3.3.2 Number of research papers published in the Journals notified on UGC website during 2016

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
1.	Review on electromagnetic welding of dissimilar materials	K. Shanthala and T.N. Sreenivasa	Mechanical Engineering	Frontiers of Mechanical Engineering (FME), Springer	ISSN: 2095 0241	UGC Care
2.	Effect of SiC and Graphite Particulates Addition on Wear Behavior of Al2219 Alloy Hybrid Composites	B K Shivananda, V Auradi and S A Kori	Mechanical Engineering	IOP Conf. Series: Materials Science and Engineering	ISSN: 1757-899X	UGC Care
3.	Evaluation of Critical Strain Energy Release Rate for Mode II Crack Propagation in Glass/Epoxy Composites	Madhu S, Manjunatha C and B T Manjunath	Mechanical Engineering	IJSRD - International Journal for Scientific Research & Development	ISSN : 2321-0613	UGC Care
4.	Processing and Wear Behavior of Al2O3 Particulates Reinforced Al-4.5Cu Alloy Composites	Shivananda B K and V Auradi	Mechanical Engineering	International Journal of Mechanical and Production Engineering	ISSN: 2321 2071	UGC Care
5.	Clustering Based on Dbscan	B R Prasad Babu	Information Science and Engineering	International Journal for Technological Research in Engineering	ISSN :2347 – 4718	UGC Care
6.	A Tool for analyzing the UML diagrams using UMLSECCheck 3.0 and Detecting Vulnerabilities	B R Prasad Babu	Information Science and Engineering	International Journal of Engineering Research	ISSN: 2319-6890	UGC Care
7.	Automated Verification of Activity Diagram Using Umlsec on Xmi Data	B R Prasad Babu	Information Science and Engineering	Global Journal of Advanced Engineering Technologies and Sciences	ISSN: 2349-0292	UGC Care
8.	Sentimental Analysis of movie reviews in Kannada	Latha C A	Information Science and Engineering	International Journal of Computer Science trends and Technology (IJCST)	ISSN:2347-8578	UGC Care
9.	Secure Data Sharing among multiple users in cloud computing	Vidya Rao	Information Science and Engineering	International Conference on Advanced Computing Techniques- IJERT	ISSN: 2278-0181	UGC Care
10.	Aspect Term Extraction for Sentiment Analysis in Large Movie Reviews Using Gini Index Feature Selection Method And Svm Classifier	Asha S Manek	Computer Science and Engineering	World Wide Web, Springer	1573-1413	UGC Care
11.	Detection of fraudulent and malicious Websites by analyzing user reviews for online shopping websites	Asha S Manek	Computer Science and Engineering	International Journal of Knowledge and Web Intelligence	1755-8263	UGC Care
12.	IoT Framework for Smart Home Using Cloud Computing Via Open-Source Mobile Platform	G.G. Sivasankari	Computer Science and Engineering	International Journal of Computer Engineering and Applications	e-ISSN: 2321-3469	UGC Care

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13.	IoT Framework for Smart Home Using Cloud Computing Via Open-Source Mobile Platform	KarthiPrem S	Computer Science and Engineering	International Journal of Computer Engineering and Applications	e-ISSN: 2319-8753	UGC Care
14.	Global Feedback Based Online Learning through Distributed Multi Agent	Rabindranath	Computer Science and Engineering	International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET	ISSN: 2319-8753	UGC Care
15.	Analysis Errors in A Conductive Approach on Sensor Data	Priya Esther and Sathish Kumar V	Computer Science and Engineering	International Journal of Innovative Research in Science, Engineering and Technology	ISSN: 1364-0321	UGC Care
16.	A Survey on residential demand side management architecture, approaches, optimization models and method	Savita Patel	Electrical & Electronics Engineering	Elsevier journal, Renewable and Sustainable Energy Reviews	ISSN: 0974-5572	UGC Care
17.	Performance Analysis and Design of Automatic attack identification for Ad-hoc wireless channel and Improvement in coverage	Kavitha T	Electronics and Communication Engineering	International Conference on Intelligent and Computing	E-ISSN 0976-3945	UGC Care
18.	An Automatic Screening of Optic Disc and Cup in Retinal Images	J. Jenitta	Electronics and Communication Engineering	International Journal of Advanced Engineering Technology	ISSN:1751-9683	UGC Care
19.	Ensemble empirical mode decomposition-based optimized power line interference removal algorithm for electrocardiogram signal	N. V. Uma Reddy	Electronics and Communication Engineering	IET Signal Processing	978-81-322-2656-7	UGC Care
20.	Performance Analysis of a Software Defined Network Using MININET	Ambily Babu	Electronics and Communication Engineering	IOTA	eISSN: 2319-1163	UGC Care
21.	DESIGN OF HIGH PERFORMANCE, LOW POWER MUX USING CIRCUIT LEVEL OPTIMIZATION IN CADENCE	Guruprasad U	Electronics and Communication Engineering	IJRET: International Journal of Research in Engineering and Technology	ISSN: 2319-1163	UGC Care
22.	DESIGN AND IMPLEMENTATION OF AMBA-MEMORY CONTROLLER FOR IMAGE TRANSFER APPLICATIONS	Savita Patil	Electronics and communication engineering	IJRET: International Journal of Research in Engineering and Technology	issn:2454-1311	UGC Care

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23.	Multicast conventions to improve obstacle detection and collision avoidance in manet	Chakradhar Sridhar, Nagesh Gunvanthrao Yernale and MVN Prasad	Electronics and Communication Engineering	" International journal of advanced engineering management and science (ijaems)	ISSN: 1687-8078	UGC Care
24.	Synthesis, spectral characterization, and antibacterial and antifungal studies of PANI/V2O5 nanocomposites	Chakradhar Sridhar B, Jakeer Husain, MVN Pradeep and MVN Ambika Prasad	Physics	International Journal of Chemical Engineering	ISSN: 1563-5112	UGC Care
25.	Antioxidant Activity of leaf and fruit extracts of Rauwolfia tetraphylla Linn	V. Venkata Lakshmi and Vinay. T	Chemistry	International Journal of Pharmaceutical sciences and Research	ISSN -2320-5148	UGC Care
26.	HPTLC fingerprint profile of n-hexane extract of Mimusops elengi Linn	V. Venkata Lakshmi and Vinay. T	Chemistry	Journal of Pharmacognosy and Phytochemistry	ISSN -2349-8234	UGC Care
27.	Preparation of chitosan/di_erent organomodi_ed clay polymer nanocomposites: studies on morphological, swelling, thermal stabilityand anti-bacterial properties	V. Venkata Lakshmi and B. H. Nanjunda Reddy	Chemistry	Journal of NANOSYSTEMS: PHYSICS, CHEMISTRY, MATHEMATICS	ISSN -2220-8054	UGC Care
28.	Electro chemical and photo catalytic studies of MnO2 nanoparticle from waste dry cell batteries	V.Venkata Lakshmi and Mylarappa	Chemistry	Journal of NANOSYSTEMS: PHYSICS, CHEMISTRY, MATHEMATICS	ISSN -2220-8054	UGC Care
29.	Synthesis and characterization of sodium Alginate from stabilized nano ZnO Bentonite clay	V.Venkata Lakshmi and B.H.Nanjunda Reddy	Chemistry	Journal of Bio Nano Science	ISSN -1557-7910	UGC Care
30.	Cyclic Voltammetry and Electrochemical Impedance Spectral Properties of MnO2 Obtained by Waste Discarded Batteries Using Eco-Friendly Leaching Materials	V.Venkata Lakshmi and Mylarappa	Chemistry	Asian Journal of Chemistry	ISSN -0970-7077	UGC Care
31.	Sloshing in Liquid Retaining Structures-A State of the Art Report	Ganesh SSY	Civil engineering	International Journal on Mechanical Engg & Robotics	ISSN 2321-5747	UGC Care

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REVIEW ARTICLE

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Review on electromagnetic welding of dissimilar materials

1

Abstract Electromagnetic welding (EMW) is a high-speed joining technique that is used to join similar or dissimilar metals, as well as metals to non-metals. This technique uses electromagnetic force to mainly join conductive materials. Unlike conventional joining processes, the weld interface does not melt, thus keeping the material properties intact. Extremely high velocity and strain rate involved in the process facilitate extending the EMW technique for joining several materials. In this paper, the research and progress in electromagnetic welding are reviewed from various perspectives to provide a basis for further research.

Keywords electromagnetic, welding, impact, dissimilar materials

1 Introduction

Manufacturing technologies aimed at sustainable development and efficient use of men, materials, and available energy are increasingly demanded. Several complex parts needs to be joined in various industries, such as automotive, aerospace, nuclear, medical, and electronics, which require special performances like corrosion or wear resistance, high temperature strength, and toughness, combined with high strength-to-weight ratio. These applications require design flexibility and the joining of materials with different chemical, mechanical, and thermal behaviors.

Joining dissimilar materials is often extremely challenging and difficult to achieve by conventional joining techniques because of thermal and metallurgical incompatibility. However, numerous dissimilar materials have been joined successfully with appropriate non-conventional joining processes. For dissimilar material combination, electromagnetic welding (EMW) is known to be a feasible joining process, allowing manufacturers to significantly improve their products, enabling the use of lighter and stronger material combinations. EMW is successfully applied for a variety of industrial materials, like aluminum, stainless steel, copper, magnesium, brass, titanium, metallic glass, and plastics [1–10].

EMW is a solid-state welding technique that uses high-speed electromagnetic force for welding [1]. Impulsive Lorenz force, which is generated by repelling magnetic fields because of pulse current, is used to accelerate one or both joining materials, resulting in high velocity collision and formation of joints. The bonding mechanism is reported to be similar to that of explosive welding. EMW has been proven to be beneficial because of minimal inter metallic phase formation at the interfaces, while establishing a strong metallurgical bonded structure. Presently, EMW has limited but rapidly growing industrial application in tube forming, sheet metal forming, crimping, welding, and cutting of metals with good success in highly conducting metals like aluminum, copper, steel, and so on [2].

2 Fundamentals of welding process

According to Faraday's law, an electrical conductor produces transient magnetic field and induces a current in the neighboring conducting object when loaded by a time-varying current. Lenz's rule states that induced current always opposes its origin and thus produces magnetic fields in the opposite direction. Therefore, a repelling Lorenz force (Fig. 1) will be established between two neighboring conducting objects when loaded by a current in the opposing direction [3]. EMW utilizes these principles and converts the discharging current in the coil into useful mechanical force either for joining or forming operation.

Lorenz force $\vec{F}$ acting on the workpiece is calculated on the basis of the current density $\vec{J}$ and magnetic flux density $\vec{B}$. Lorenz force is given by Eq. (1) [3]:

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Evaluation of Critical Strain Energy Release Rate for Mode II Crack Propagation in Glass/Epoxy Composites

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Abstract— Inter-laminar fracture is the key disadvantage of laminated fiber reinforced composites, precisely delamination. Delamination is a commonly observed failure due to the composite construction nature. Preparing composite structures involve various techniques of manufacturing. Commonly, most popular method of composite manufacturing is layer by layer lay-up method. Interacting portion between the two layers is obviously not reinforced with fibers due to which delamination or inter-laminar fracture occurs. Material property that denotes resistance to delamination is strain energy release rate (GC). Primary objective of this paper is to find the critical strain energy release rate or inter-laminar fracture toughness which is produced due to the sliding mode of fracture in composite laminate. Fracture toughness (GIIC) for mode II crack expansion is found for a glass fiber reinforced polymer composite with 00 orientation unidirectional fibers. 40%, 50% and 60% volumes of fiber are compared with each other to find the best volume fraction at which the resistance to crack growth GIIC is maximum. Compliance Calibration Method is used for the experimental investigation. Investigation is carried on End Notched Flexure specimen prepared from E-glass fiber and epoxy as per ASTM D7905 in hand layup method. Numerical analysis was done using virtual crack closure technique (VCCT). Experimental results obtained are again correlated with numerical results.

Key words: Glass fiber reinforced polymer, Inter-laminar Fracture, Strain Energy Release Rate, Fracture Toughness

I. INTRODUCTION

Glass fibers have a wide use in the epoxy polymer based composite materials as the reinforcing material, because of their good strength, stiffness, etc. Composites are classified as longitudinal (Unidirectional) or cross (Bidirectional) according to the fiber alignment. Unidirectional glass fiber reinforced polymers always have a better compressive strength as well as tensile strength compared to the bidirectional fiber glass composite [1, 2].

Even though composites with remarkable strength are unidirectional composites, delamination or inter-laminar fracture is the significant drawback. Laminated structure undergoing delamination consists of three modes; namely opening mode, sliding shear mode and scissoring shear mode as in fig1. Significant attention has been paid in Characterization of mode I and mixed mode I/II fractures to study the fracture behavior which results in standard testing methods [3]. Comparatively very fewer studies are done on pure mode II fracture.

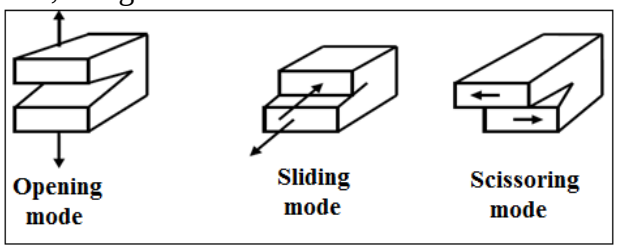

Fig. 1: Fracture modes

End Slit Load (ELS), End notched flexure (ENF) specimen and 4point End Notched Flexure (4ENF) specimen can be used to study the fracture toughness of second mode for composite laminates. ENF specimen evolved to be most effective tests for mode II fracture [4]. Russell [4] first presented the use of the End Notched Flexure (ENF) specimen as shown in fig2 for the mode II fracture toughness. Carlsson et al. [5] investigated the dependency of specimen preparation for mode II (G_{IIC}) fracture toughness using the data reduction technology. Standard mode II inter-laminar fracture toughness using ENF test, the procedure for preparation of specimen and testing for a unidirectional fiber reinforced polymer composite is standardized in ASTM D7905/D7905M-14. [6]. Inter laminar fracture toughness for an End Notched Flexure specimen in sliding mode crack propagation for fiber reinforced polymer laminate is obtained from fracture mechanics approach. The present investigation, ENF specimen is prepared such a way that it contains a pre-crack of required length at mid-section starting from one of the specimen edges. ENF specimen undergone a three point bending test by applying mid load on the simply supported beam, the load in turn creates the tension on the surface under the crack and surface over crack compression further stress is developed at the crack tip therefore the crack initiate growing. The load at which the crack growth is initiated is called the critical load. The energy required for the crack to grow is the strain energy. The energy release per unit area of crack growth is strain energy release rate. At the critical load strain energy release rate is known as inter laminar fracture toughness of mode II 'G_{IIC}' or the critical strain energy release rate.

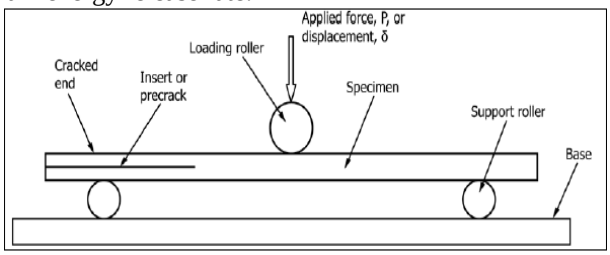

Fig. 2: End Notched Flexure specimen

Griffith proposed a theory to find the strain energy release rate for studying the crack behavior before failure

CLUSTERING BASED ON DBSCAN

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Abstract: DBSCAN is a density based clustering algorithm extracting the arbitrary shapes of the normal lanes from AIS data. This paper presents a parallel DBSCAN algorithm on top of Hadoop the experiment conducted in the paper shows that the proposed method can work well with maritime data although the performance is not satisfying. A discussion about the method's limitation and potential issues is shown at the end of the paper.
Key words: Maritime Surveillance; Clustering.

I. INTRODUCTION

Density based spatial clustering of applications with noise (DBSACN) is a data clustering algorithm proposed by martin Ester,Hans-peter Kriegel,Jorg Sander and Xiaowei Xu in 1996[1]. It is a density based clustering algorithm. Given a set of points in some space, it groups together points that are closely packed together (points with many nearby neighbors), making as outliers points that lie alone in low density regions (whose nearest neighbors are too far away). DBSCAN is one of the most common clustering algorithms and also most cited scientific literature. Numerous applications require the management of spatial data, i.e. data related to space. Spatial Database Systems(SDBS) (Gueting 1994)[2] are database systems for the management of spatial data. Increasingly large amounts of data are obtained from satellite images, X-ray crystallography or other automatic equipment. Therefore, automated knowledge discovery becomes more and more important in spatial databases. Several tasks of knowledge discovery in databases (KDD)[3] have been defined in the literature (Matheus, Chan&Piatetsky- Shapiro 1993)[4]. The task considered in this paper is class identification, i.e. the grouping of the objects of a database into meaningful subclasses. In an earth observation database, e.g., we might want to discover classes of houses along some river. Clustering algorithms are attractive for the task of class identification. However the e application to large spatial databases rises the following requirements for clustering algorithms

- Minimal requirements of domain knowledge to determine the input parameters, because appropriate values. These values often not knowing advance then dealing with large databases.
- Discovery of clusters with arbitrary shape, because the shape of clusters in spatial databases may be spherical, drawn-out, linear, elongated etc.
- Good efficiency on large databases, i.e. on databases of significantly more than just a few thousand objects. Clustering algorithms are attractive for the task of class identification in spatial databases.

However, the application to large spatial databases rises the following requirements or clustering algorithms: minimal requirements of domain Knowledge to determine the input parameters, discovery of clusters with arbitrary shape and coding efficiency on large databases. Thee well-known clustering algorithms offer no solution to the combination of these requirements in this paper, this resent the new clustering algorithm DBSCAN relaying on a density-based notion of clusters which is designed to discover clusters of arbitrary shape. DBSCAN only one input parameter and supports user in determining an appropriate value for it. In 2014, the algorithm was awarded the test of time award (an award given to algorithms which have received substantial attention in theory and practice) at the leading data mining conference, KDD[5]. The well-known clustering algorithms offer no solution to the combination of these requirements. In this paper, we present the new clustering algorithm DBSCAN. It requires only one input parameter and supports the user in determining an appropriate value for it. It discovers clusters of arbitrary shape. Finally, DBSCAN is efficient even for large spatial databases. The rest of the paper is organized as follows. We discuss clustering algorithms, evaluating them according to the above requirements. We present our notion of clusters which is based on the concept of density in the database. Even introduces the algorithm DBSCAN which discovers such clusters in a spatial database. We performed an experimental evaluation of the effectiveness and efficiency of DBSCAN using synthetic data and data of the SEQUOI2A0 00 benchmark[6]. At last concludes with a summary and some directions for future research.

II. ARCHITECTURE

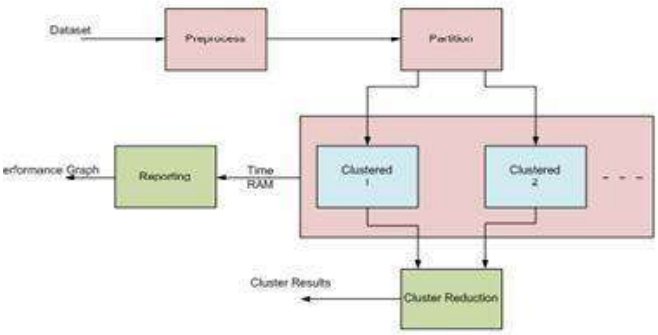

Figure 1: System Architecture.

DBSCAN Architecture explains how the data is accessed as shown in the Figure 1[7]. First of all dataset is given to find the particular data in the dataset. Dataset is input to the DBSCAN algorithm. These data set is processed and send to

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A Tool for analyzing the UML diagrams using UMLSECCheck 3.0 and Detecting Vulnerabilities*

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Abstract

The depiction of the useful, behavioral, and basic framework essentials structure focal parts of any genuine necessities detail. In the UML, for instance, practical prerequisites are communicated by use cases, their conduct demonstrated by e.g. action diagrams, and auxiliary prerequisites are caught by class models. Tragically, any product advancement strategy managing distinctive models confronts troubles guaranteeing consistency of the details and culmination as for each other. To defeat these lacks, we refine movement charts to address the issues of an appropriate displaying component for use case conduct. The refinement specifically bolsters the correct coupling of movement charts and the class model. Granularity and semantics of the methodology take into consideration a consistent, traceable move of utilization cases to area classes and for the confirmation of the space class model against the utilization case model. The approval of the utilization case model and parts of the area class model is upheld also. Keywords: Parser, schema, rule file UML models, XMI data

I INTRODUCTION

Still just around 4% of programming frameworks by and by are fabricated utilizing displaying procedures or some likeness thereof (the vast majority of them utilizing UML). There should be a persuading increased the value of the utilization of model-based advancement methods before it will be generally received in industry . We will probably give such included quality by creating device support for the investigation of UML models against framework necessities which can be detailed at the level of the framework demonstrate, and which can't be physically checked in a solid and productive path, (for example, security prerequisites). Here, we portray an UML confirmation system supporting the development of mechanized prerequisites examination apparatuses for UML graphs. Ordinarily, UML models checked against security properties are express models of the framework plan, while in Model-Based Testing (MBT) we depict the normal conduct of an application, considered along these lines to be a blackbox. With the present cutting edge, on one hand it is workable for a framework architect to plan an origination model explained with security properties that can be confirmed utilizing robotized hypothesis provers and model-checking, for instance utilizing the UMLsec approach. Modeling strategies are utilized as a part of less sum in creating programming framework (the greater part of them utilizing UML). Model-based improvement methods ought to be tried before utilizing as a part of industry. Our point is to execute a product examination instrument to test UML models which can't be physically checked in a solid and proficient route, (for example, security necessities). Here, we outline a system for assessing UML models which gives robotized investigation instruments. As a rule the UML charts (model) tried contrary to security measures (properties) are exact graphs (model) of the composed framework. In model based test unsurprising deeds (conduct) of the applications seen as a black box. By utilizing current situation with the workmanship the designer can plan a model reasonably connected with security measures(properties) and can be tried by utilizing model based system.

II METHODOLOGY

The approach the instrument is appeared in Fig.1 and comprises of three noteworthy useful modules to be specific, Parser, Rule approval and Rule Engine.

UML XMI Data: This information is gotten by changing over UML charts [14] into XMI document design (.xmi augmentation) utilizing Argo-UML apparatus.

Parser: Parser will take the information XMI information and produces

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AUTOMATED VERIFICATION OF ACTIVITY DIAGRAM USING UMLSEC ON XMI DATA

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ABSTRACT
Vulnerability is outlined as any defect within the software package, which results attackers to induce access to confidential data. While vulnerabilities in code are well documented very little analysis has been done to find vulnerabilities in design per UML. The presence of vulnerability within the design model of the system makes it necessary to possess a tool that may facilitate developers to avoid or notice them within the design stage

Here we describe mechanism to find the defect in system. The tool takes UML Diagram as input. And this metadata (XMI DATA) is cross checked against rule. If the requirement fails to hold then error message is returned.

KEYWORDS: Architecture of UMLSec tool, Validation window for selecting the XMI file.

INTRODUCTION
Software program security is an area that is getting lot of interest .Protection lapses can occur because of the flaws in layout and coding .At the same time as protection vulnerabilities because of illness in code were studied and nicely documented as CWE, paintings on vulnerabilities due to layout flaws have now not been studied a good deal .An essential work in this area has been the e-book on software layout patterns

UML diagrams are drastically utilized in specifying design of object oriented software program. But, those cannot be manually checked in an efficient way for the safety flaws. This paper describes the improvement of the software program analysis device to test UML models for the vulnerabilities to suggest insufficiency of security features

While tools for painting UML diagrams are available in the market, testing tool, for validating security aspects in UML diagram are not available. To overcome this problem, we have developed a tool called UMLSec. The main function of the tool is to analyse UML diagram to detect vulnerabilities

In next section (II) considers the methodology followed and the system architecture of the tool. In section III we consider functioning of the tool by considering Activity diagrams as input and speculative results are given.

METHODOLOGY
The methodology of the tool is shown within the fig.1 and carries with it 3 major practical modules particularly parser, rule engine and rule validation

UML XMI Data: this data is obtained by changing UML diagrams [14] into XMI file format (.xmi extension) utilizing Argo-UML tool.

Parser: Here in this part XMI data is the input and using this input parser produces the schema

The schema is however a mirrored image of security rules that are outlined on the basis of test intention.

Rule engine: rule engine includes security rule sets which are outlined based on the application, which acts as an input to rule engine

Rule validation: As the name suggest this part validates for violation in UML diagram by comparing the schema and rule sets, the output is rule violation or no violation

RESEARCH ARTICLE OPEN ACCESS

Sentimental Analysis of Movie Reviews in Kannada

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ABSTRACT

With the development of Internet technologies, there is an enormous amount of information that is getting accumulated in the World Wide Web, such as reviews, blogs, tweets, posts etc. In recent years sentimental analysis has gained momentum due to the increase in the size of information. Sentimental Analysis has been important in reviewing products, movies etc. Firstly, we use web scraping to scrape information about movie reviews from a website. Approach is to determine the sentiment polarity of Kannada movie reviews. This paper introduces a hybrid method including both Lexicon based and Machine Learning.

Keywords:– Sentimental Analysis, Machine Learning, Web Scraping.

I. INTRODUCTION

The Internet has revolutionized the computer and communications world like nothing before. The Initial concepts originated in several Computer Science laboratories in the United States, Great Britain, and France, but the internet today is a widespread information infrastructure. With the development of Internet technologies, there is a huge amount of information and raw data such as reviews, blogs, tweets, posts, and other such information on all kinds of websites. People have started to share information about entities such as products, movies etc., through different kinds of sites such as face book, Amazon etc. This information plays an important role in deciding whether an entity is good or bad. With the increase in the amount of such information, the analysis and categorization of these become extremely difficult. The large amount of the information also attracts researchers to make efforts to organize the information clearly. So the automatic text categorization is come up with. One of the ways in which the above problem can be tackled is through Sentiment Analysis.

II. SENTIMENT ANALYSIS

In recent years Sentiment Analysis has gained momentum by the increase of social networking sites. Sentiment Analysis is the process of determining whether a piece of writing is positive, negative or neutral. It's also known as opinion mining, deriving the opinion or attitude of a speaker. A common use-case for this technology is to discover how people feel about a particular topic. Sentiment Analysis can be of three levels -Document level (such as blog), Sentence level (such as comments) and Word level.

Sentiment classification looks for words or emotional states such as good, bad, nice, sweet, awful etc. in a piece of sentence in a review.

In this paper we present the implementation of Sentimental Analysis for Kannada Movie Reviews. We use a hybrid method of analysis where in we utilize both the lexicon based approach and the machine learning approach called Naive Bayes classifier.

III. INTRODUCTION TO WEB SCRAPING

Web scraping also known as Web Data Extraction, Web Harvesting is a technique employed to extract data from websites here the data is extracted and saved to a local file in your computer or to database. Data displayed by most websites can only be viewed using a web browser

Secure Data Sharing Among Multiple users in Cloud Computing

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***Abstract*—Cloud services allow individuals and businesses to use software and hardware that are managed by third parties at remote locations. Cloud services offers an on-demand data outsourcing service which reduces burden for storage management. This new technique of data hosting service also brings new security threats towards user's data. During the data accessing, multiple users maybe working in a group to achieve productive benefits. But data sharing is not safe in cloud because the outsourced data can be exposed to risk when accessed by multiple users. Here the privacy criteria of the user is at risk as access request tends to expose all the information. In this paper, we have studied the privacy-preserving authentication protocol to address the mentioned privacy issue for cloud storing. Here we propose a solution to solve the problem of data integrity. Also the privacy of the data owner is achieved.by anonymous access request matching mechanism, proxy-reencryption at cloud server and ring signature.**

Keywords-Cloud computing, authentication protocol, data integrity, ring signature.

I. INTRODUCTION

Cloud computing is the practice of using a network of remote servers which will be hosted on the internet. This is used to process, manage and store the data. This is used as an alternative to local servers or personal computers. The popularity of cloud computing is increasing because it provides on-demand storage, infrastructure management, backup solutions, web based email services, data processing, technical support, virtual infrastructure etc.,[1]. However security and privacy are becoming the main concern with increasing popularity of cloud. The main focus of conventional security approaches is to provide authentication. But as the requirements increases for each application, users may want to access and share each other's data to achieve productive benefits. The sharing of data by users will bring new security and privacy challenges in cloud storage.

Security issues: Most companies use to store their data in their own data centers but nowadays they are prompting to cloud to store their data because this can decrease their operational cost radically, enjoy the services provided by cloud, reduce the burden of storage. But major drawback for storing in cloud is security in terms of data integrity, data leak and data confidentiality especially in shared groups. Few issues are malicious hacker, connection spooping, denial of service, faulty APIs. Insufficient understanding of cloud technology and compatibility between different cloud services is also an issue [10].

In cloud environment, the security protocol should achieve the following requirements.

1. Authentication: It confirms the identity of a person. The credentials provided will be compared with the database. If the credentials match then the user is granted is granted authorization for access.
2. Data anonymity: It is the process of encrypting the data, so that it cannot be accessed by unauthorized user.
3. Access control: The users access desires should not be known to any unknown entity.
4. Forward security: If the password or secret key is compromised, the past sessions must still be protected.

This paper mainly deals with providing the security tools for the four properties described above.

An efficient solution to address the above issues is using

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Aspect term extraction for sentiment analysis in large movie reviews using Gini Index feature selection method and SVM classifier

Asha S Manek[1] · P Deepa Shenoy[2] · M Chandra Mohan[3] · Venugopal K R[2]

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Abstract With the rapid development of the World Wide Web, electronic word-of-mouth interaction has made consumers active participants. Nowadays, a large number of reviews posted by the consumers on the Web provide valuable information to other consumers. Such information is highly essential for decision making and hence popular among the internet users. This information is very valuable not only for prospective consumers to make decisions but also for businesses in predicting the success and sustainability. In this paper, a Gini Index based feature selection method with Support Vector Machine (SVM) classifier is proposed for sentiment classification for large movie review data set. The results show that our Gini Index method has better classification performance in terms of reduced error rate and accuracy.

Keywords Gini Index · Feature selection · Reviews · Sentiment · Support Vector Machine (SVM)

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Detection of fraudulent and malicious websites by analysing user reviews for online shopping websites

Asha S. Manek, P. Deepa Shenoy, M. Chandra Mohan and K.R. Venugopal

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Abstract

Recently, the web has become a crucial worldwide platform for online shopping. People go online to sell and buy products, use online banking facilities and even give opinions about their online shopping experience. People with malicious intent may be involved in any online transaction with a fraudulent e-business give fake positive reviews that actually does not exist to promote or degrade the product. User reviews are extremely essential for decision making and at the same time cannot be reliable. In this paper, we propose a novel method Bayesian logistic regression classifier (BLRFier) that detects fraudulent and malicious websites by analysing user reviews for online shopping websites. We have built our own dataset by crawling reviews of benign and malicious e-shopping websites to apply supervised learning techniques. Experimental evaluation of BLRFier model achieved 100% accuracy signifying the effectiveness of this approach for real-life deployment.

Keywords

fake reviews, malicious websites, supervised learning, sentiment analysis, Bayesian logistic regression, fraud detection, user reviews, online shopping websites

Keywords

fake reviews
malicious websites
supervised learning
sentiment analysis
Bayesian logistic regression
fraud detection
user reviews
online shopping websites

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IoT FRAMEWORK FOR SMART HOME USING CLOUD COMPUTING VIA OPEN SOURCE MOBILE PLATFORM

J. Rajalakshmi · Published 2016 · Computer Science

Internet of Things and Smart Homes are the research topics which are gaining more public attention as they help us to create a comfortable l iving environment. Smart Home is the one where the home benefits from the advent of automati on and communication technologies to create a smart environment which is more convenient for the users. One main goal of Smart Home is to ease people's lives by making the techno logy work for them. But the problem with such smart systems is that they are dynamic, hetero g neous and complex. However such systems can profit from the virtually boundless cap abilities and resources of Cloud to overcome such problems. Additionally Smartphone inn ovation is successful to the point that individuals experience difficulty envisioning a day without them. With the integration of Internet of Things, Cloud Computing and Smart phone Technology, we present a Smart Home based on Cloud using IoT framework that uses a n Android mobile to control the home appliances from anywhere around the world. The fram ework is designed to be low cost, scalable and easy to use. Also this system can be e xt nded to various other applications like smart buildings, healthcare just to mention a few o f them. Collapse

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Global Feedback Based Online Learning through Distributed Multi Agent

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ABSTRACT: In this paper, we develop online learning algorithmsthat enable the agents to cooperatively learn how to maximize the overall prize in scenarios where only noisy worldwide criticism is accessible without trading any data among themselves. We demonstrate that our calculations learning regrets—the misfortunes incurred by the algorithms due to uncertainty—are logarithmically expanding in time and thus the time average prize converges to the optimal average prize. Besides, we additionally delineate how the regret relies on upon the size of the action space, and we demonstrate that this relationship is impacted by the informativeness of the reward structure with respect to every agent's individual action. At the point when the overall reward is completely instructive, regret is shown to be straight in the aggregate number of actions of all the agents. Our logical and numerical results demonstrate that the proposed learning calculations fundamentally outperform existing internet learning arrangements as far as regret and learning speed. We represent how our hypothetical structure can be utilized as a part of practice by applying it to online Big Data mining using distributed classifiers.

KEYWORDS: Big Data mining, distributed cooperative learning, multiagent learning, multiarmed bandits, online learning, reward informativeness.

I. INTRODUCTION

In this paper, we consider a multi-agent decision making and learning problem, in which an arrangement of disseminated agents select activities from their own particular activity sets keeping in mind the end goal to augment the general framework reward which relies on upon the joint action of all agents. In the considered situation, agents don't have the foggiest idea about from the earlier how their activities impact the general framework prize, or how their impact might change progressively after some time. In this manner, keeping in mind the end goal to amplify the general framework reward, agents should progressively figure out how to choose their best activities after some time. Be that as it may, agents can just watch/measure the general framework execution and henceforth, they just get worldwide criticism that relies on upon the joint activities of all agents. Since individualized criticism about individual activities is missing, it is inconceivable for the agents to figure out how their activities alone influence the general execution without coordinating with each other. Be that as it may, on the grounds that agents are appropriated they can't convey and facilitate their activity decisions. Besides, agents' perceptions of the worldwide input might be liable to individual blunders, and along these lines it might be greatly troublesome for an agent to guess other agents' activities construct exclusively with respect to its own particular watched reward history.

Be that as it may, on the grounds that agents are appropriated they can't convey and facilitate their activity decisions. Besides, agents' perceptions of the worldwide input might be liable to individual blunders, and along these lines it might be greatly troublesome for an agent to guess other agents' activities construct exclusively with respect to its own particular watched reward history. The way that individualized input is missing, correspondence is impractical, and the worldwide criticism is loud makes the advancement of productive learning calculations which amplify the joint compensate extremely difficult. Essentially, the considered multi-agent learning situation varies fundamentally from the current arrangements in which agents get individualized prizes.

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Analysing Errors in a Conducive Approach on Sensor Data

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ABSTRACT: Big sensor data is pervasive in both industry and scientific applications where the data is created with high volume and speed, it is hard to process utilizing available database administration tools or conventional data handling applications. Hadoop provides a promising platform to support the addressing of this challenge as it provides a flexible stack of massive computing, storage, and software services in a scalable manner at low cost. A few systems have been created as of late to process sensor data on cloud, for example, sensor-cloud. However, traditional techniques do not provide productive support on speed detection and locating of errors in big sensor data sets.For speed data error detection in big sensor data sets, in this paper, we develop a novel data error detection approach which exploits the full computation potential of Hadoop platform. Firstly, Differentiation and definition of Different sensor error types are done. Based on that classification, the network feature of a clustered Wireless sensor network is introduced and analysed to support speed error detection and location. Explicitly, in the proposed approach,a large portion of identification operations can be directed in restricted temporal or spatial data blocks rather than an entire big data set. Thus, the detection and location process can be dramatically accelerated. Additionally, the detection and location tasks can be distributed to Hadoop platform to completely exploit the computation power and massive storage.Through the analysis on our Hadoop platform, it is exhibited that our proposed methodology can significantly recede the time for error detection and location in big data sets generated by large scale sensor network systems with acceptable error detecting accuracy.

KEYWORDS: Big data, Hadoop, data abnormality, error detection, time efficiency, sensor networks, complex network systems

I.INTRODUCTION

RECENTLY, we enter a new era of data explosion which brings about new challenges for big data processing. In general, big data [1], [2] is a collection of data sets, All in all, enormous information, is a gathering of information sets so huge and complex that it gets to be hard to handle with available database administration frameworks or conventional information preparing applications. It represents the progress of the human cognitive processes, usually includes data sets with sizes beyond the ability of current technology, method and theory to capture, manage, and process the data within a tolerable elapsed time [1], [2], [12], [13], [14], [15], [16], [17],. BigData has typical characteristics of five 'V's, volume, variety, velocity, veracity and value. Big data sets come from many areas, including meteorology, connectomics [1], [2]. According to literature [1], [2], since 1980s, generated data doubles its size in every 40 months all over the world. Hadoop, Java-based programming framework that supports the processing of large data sets in a distributed computing environment. One of important source for scientific big data is the data sets collected by wireless sensor networks (WSN). Wireless sensor networks have capability of essentially improving individuals' capacity to screen and communicate with their physical surroundings. For a WSN application to deduce an appropriate result, it is vital that the information got is clean, accurate, and loss- less. However, effective detection and cleaning of sensor big data errors is a challenging issue demanding innovative solutions. Therefore, the question of how to find data errors in complex network systems for improving and debugging the network has attracted the

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A survey on residential Demand Side Management architecture, approaches, optimization models and methods

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ABSTRACT

The residential sector is a major contributor to the global energy balance. So far, the residential users demand has been largely uncontrollable and inelastic with respect to the power grid conditions. Demand Side Management (DSM) is an important function in smart grid that allows consumers to make informed decision regarding energy consumption, and helps energy providers to reshape the load profile and to reduce peak load demand. DSM can be mathematically formulated either to maximize the system total peak demand or to maximize overall system load factor and utility's revenue and to minimize customer electricity bill. This paper reviews the various optimization techniques applied to DSM as contrasting characteristics like individual users versus cooperative users, deterministic versus stochastic and day-ahead versus real time DSM. This paper reviews a survey on residential DSM, which can help general readers to have an outlook of the topic which includes the architecture, formulation of optimization problems and its various approaches. The issues, existing solutions and approaches are presented. In addition, the future research directions are also discussed to enhance the work in this domain.

Contents

1. Introduction

The worldwide rise in energy demand accompanied by the rise in prices of petroleum products has led to a profound change in the present day energy infrastructure. Academia and industry have evaluated the upgrade to a smart grid as a critical step to address the future energy requirements. Smart grid represents a vision of the future power systems integrating advanced sensing technologies, control methodologies and communication technologies at transmission and distribution levels in order to supply electricity in a smart and user friendly way. The main characteristics of a smart grid are consumer friendliness, resistance for attack, self-healing, hack proof, ability to accommodate all types of generation

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IDANT ACTIVITY OF LEAF AND FRUIT EXTRACTS OF *RAUWOLFIA* *HYLLA* LINN.

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Key words:

Antioxidant, *Rauwolfia raphylla*, Apocyanaceae, BHA, Ascorbic acid

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ABSTRACT: Four crude extracts viz, methanol extract of fruit and n-hexane, dichloromethane, methanol extracts of the leaf of *R. tetraphylla* were investigated for in vitro antioxidant activity at different concentrations (5, 50 and 100 µg). Antioxidant ability is expressed as equivalents of ascorbic acid and was calculated using standard graph. The results indicated that the leaf n-hexane and methanol extracts was found to be significantly active at 5µg when compared with BHA, and at 50 µg concentration the methanol leaf extract found be very high. The fruit methanol extract was found to be active and the activity increased with increase in dose, but not as that of BHA. The experimental results show that the activity exhibited by the solvent extracts is dose dependent.

NTRODUCTION: Oxidation reactions are one of he destructive processes and can produce free radicals, which can start chain reactions that damage cells. Oxidative stress is a result of excessive production of reactive oxygen species (ROS), super oxide, hydrogen peroxide, hydroxyl radicals and these species leads to uncontrolled reactions. Molecular oxygen is an essential component for all living organisms, but suffer from injury if exposed to oxygen concentration of more than 21%. [1] Oxidative free radicals are formed continuously in the human system and have been concerned in several human diseases. [2]

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When this resistance mechanism is insufficient, oxidative stress can damage proteins, carbohydrates, lipid and nucleic acids leading to the generation of free radicals, other reactive oxygen species or impaired antioxidant defense mechanism and has been concerned in a variety of pathological conditions like rheumatoid arthritis, autoimmune diseases, myocardial infarction, cancer, atherosclerosis and heart diseases. [3]

Even if these free radicals can be scavenged by the *in vivo* produced antioxidants, but endogenous antioxidants are insufficient to completely remove them to maintain a balance. As a result, dietary antioxidants are necessary to counteract excess free radicals. [4] Antioxidants are widely used as ingredients in dietary supplements in the hope of maintaining healthiness and preventing diseases such as cancer, coronary heart disease and even altitude sickness. In addition to these uses of natural antioxidants in medication, these

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Research Article

Synthesis, Spectral Characterization, and Antibacterial and Antifungal Studies of PANI/V_2O_5 Nanocomposites

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The present study deals with the synthesis and characterization of nanocrystalline vanadium pentoxide (V_2O_5) nanoparticles and their antibacterial and antifungal activity on *Staphylococcus aureus* and *Aspergillus niger*, respectively, by agar diffusion method. The metal oxide has been synthesized by employing the sol-gel method, polyaniline (PANI) has been synthesized by chemical oxidation, and PANI/V_2O_5 composites have been synthesized by in situ polymerization method with different ratios (10, 20, 30, 40, and 50 weight%) of V_2O_5 in PANI. The newly prepared composites were characterized by FTIR and powder X-ray diffraction (P-XRD) techniques and are found to be formed of PANI/V_2O_5 nanocomposites, and also the compounds showed moderate antibacterial and antifungal activity.

1. Introduction

Conducting polymers are unique because they show electrical, biological, and optical property changes when they are chemically treated with oxidizing or reducing agents. After chemical treatment with redox active agents, these polymers can change from an initial insulating state to an electrically conducting state [1]. This characteristic can be used in such applications as chemical sensors [2, 3], optical sensors [4], and biosensors [5, 6]. The most widely studied conducting polymers include polyaniline, polypyrrole, and polythiophene. Polyaniline is appealing because it is environmentally stable, is easily synthesized, and can react with chemical species at room temperature [7]. The nanoparticles composites materials have unique physical properties that have attracted more and more attention as a cathode in rechargeable ion batteries and selective gas sensors such as ammonia because of their high surface area and redox activity [8, 9]. Biological activity of vanadium pentoxide nanomaterial depends on factors such as the type of the derivative, manner of its administration, dose, length of treatment, and also individual and species specific sensitivity to the administered compound [10]. V_2O_5 nanomaterial is amphoteric in nature. Vanadium is connected to its degree of oxidation (vanadyl/vanadate ion) and chemical form (organic/inorganic ligand) [11–13]. The existence of the various vanadate species depends on the pH and on the total concentration of vanadium. Their occurrence can be accounted for by protonation and condensation equilibrium; it is evident that only in very dilute solutions are monomeric vanadium ions found, and increase in concentration, particularly if the solution is acidic, lead to polymerization [14–16].

In the recent past, the conducting polymer-based nanocomposites have drawn attention to their applications as potent biological agents [17–21]. Therefore, PANI/V_2O_5 composites have been most intensively studied among various composites, because they could combine the merits of PANI and crystalline V_2O_5 within a single material and are expected to have applications as potent biological agents.

2. Experimental

2.1. Materials and Methods. The monomer aniline was distilled twice before use; an AR grade ammonium persulfate ($(NH_4)_2S_2O_8$), hydrochloric acid (HCl), and vanadium pentoxide (V_2O_5) were used for synthesis.

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Synthesis, characterization, electrical and sensor behavior of PANI/In_2O_3 nano composites

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ABSTRACT
Indium oxide (In_2O_3) nanoparticles were successfully prepared by sol-gel method. Nanocomposites of polyaniline (PANI) and Indium oxide (In_2O_3) have been synthesized using insitu polymerization method for different concentrations of nano In_2O_3 powder. The formation of polymer nanocomposite and changes in its structural and micro structural properties of the materials were investigated by X-ray diffractometry (XRD) and Fourier infrared spectroscopy (FTIR) techniques. The surface morphology of PANI–In_2O_3 nanocomposite was elucidated using Scanning Electron Microscopy (SEM). DC conductivity studies of PANI-In_2O_3 composites for different weight percentage (wt%) show thermally activated behaviour. The conductivity was found to increase with the increase in temperature indicating the semiconducting behaviour of all the compositions. Maximum conductivity was observed in 30 wt% of In_2O_3 in polyaniline. On exposure of the composites to liquefied petroleum gas (LPG), increase in resistance was observed with the increase in gas concentration. Maximum sensitivity for gas sensing was observed in the composite of 50 wt% In_2O_3 in polyaniline.

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KEYWORDS
Polyaniline; indium oxide; nano-crystalline; conductivity; LPG sensing

1. Introduction

Nanocrystals metal oxides have a wide range of applications in catalysis, energy storage, optics, electronics, and battery materials. In particular, indium oxide nanocrystals are potentially important in microelectronic device materials used in solar cells [1,2], flat-panel displays, sensors [3,4], transparent conductors [5] and architectural glasses. However, to obtain metal oxides as nanoscale materials with well defined shape, size and composition, traditional solid state synthesis based on the reaction of powder precursors is unsuitable. In contrast to these high-temperature processes, soft-chemistry routes, and in particular, sol–gel procedures, future advantages such as the possibility of obtaining meta stable materials, achieving superior purity and compositional homogeneity of the products

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ANTIOXIDANT ACTIVITY OF LEAF AND FRUIT EXTRACTS OF *RAUWOLFIA TETRAPHYLLA* LINN.

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Key words:

Antioxidant, *Rauwolfia tetraphylla*, Apocyanaceae, BHA, Ascorbic acid

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When this resistance mechanism is insufficient, oxidative stress can damage proteins, carbohydrates, lipid and nucleic acids leading to the generation of free radicals, other reactive oxygen species or impaired antioxidant defense mechanism and has been concerned in a variety of pathological conditions like rheumatoid arthritis, autoimmune diseases, myocardial infarction, cancer, atherosclerosis and heart diseases. [3]

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HPTLC finger print profile of n-hexane extract of *Mimusops elengi* Linn.

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Abstract
The objective of the present study is to evaluate phytochemical composition and HPTLC finger print profile of medicinally useful plant *Mimusops elengi* L. (Sapotaceae) leaf n-hexane extract. The CAMAG HPTLC system was used for the finger print profiling of leaf extract using the mobile phase toluene: ethyl acetate (93:7 v/v). The profile showed that the leaf extract of *M.elengi* exhibited several peaks with different Rf values when visualized at 254nm and 366 nm. At 254 nm a total 8 peaks were observed and at 366 nm 7 peaks were observed. The HPTLC profile of *M.elengi* leaf n-hexane extract is used to identify the number of chemical components and their concentration, this in turn helps to identify the chemical constituents in medicinal products and also in identification of adulterants in medicinal products mainly herbal medicine.

Keywords: *Mimusops elengi,* HPTLC, Fingerprint, Sapotaceae, CAMAG.

1. Introduction

Herbal drugs obtained from medicinal plants which in turn synthesize complex organic constitutes with frequently unknown biologically active constituents. The herbal drugs are mostly prepared from the crude extracts, not standardized or analyzed for the content of the dynamic ingredients. Quality control is intricate, as many factors can influence the final product, i.e. growth circumstances of the plant, parts of the plant used, preparation of the plant for use, extraction method, volume of extract used in the final preparation and numerous others. All of these factors can affect the level of active compound and therefore the competence of the herbal formulation [1]. Modern medicine has evolved from folk medicine and traditional system only after detailed chemical and pharmaceutical screening; plants remain a major source of therapeutic compounds. Synthetic drugs causes side effects as a consequence, people are more approving to use natural compounds obtained from plants [2]. There are nearly 1250 Indian medicinal plants, which were used for formulating therapeutic preparation according Ayurveda and additional traditional system of medicine [3]. Phytochemical analysis of plants used in folklore has contributed a number of compounds with different pharmacological activities. Standardization of the plant material is need of the day as many pharmacopoeia containing monographs of the plant materials describe only the physicochemical characters. Hence, the current methods describing the identification and quantification of active constituents in the plant material may be functional for proper standardization of herbs and its formulations [4, 5]. Finger printing can be used to identify the plant, determine active ingredients or markers and detect impurities or contaminants such as herbicides [6].

High performance thin layer chromatography (HPTLC) is frequently used as an alternative to HPLC for the quantification of plant products because of its accuracy, simplicity, cost-effectiveness and rapidity [7]. HPTLC methods are faster, reproducible and reliable. Integrating HPTLC with digital scanning profiling gives accurate quantifiable analysis and Rf values of samples by *in situ* scanning densitometry assisted by the creation of easily detectable by post chromatography chemical reactions as necessary as well as documentation of separation in the form of chromatography with fractions represented as peaks with define parameters counting observance (Intensity), Rf height and area [8]. HPTLC plates has higher surface area thereby allowing for quicker and clearer sample separation due to extra consistent and considerably smaller particle size of the adsorbent [9]. Chromatographic fingerprint is a logical option to meet the need for more effectual and powerful quality assessment to TCHM (Chinese traditional herbal medicine) and ITM (Indian Traditional Medicine). The optimized

NANOSYSTEMS: PHYSICS, CHEMISTRY, MATHEMATICS, 2016, 7 (4), P. 667–674

Preparation of chitosan/different organomodified clay polymer nanocomposites: studies on morphological, swelling, thermal stability and anti-bacterial properties

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In the current study, chitosan films were prepared by dispersing different commercially-modified nanoclays, such as C-Na, C-10A, C-15A, C-30B, and C-93A. The exfoliation and morphology were studied using XRD and SEM. The C-15A, C-30B and C-93A nanoclays/Cts BNCs (Bionanocomposites) showed very good uniform exfoliation compared to that of other clays. The thermal analyses were evaluated using DSC and TGA. These results also confirmed that because of exfoliation, the thermal properties were improved in the case of C-15A, C-30B and C-93A nanoclays/Cts BNCs. The swelling capacity of a chitosan/clay films were studied. Increasing the chitosan content in the film increased the swelling capacity significantly; the decreasing order of swelling capacity of Cts/Clay films is in accordance with the decrease in clay content. Greater swelling capacity is shown by films Cts, C-Na and C-10A is because of the presence of greater hydrophilic agencies in the film makeup, which assist in improving the swelling characteristics of the films. The antibacterial activities of Cts/clay were also investigated against Gram-negative and Gram-positive bacteria (*E. coli* and *S. aureus*) according to the zone of inhibition in the disc diffusion method.

Keywords: chitosan, clay, bio-nanocomposites, swelling property and anti-bacterial property.

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1. Introduction

In the most recent decade, polymer/clay composites have received much attention because of their astonishing ability to improve most of the properties and are an essential alternative to standard polymer composites. The intercalation of polymers into the gallery of the clays brings greater characteristics to hybrid materials [1–4]. In comparison to the vast research on polymer/clay composites, the quantity of biopolymer/clay composites research is comparatively smaller [5–7]. Chitosan (Cts) is a polysaccharide that consists of N-acetyl-glucosamine and N-glucosamine units and it is largely insoluble at neutral and alkaline pH, given that its pKa within the variety of 6.2–7.0 is one of the second most plentiful natural polymers after cellulose in the world, naturally obtained and is derived by deacetylation of chitin present in crustaceous species [8, 9]. In addition to its unique properties such as biocompatibility, biodegrability and non toxicity, it is widely used in biotechnology, pharmaceuticals, cosmetics, textiles agriculture fields due to its antifungal and antimicrobial activities [10]. Unmodified chitosan is not antimicrobially energetic at pH 7, since it does not dissolve or include a large number of charges on the amino groups. The antimicrobial activity of chitosan also increases with increasing degree of deacetylation, due to the increasing number of basic amino groups.

Montmorillonite (MMT) is a member of the smectite group minerals which has a layered shape or platelets. Because of its high aspect ratios and excessive surface area, if clay particles are properly dispersed in a polymer matrix at a loading level of 1–5 % (w/w), precise mixtures of physical and chemical properties may be enhanced, and in turn those composites become more attractive for making films and coatings for a multiplicity of commercial applications, such as drug delivery systems and antimicrobial systems due to their natural abundance and the

NANOSYSTEMS: PHYSICS, CHEMISTRY, MATHEMATICS, 2016, 7 (4), P. 0–4

Electro chemical and photo catalytic studies of MnO_2 nanoparticle from waste dry cell batteries

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The objective of the existing research was essentially focused on recovery of MnO_2 nanoparticles from consumed dry cells by employing adapted hydrometallurgical process. Experimental tests for the recovery of MnO_2 present in the dry cell batteries have been carried out by an acidic reductive leachant, namely oxalic acid. The elemental compositions of the recovered metals from dry cells were confirmed by Energy Dispersive X-ray analysis (EDAX). Surface morphology of the recovered metals was examined using Scanning Electron Microscopy (SEM). Phase composition of the recovered metals from dry cell batteries were confirmed from X-ray Diffract meter (XRD). Cyclic Voltammetry (CV) studies were carried out to clarify the reversibility of the reactions. The obtained MnO_2 catalyst was applied for the degradation of different non-volatile dye compounds such as Indigo carmine (IC) and Rhodamine B (RB). The performance of MnO_2 shows fast degradation of dyes of high concentration.

Keywords: Dry cell batteries, recovery, Zn, Mn, electrochemical, catalytic activity.

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1. Introduction

Dry cell batteries are used in radios, recorders, toys, remote controls, watches, calculators, cameras, and in many other objects. The waste batteries present serious problems due to their toxicity, abundance and longevity in the environment [1]. The hydrometallurgical methods are the most popular process in all over the world because of its environmental suitability and economical coasts for treating even low zinc and manganese containing materials on small scale with high purity and low energy requirements [2, 3]. Hence, the treatment of these wastes for the recovery of manganese is vigorous for discarded material to raw material recycling. Two different acid-reductive leaching agents have been investigated; sulfuric acid - oxalic acid and sulfuric acid- hydrogen peroxide. MnO_2 is economically and commercially-important with applications in different fields, such as battery industry, catalysis, water treatment plants, steel industry and chemicals. In this study, we show how to recover manganese as MnO_2 from consumed dry cell using a hydrometallurgical process, without altering the concentration of zinc in solutions that can be recovered by precipitation or electro winning [4]. The aim of this work is to study the applicability of electrochemical and photocatalytic enactment of MnO_2 using a hydrometallurgical process and the catalytic action of MnO_2 is due to its high efficiency in the reduction/oxidation cycles [1]. The effects of the recovered conditions and crystallinity of MnO_2 on the catalytic performance in degradation of high concentration dyes (methylene blue indigo carmine and Rhodamine B) were intensively evaluated [5].Nanostructured materials have received enormous interest in recent years because of their unusual properties when compared with bulk materials. Nanoscale one-dimensional (1D) structures such as nanotubes, nanowires and nanorods have attracted much interest because of their unique electronic, optical and mechanical properties due to the low dimensionality and the quantum confinement effect. For example, the electrons interact differently in one dimensional (1D) and three-dimensional structures (3D). The 1D system is the smallest dimensional structure that can be used for efficient transport of electrons and optical excitations, and is thus expected to be critical to the function and integration of nanoscale devices. 1D nanostructure provides a good system for investigating the electrical and thermal transport properties in size and shape reduction [6–8].The aim of this work is to study the applicability of electrochemical and photocatalytic enactment of MnO_2 using a hydrometallurgical process and the catalytic action of MnO_2 is due to their high efficiency in the reaction/oxidation cycles [1]. The effects of the recovered conditions and crystallinity

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Synthesis and Characterization of Sodium Alginate Stabilized Nano-ZnO Impregnated into Bentonite Clay

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Nanocrystalline ZnO (*n*-ZnO) particles are synthesized by *in-situ* sol–gel method, stabilized by using sodium alginate (SA) polymer and impregnated into bentonite (Bt) clay matrix by one pot synthesis. Different nanocomposites of *n*-ZnO are prepared by alkaline hydrolysis of zinc acetate as precursor by varying the concentration of sodium hydroxide. The effect of Bt on the characteristics of *n*-ZnO was studied. The average particle size of *n*-ZnO was calculated to be 14–23 nm by XRD analysis which is matching with the TEM values. TEM images clearly showed the influence of Bt on the shape of particles in which 45 SA showed ZnO nanorods due to the stabilization effect of SA. Whereas, spherical ZnO nanoparticles are exhibited by 45SA-Bt due the restriction of *n*-ZnO growth by the interlayers of Bt. We found that the nanocomposites exhibited excellent bacterial resistance towards both Gram negative (*E. coli*) and Gram positive (*S. aureus*) bacteria. The bacterial resistance of nanocomposites is slightly more than that of pure *n*-ZnO. The results of this study proved that the synthesized *n*-ZnO and its nanocomposites can be used for various application such as antibacterial, semiconducting etc.

Keywords: ZnO Nanoparticles, Nanocomposites, Bentonite, Sodium Alginate.

RESEARCH ARTICLE

1. INTRODUCTION

Nowadays, nanoparticles are finding enormous and novel applications in varied fields like antibacterial, drug delivery, optoelectronic, semiconducting, etc.[1–3] ZnO is a distinctive material due to its unique hexagonal wurtzite and cubic zinc blend structures. It is a II^b–VI compound semiconductor with direct band-gap of 3.4 eV for near UV.[4] Many of its optical and semiconducting properties are similar to GaN.[5,6] ZnO shows 60 meV excitation binding energy compared to 25 meV of GaN which makes ZnO a potential competitor for GaN in laser applications. ZnO finds its use as transparent thin film transistors, acoustic wave devices, ceramics, cigarette filters, UV absorption, piezoelectricity, methane reformation, solar cells, restorative prosthodontics, food additives, etc. Nano ZnO (*n*-ZnO) exhibits various structures such as 1D (needles, helixes, ribbons, tubes, wires, belts, springs and rings), 2D (nanoplates, nanopellets) and 3D (flowers, dandelion, snowflakes, coniferous urchin like structures).[7] A significant part of the recent research work about ZnO is based on the applications dealing with the nanoparticles, nanowires, nanorods and other structures of *n*-ZnO.

The kind of reducing agent, capping agent and other additive used during the synthesis will influences the morphology of nanoparticles. *n*-ZnO has been synthesized by the reduction of zinc salt using chemical reducing agents and by green synthetic methods.[8,9] Polysaccharide like sodium alginate (SA) is a biodegradable polymer obtained from sea weed. The negatively charged carboxyl groups of its ring structure are located on the M and G monomers. SA is an interesting material as a capping agent which stabilizes the formed nanoparticles by preventing its agglomeration.[10] Owing to its biocompatibility, it is widely used for wound dressing, tissue regeneration etc.[11] Keeping the above perspectives in mind, SA is used as matrix and capping agent for the preparation of *n*-ZnO.

Bentonite (Bt) is a water swelling clay with layered structure packed together by electrochemical forces. A layer of octahedral alumina is sandwiched between two tetrahedral silica layers with water molecules between each layer.[12] Each layer will have a thickness of around one nm and lateral dimensions ranging from 300 to several microns.[13,14] Due to the layered structure, Bt offers large

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Cyclic Voltammetry and Electrochemical Impedance Spectral Properties of MnO_2 Obtained by Waste Discarded Batteries Using Eco-Friendly Leaching Materials

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This paper reports the recovery of zinc and manganese using hydrometallurgical method from spent dry cell batteries. For the recovery of zinc and manganese present within the spent dry cells are meted out by two acidic subtractive leachants specifically oxalic acid and hydrogen peroxide. The chemical analysis of metals from dry cell batteries were performed by using atomic absorption spectroscopy (AAS). The fundamental composition of recovered metals from dry cell batteries were confirmed by energy dispersive X-ray analysis (EDAX). The section composition of the recovered metals from dry cell batteries were confirmed from X-ray diffractometer. Surface morphology of the recovered metals were examined using scanning electron microscopy (SEM). The functional group analysis were done by Fourier transform infrared (FTIR) analysis. Oxalic acid and hydrogen peroxide were showing active leachants on the recovery of zinc and manganese. Leaching yields of both zinc and manganese higher at leach temperature of 90 °C and NaOH was used as precipitating agent for the recovery of Mn as MnO_2. The cyclic voltammetry (CV) shows the more reversibility of the electrode and electrochemical impedance spectroscopy (EIS) reveal charge transfer resistance (R_{ct}) and capacitance of electrode. The electrode using 0.5 M NaOH has lowest R_{ct} and more capacitance among all the electrolytes, indicating better conductivity and confirmed that the charge transfer resistance and capacitive behaviour is faster.

Keywords: Waste dry cell, Leachants, Electrochemical, MnO_2, Zinc, Manganese, Cyclic voltammetry.

INTRODUCTION

Spent alkaline batteries signifies a severe pollutant in terms of heavy metals content when discarded improperly [1,2]. Zinc and manganese cell batteries represents a major amount of spent batteries wastes. The discarded spent alkaline batteries shows severe environmental problem because they contains comparatively high concentration of hazardous metals in their electrodes. The consequences are a greater need of landfills for disposal of the wastes and a more intensive exploitation of mineral resources. Moreover, the local authorities are unable to give the authorization for the opening up of new landfills due to the costs to maintain landfills. During the last decades, to match the environmental requirements the battery producers were involved in the research to find out the substitute for toxic substances still used in the batteries.

Different types of batteries, such as Zn-air battery, zinc-manganese dioxide battery (Zn-MnO_2) and zinc-carbon (Zn-C) are a source of valuable metals like Zn and Mn. Their recovery represents an economic benefit for the battery producers and bring to smaller volume to dispose, thus it lengthening the life of landfills [3]. The recovered metals from spent alkaline batteries are used for different electronic applications such as remote communications, torches, military radio receivers, electronic gadgets, some medical devices and electronic toys, *etc*. These batteries are composed of a cathode, anode, electrolyte and a separator [4,5].

From literature review, numerous reduction approaches in acid media has been investigated such as lactose reduction leaching [6], sucrose reduction leaching [7], corncob reduction leaching [8], oxalic acid reduction leaching [2], hydrogen peroxide reduction leaching [9], ascorbic/oxalic acid reduction leaching [10,11] and activated carbon powder reduction leaching [12]. Many patented processes have already been developed mainly for treatment of dry cell batteries for a mixture of batteries [13], for lead-acid [14] and a hydrometallurgical process for the recycling of all cell components using sulfuric acid leaching with waste carbohydrates as reducing

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Sloshing in Liquid Retaining Structures -A State of the Art Report

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Abstract— Sloshing in liquid retaining structures has been a subject study for engineers and scientists , over the years. Moving vehicles carrying petroleum tanks, tanks in chemical industries where spilling is often a problem and water tanks storing water to different heights are the examples of structures where sloshing needs to be considered. Several researchers conducted extensive studies to model the sloshing phenomenon in liquid storage structures. Housener's model that splits sloshing liquid in to impulsive and convective components , is followed even today , and needs a special mention . However, the various shapes of tanks that are seen in practice and the various kinds of loading situations make the sloshing effect critical to be analysed and computed, thus requiring further investigations.

This paper reviews the various works done on quantifying the sloshing effect in liquid retaining structures in a chronological order, presents the significant contributions in the recent times and highlights the need for considering various shapes and situations that complicate the sloshing effect in liquid retaining structures . Further, the scope and potential for the use of modern theories and tools in improvising on the existing models for sloshing in liquid retaining structures is also explored.

Keywords: Liquid retaining structures- sloshing of liquid – models

I. INTRODUCTION

Liquid storage tanks are extensively used in water supply facilities, oil and gas industries and nuclear plants for storage of a variety of liquid or liquid-like materials such as oil, liquid natural gas (LNG), chemical fluids and wastes of different forms. Problems associated with liquid tanks involve many fundamental issues . During the past earthquakes, tanks have suffered many types of damages. Typical damages include: Buckling of ground supported slender tanks, rupture of steel tank shell at the location of joints with pipes, collapse of supporting tower of elevated tanks rupture of steel tank shell at the location of joints with pipes, collapse of supporting tower of elevated tanks, cracks in the ground supported RC tanks. Besides these , there exists a phenomenon called sloshing , which is often ignored and needs attention .

Sloshing means any motion of the free liquid surface inside its container. It is caused by any disturbance to partially filled liquid containers. During lateral base excitation seismic ground acceleration causes hydrodynamic pressure on the tank wall which depends on the geometry of tank, height of liquid, properties of liquid and fluid-tank interaction. There are evidences of failures of liquid storage tanks during earthquakes in the past , particularly due to sloshing

A . **Tank damages due to liquid sloshing**:

Table -I: Details of failures of tanks during past earthquakes

Earthquake	Year	MW	Damage
Kanto	1923	7.9	6,000 t oil tank
Long Beach	1933	6.2	Water tanks
Kern Country	1952	7.5	Oil tanks
Alaska	1964	9.2	Many oil tanks, fires
Niigata	1964	7.6	Many oil tanks , fires
Central Chile	1965	7.1	Oil tanks
San Feranado	1971	6.6	Oil tanks
Miyagi-oki	1978	6.5	Oil tanks
Imperial Valley	1979	6.5	Oil tanks
Coalinga	1983	7.7	Many oil tanks
Japan Sea	1983	7.7	Many oil tanks, fires
Kocaeli	1999	7.6	Many oil tanks, fires
Chi-Chi	1999	7.7	Oil tanks
Tokachi-oki	2003	8.3	Many oil tanks ,fires

Based on the evidences obtained from the failures of various tanks during the past earthquakes (Table-1),The reasons for failures of tanks structures due to sloshing resulted from earthquakes ,can be summarised as follows.

1) Failures of structures due to extreme lateral forces , moments and shears in various components of tanks structures (supporting structures or tank structures as the case may be).

3.3.2 Number of research papers published in the Journals notified on UGC website during 2017

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
37.	Electromagnetic pulse welding for joining of Aluminum tube to uncoated and copper	K. Shanthala, T.N. Sreenivasa	Mechanical Engineering	The Journal of CPRI	Print ISSN: 0973-0338	Scopus
38.	Mechanical Behavior of Al6061-Al2O3 and Al6061-Graphite Composites	Shivananda B K,	Mechanical Engineering	Materials Today: Proceedings, Elsevier	ISSN: 2214-7853	Scopus
39.	Effect of Geometric Discontinuity on Stress Concentration Factor of Al6061T6 Alloy under Bending Load	Premkumar Naik	Mechanical Engineering	Materials Today: Proceedings, Elsevier	ISSN: 2214-7853	Scopus
40.	Development of Geopolymer Lightweight Concrete using Industrial By-products	Shashishankar A	Civil engineering	International Journal of Latest Technology in Engineering, Management & Applied Science (IJLTEMAS)	ISSN 2278-2540	UGC Care
41.	Experimental Determination of Modulus of Elasticity for Fibre Reinforced Concrete	Shashishankar.A	Civil engineering	International Journal of Current Research	0975-833X	UGC Care
42.	Workability & flexural Behavior of Geo-polymer Lightweight concrete using industrial By-product	Shashishankar.A	Civil engineering	International Journal of Scientific Research in Science and Technology	ISSN: 2395-6011	UGC Care
43.	Carbon Neutral Environment for Sustainability :a case study of AMC engineering College	Umashanker.L, Shashishankar.A, Mohiyuddin C S	Civil engineering	International Journal of Research in Engineering and Technology	2319-1163	UGC Care
44.	Cementitious matrix composites (CMC) with manufactured coal ash aggregates (MCAA)	Shashishankar.A,Ravitheja.N	Civil engineering	International Journal of Research in Engineering and Technology	2319-1163	UGC Care
45.	Analysis of Excavatable flowable composites	Shashishankar.A,Mohiyuddin C S	Civil engineering	International Journal of Research in Engineering and Technology	2319-1163	UGC Care
46.	Landscapes & Hydrological Regime Linkages: A case study of chandihole ,Aghanashini	Shashishankar.A	Civil engineering	International Journal of Research in Engineering and Technology	2319-1163	UGC Care
47.	Improved methods of image denoising using NSCT	Malini S	Electronics and Communication Engineering	IJAERT	0973-4562	UGC Care
48.	Au25 Gold Nanoclusters for Enhancing Organic Cell Parameters	Yashaswini Gowda N, RV Manjunath, BR Lakshmikantha	Electronics and Communication Engineering	International Journal of Computer Applications	0975 – 8887	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2017

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
49.	Improved methods of image denoising using Nonsubsampled contourlet transform	Malini S	Electronics and Communication Engineering	ACST	093-6107	UGC Care
50.	TCP/IP Protocol based adaptive cruise control using Raspberry PI	Kavitha. T	Electronics and Communication Engineering	International Research Journal of Engineering &Technology	E-ISSN:2395-0056	UGC Care
51.	Fair Allocation of Energy & Power using Shapely value to reduce deficit in regions of Indian Grid	B. Priya Esther, K. Sathish Kumar, G. Gokul Krishnan and S. Venkatesh	Electrical & Electronics Engineering	Indian Journal of Science & Technology	ISSN: 0974-5645	UGC Care
52.	Synthesis and antimicrobial evaluation of substituted fluoroquinolones under conventional and microwave irradiation conditions	V.Veeranna and M.V.V.Varaprasad	Chemistry	European Journal of Chemistry	ISSN -1895-1066	UGC Care
53.	Natural biowaste of ground nutshell derived nano carbons: Synthesis, characterization and its in-vitro antibacterial activity	S.Yallappa, Chandraprasad Madihalli and S. Ashok Kumar	Chemistry	Nano Structures and Nano objects, 12 (2017) 84-90. Sept 2017	2352-507X	UGC Care
54.	Comparative Study of Erbium Doped KDP Single Crystals Grown by Different Techniques	ROOPA V	Physics	Mechanics, Materials Science& Engineering Journal	ISSN 2412-5954	UGC Care
55.	Investigation of SR Method Grown <101> Directed Praseodymium doped KDP crystal and its Single Crystal XRD, LDT, Thermal, Mechanical, Etching, FTIR, SEM & TEM Analysis	ROOPA V	Physics	IOSR Journal of Applied Physics	e-ISSN: 2278-4861	UGC Care
56.	Dielectric, Mechanical properties and Raman Analysis of TGS-ADP Mixed crystals	ROOPA V	Physics	International Journal of ChemTech Research	ISSN: 0974-4290	UGC Care
57.	Dielectric, Mechanical properties and Raman Analysis of TGS-KDP Mixed crystals	ROOPA V	Physics	Research Journal of Recent Sciences	ISSN 2277-2502.	UGC Care
58.	AC CONDUCTIVITY STUDIES OF POLYANILINE/CuO COMPOSITES	Chakradhar B	Physics	Indian J.Sci.Res	ISSN: 2250-0138	UGC Care
59.	Survey on area-based Routing Protocols WSN	P BindhuMadhavi	Information Science and Engineering	IJSET-International Journal of Science, Environment and Technology	ISSN(O):2348-4098	UGC Care
60.	Performance Evaluation of a Metropolitan Air Pollution sensing system Based on Prototype Design	P BindhuMadhavi	Information Science and Engineering	IJSET-International Journal of Science, Environment and Technology	ISSN(O):2348-4098	UGC Care

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SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
61.	Performance Analysis of WMSN Based on Distinct Quality Based Routing Protocols	P BindhuMadhavi	Information Science and Engineering	IJSET-International Journal of Science, Environment and Technology	ISSN(O):2348-4098	UGC Care
62.	Secure data sharing in cloud computing using Revocable – storage Identity based Encryption	R. Amutha	Information Science and Engineering	IJSDR-International Journal of Scientific Development and Research	ISSN:2455-2631	UGC Care
63.	Brinkman ferro convection: Effects of vertical heterogeneity in permeability and local thermal non-equilibrium	R. Gangadhar Reddy	Mathematics	Multidiscipline Modeling in Materials and Structures	15736105	UGC Care

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Electromagnetic Pulse Welding for Joining of Aluminium Tube to Uncoated and Copper Coated Steel rod 37

Shanthala K. *, Sreenivasa T.N.* and Hitesh Choudhary**

Reliable and cost effective joining methods are essential for the development of hybrid structures involving dissimilar materials. Electromagnetic welding (EMW) is one such technology which can be used for joining of dissimilar materials. In an EMW the pulsed current with a very high amplitude and frequency produces Lorentz forces and a high magnetic pressure well beyond the material yield strength, causes acceleration and one of the work pieces impacts onto the other part with a collision. Present study deals with the application of EMW for joining of tubular aluminium workpiece to uncoated and copper coated steel rod. The electromagnetic pressure necessary for joining is estimated. Joint is analyzed for the microstructure and hardness.

Keywords: *Impact, electromagnetic, lorenz force, steel welding*

1.0 INTRODUCTION

Electromagnetic welding (EMW) is an impact welding process in which coalescence takes place at the interface of the materials called flyer and target due to high velocity electromagnetic pulse force or Lorenz force. Lorenz forces are generated by the interaction of the repelling magnetic fields due to the induced eddy currents between coil and the adjacent flyer workpiece, inducing high velocity impact of flyer workpiece on to a target workpiece with severe plastic deformation, thus producing a metallurgical bonding at the interface of the two materials. Metallic combinations like aluminium to copper, aluminium to nickel, aluminium to titanium, copper to steel which are not normally compatible can be joined by EMW [1].

Aluminium– steel transition joints find many applications like drive shafts of automobiles, cryogenic coupling for liquefied storage vessels and pipe works, bus bar connections in electrolysis plants. Soft interlayer like copper coating is used as reaction promoters and stress reliever which are commonly developed at the interface of aluminium-steel joints [2]. In the present paper, authors have attempted joining of aluminium tube to both uncoated and copper coated steel rods using electromagnetic welding. Aluminum AA6005 has been selected for the study due to its excellent combination of high strength, formability and corrosion resistance.

1.1 Mathematical Framework of Electromagnetic Welding

In an electromagnetic welding process, a small displacement of solid structure in an electromagnetic media modifies the magnetic flux. There is a strong coupling with electro-magnetic-mechanical systems. In an electromagnetic field model, magnetic vector

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Mechanical Behavior of Al6061-Al_2O_3 and Al6061-Graphite Composites

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Abstract

This work investigated the influence of Al_2O_3 and graphite on the microstructure and mechanical behavior of Al6061- Al_2O_3 and Al6061-Graphite composites. The investigation reveals the effectiveness of incorporation of Al_2O_3 and Graphite in the Al6061 alloy for studying mechanical properties. The composites were fabricated using liquid metallurgy route. The Al6061- Al_2O_3 and Al6061-Graphite composites were fabricated separately by introducing 9 wt. % of Al_2O_3 and graphite particulates by two stage melt stirring process. In this reinforcement particulates were added in two steps to increase the wettability. The characterization was performed through Scanning Electron Microscope and Energy Dispersive Spectrum. The particle distribution was uniform in these composites. The grains were refined by addition of Al_2O_3 and Graphite particulates. The density, hardness, ultimate tensile strength, yield strength and percentage elongation of both Al_2O_3 and Graphite composites were evaluated as per ASTM standards. Further, a comparative study has been made between the Al6061- Al_2O_3 and Al6061-Graphite composites.

Selection and Peer-review under responsibility of Advanced Materials, Manufacturing, Management and Thermal Science (AMMMT 2016).

Keywords: Al6061 Alloy; Al_2O_3; Graphite; Microstructure; Mechanical Properties

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Effect of Geometric Discontinuity on Stress Concentration Factor of Al6061T6 Alloy under Bending Load

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Abstract

Geometric discontinuity plays a vital role in failure of mechanical members. Grooved or cracked components cannot be replaced immediately, the reason being their high cost and restrictions offered by practical operational features. Such circumstances lead to the requirement of assessing the reliability of grooved or cracked specimen. The objective of present work is to determine relatively safest geometric discontinuity which provides higher reliability under the action of bending loads. Uniform cylindrical specimens of different geometric discontinuities were machined in such a way that all specimens have approximately same cross sectional area at the groove geometry. The specimens were subjected to bending load with a loading rate of 0.5 mm/min on Universal Testing Machine. The maximum stress and stress concentration factor (SCF) for each specimen are calculated and the failure behavior is analyzed. The results show that, the elliptical grooved specimen deform plastically with SCF of 1.4 absorbing a large magnitude of energy whereas the V-groove specimen with SCF of 1.73 failed in a brittle manner with relatively negligible deflection.

Selection and Peer-review under responsibility of Advanced Materials, Manufacturing, Management and Thermal Science (AMMMT 2016).

Keywords: *Stress concentration factor; V-Groove; Deflection; Brittle; Stiffness; Reliable.*

1. Introduction

While designing the machine parts, the stress raisers are usually avoided but under inevitable conditions the number of stress raisers is limited to minimum so as to extend the life of the component. The existence of geometric discontinuity in a machine component under service may lead to crack initiation and finally resulting in failure of the component.

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Development of Geopolymer Lightweight Concrete using Industrial By-products

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Abstract: **An attempt has been made in this research work to develop the geopolymer concrete composite using the industrial by-products such as fly ash class-C, GGBFS, PS sand and sintered fly ash aggregates to achieve the required strength. The different combination of fly ash and GGBFS as binding materials were studied in this work. The ambient cured geopolymer concrete was developed to mitigate the carbon footprint in building construction. The density of concrete was in the range of 1740Kg/m^3 to 1840Kg/m^3. The higher the GGBFS content higher the density. The strength developed in geopolymer concrete after 28 days of curing is in the range of 25 Mpa to 45 Mpa. Hence this Light Weight Geopolymer concrete can be used as structural concrete for buildings.**

***Keywords*: Geopolymer, Class – C Fly ash, GGBFS, PS Sand, Sintered Fly ash Aggregates.**

I. INTRODUCTION

In the modern world, the challenges faced by the Civil Engineering Industry, is to develop high performance construction material at reasonable cost with the lowest possible environmental impact. India has become the second largest country in both production and consumption of cement next only to China. Manufacturing of Ordinary Portland Cement - OPC is highly energy consuming process and also requires huge quantity of natural resources. The production of OPC releases large amount of CO_2 in to the atmosphere, i.e., with all the modern technology of cement manufacturing process available, for every ton of Portland cement production, about 0.8 ton of CO_2 is released to atmosphere. The decade (2014 – 2024) is known as international decade for sustainability. It envisages adoption of industrial by-products such as fly ash, GGBFS composites in civil engineering applications.

Geopolymer is one in which cement is completely replaced (100%) by many suitable cementitious materials. Geopolymer binders have emerged as an environmental friendly, possible alternative to OPC binders due to their reported high early strength and durability [1] - [6]. The strength development in Geopolymer relies on alumina-silicate rather than calcium silicate hydrate bonds as in OPC concrete. Geopolymer was invented by Devidovits [7] in 1979 as a 3-dimensional alumina silicates. He states that, supplementary cementing materials which are coal and lignite fly ash, rice husk ash, palm oil fuel ash, GGBFS, Silica Fumes, limestone, metakaolin and natural pozzolana can produce geopolymer.

The Geopolymer is synthesized by mixing one or more supplementary cementing materials, in known proportions, with alkaline solution of Sodium Silicate and Sodium Hydroxide. Sodium Hydroxide either in Pellets form or in Solution form - Lye, is available commercially. Sodium hydroxide solution with required molar concentration is prepared for the work and is mixed with Sodium silicate solution and used as activator solution.

II. EXPERIMENTAL STUDY

An attempt has been made here to develop the geopolymer concrete composite using the industrial by-products such as fly ash class-C, GGBFS, PS sand and sintered fly ash aggregates to achieve the required workability and strength.

A. Materials Used and their properties

Locally available cement – OPC 53 Grade is used to develop a control concrete, to which the geopolymer concrete strengths are compared. The Fly ash Class C (FAC), a by-product from Neyveli Thermal power plant and Ground Granulated Blast Furnace Slag (GGBFS), a by-product of Iron and steel industry has been used as geopolymer source materials. Fine Aggregate used is another by-product from steel industry, Processed Slag Sand (PSS). Sintered Fly ash Aggregates (SFA) another by-product from thermal power plant has been used as Coarse Aggregates. Activator Solution (AS) is a combination of Sodium Silicate and Sodium Hydroxide solutions procured in commercial grade. The physical and chemical properties of these materials are tabulated in table-I and table-II.

B. Methodology adopted

The Geopolymer has been synthesized by mixing FAC and GGBFS in different proportions with AS of Sodium Silicate and Sodium Hydroxide. Commercially available Lye (Caustic Soda), Sodium Hydroxide in solution form and

CARBON NEUTRAL ENVIRONMENT FOR SUSTAINABLITY: A CASE STUDY OF AMC ENGINEERING COLLEGE

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Abstract

Purpose – The objective of this case study is to provide researched information about retrospect and prospect of achieving sustainable campus at AMC Engineering College (AMCEC) to reduce its carbon footprint and to establish a campus culture focused on the theme of environmental sustainability. Also parallely make available the solutions to globally similar institutions in achieving low carbon footprint.

Annually built environment releases billions of tons of carbon dioxide(CO2) which causes glassy layer in presence of Suspended Particulate Matter(SPM) at the outer atmosphere. This prevents the release of heat and reverts it back causing Green house effect. Lifestyle changes contribute to carbon footprint and hence a deviation in strategy such as use of Zero Energy Materials (ZEM) would mitigate ill effects. The recent theme is carbon neutral campuses which is incorporated in the accreditation process of National Assessment and Accreditation Council (NAAC) of University Grants Commission (UGC) and also National Board of Accreditation(NBA) under All India Council for Technical Education (AICTE).

The functionality of University affiliated colleges is hinged on Education and R&D towards reaching the micro economic societal requirements . This paper establishes the betterment of a 52 acre large campus towards holistic ecosystem having been located 6 kms from the famous Bannergatta National Park, achieving the desired goal of solutions through horizontal and vertical approach.

Keywords— *Carbon footprint(CFP), Suspended Particulate Matter(SPM), Green house effect, Zero Energy Materials (ZEM) , Colleges, NAAC,NBA, Case study.*

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1. PROLOGUE

Climate change crisis is a global environmental and societal afflicting the planet. Paris Declaration has been signed in 2016 by all serious countries committed to consensus both on the basic science behind climate change (i.e., its causes and mechanism) and on a broad range of future climate projections coming from the modelling efforts.

The main reason for climate change is heat-trapping gases, also called green house gases(GHG), a major portion of which is caused by human activity due to fossil fuel burning activity on which the world energy demand is met with. Other emissions such as methane and nitrous oxide in smaller proportions come from carbon changes (such as deforestation), agricultural activities, industrial processes, and waste management. Carbon dioxide is less offensive but comprises the majority of GHG emissions, at about 77% of the worldwide total. The remainder comes mostly from methane(CH_4) and nitrous oxide (N2O), with micro shares coming from fluorinated gases(SF_6, PFCs , and HFCs). Global climate change has the potential to alter the earth's average temperature, raise sea levels, and shift entire ecosystem zones to an extent not seen since periods of glacial transformation, which in turn undoubtedly will severely affect human well-being and cause massive species extinctions.

Small number of countries, including United States, produce a large majority of global GHG emissions. In 2000, the U.S was the higest total GHG emitter (contributing 20.6% of world's total emissions at 6,928 million metric tonnes of carbon daioxide equivalent), followed by China(14.7%), EU(14.7%),India(6%) and others.

2. CFP CONTRIBUTION PER YEAR

2.1 Carbon Foot Print (CFP) based on Embodied Energy of Construction Activity

Table 1

Sl NO	Description	Embodied Energy
1	Embodied energy for super built up area	450 MJ per m2
2	Total super built up area	59199.09 m2
3	Total energy	26.64 X 10^6MJ

ANALYSIS OF EXCAVATABLE FLOWABLE COMPOSITES

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Abstract

A flowable fill composite termed as Controlled Low Strength Material (CLSM) is a good alternative to compacted soils. CLSM is unique in achieving compressive strength without compacting effort and is superior to compacted earth. However, future digability can be allowed through a proper method of proportioning. The study uses combinations of CLSM composite mixtures constituting Processed Slag Sand (PSS) and Ground Granulated Blast Furnace Slag (GGBFS). The characteristics of CLSM composites mixtures viz., uniaxial compressive strength, absorption of water and lixiviate limits were determined by conducting various laboratory tests. Low GGBFS flowable fills with higher percentage of PSS are obtained with desirable flowability and lower uniaxial compressive strengths between the ranges of 1.20-2.70 MPa for easy future excavation process. The study is promising for a new area of applications for carbon footprint (CFP) mitigation. Thus, the objective of the study is to examine bulk utilization of low energy materials for CFP mitigation and to evaluate the use of PSS as fine aggregates in excavatable flowable fill composites. The uniaxial compressive strength properties in the range of 1.2-2.7 MPa and RFA of CLSM composite mixtures between 5 and 15 would be studied for different combinations and a comparative analysis would be made.

Keywords: *Controlled low strength material; GGBS; PSS; Uniaxial compressive strength; Capillarity; Toxicity; CFP mitigation; RFA.*

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1. INTRODUCTION

Several researchers during last one decade have developed many engineering applications for CLSM as an alternative to compacted fill. CLSM is a class of cementitious matrix composites known by different terminologies viz., controlled density filling (CDF) material, flowable mortar (FM), flowable fill (FF). CLSM needs no compactive effort being a proportioned non newtonian fluid and suitable for placing and compacting in constricted inaccessible areas. For digability, uniaxial compressive strength is fixed at a lower level of 1.2-2.7 MPa. Most fills exhibit a 7 days compressive strength of 0.7 M Pa. For excavation of trench fills, maximum strength shall not exceed 2.7 M Pa. ACI 229R-99 report suggests a higher limit of 2.1 MPa [1].

Mixtures consisting of conventional materials such as OPC, river sand have been widely used. Also industrial waste like acid mine drainage [4], spent foundry sand [2, 3] and recycled glass [5] have been tried.

A reduced in-place cost, placement and compressive strength properties make CLSM mixes are more economical and suitable for backfilling applications because of less labour requirement and ruggedness to moisture content variation [6]. Easy production and on-site delivery by a RMC producer, increases its suitability for placement application under old bridges, box or pipe culverts, open trenches, mine fills and specialised fills for telecom and gas pipe line applications.

Generally uniaxial compressive strengths in the range of 0.35 N/mm^2 - 2.00 N/mm^2 have been reported for most of the CLSM fill applications. Higher values of compressive strengths for non-digability can also be obtained by proper proportioning. Of CLSM and is a better alternative for natural soils due to higher strength than surrounding in-situ materials. However, CLSM provides easy excavation using regular methods whenever it is required. Higher range of strength becomes problematic for future excavation in case of cable trenches and hence merits should be considered [7].

2. MATERIALS OF PRODUCTION

Ground granulated blast-furnace slag (GGBS), a by-product of iron and steel making can be used in CLSM in combination with cementitious materials such as Portland cement. Silicate (glass) is the raw material for GGBFS cementing material. Molten slag is cooled and finely ground to form GGBS cementing material. It is a recycled product and has no identical chemical constituents as Portland cement.

GGBS is used by comparing the strength versus time graph for mixes of Portland cement which gains strength much more slowly when compared with that of Portland cement mix. CLSM are desirable for their lower strength, however the ultimate compressive strength are found to be higher due to higher content of Calcium Silicate Hydrate (C-S-H) gel and less Calcium Hydroxide (lime) in the resulting concrete.

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Fair Allocation of Energy and Power using Shapley Value to Reduce Deficit in Regions of Indian Grid

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Abstract

Objectives: The paper aims at reducing the power and energy deficit in various regions of India. **Methods:** A game theory based mathematical model performs the allocation called Shapley value, which does the fair allocation of power and energy in order to reduce the maximum deficit in a particular region. **Findings:** The simulation results confirm the distribution is fair enough in reducing the overall deficit percentage in all regions. **Applications:** The work can be integrated with the grid and further extensions to the next level are possible.

Keywords: Central Electricity Authority (CEA), Deficit, Energy, Game Theory, Power, Shapley Value (SV)

1. Introduction

From 18th century and in the last fifteen decades there is no change with the basic infrastructure of the electrical grid. It does not even satisfy the basic need of 21st century that is an "uninterrupted power" and "power for all" concept in developing countries. In India 300 million people does not have access to electric power. Another one-fourth million-get irregular power supply of about three to four hours a day. With the advancements in Information and Communication Technologies possible solution in the electrical sector is making the present grid to a smarter grid which can help to the present situations to improve. Indian has "one country; one grid system from December 2013. Indian grid system is categorised as Northern, Western, Southern, Eastern and North Eastern depending on its topology. These regions have different energy requirement and power demand. During the revenue year the electricity generated in the utility sector was 1,030.785 billion KWh with a shortage of 38.138 billion KWh which is a 3.6% deficit. The peak demand was 1,41,180 MW with a shortage of 7,006 MW which is a 4.7% deficit. This deficit will increase further due to the increase in population and drastic development in infrastructure. Figure 1 depicts the present Indian state of power with deficit figures.

Table 1. Energy and Power deficit for 2015

Region	Deficit %	
	Energy	Power
Northern	4.8	3.7
Western	0.3	1.0
Southern	2.1	2.7
Eastern	1.0	0.4
Northern Eastern	7.5	1.0

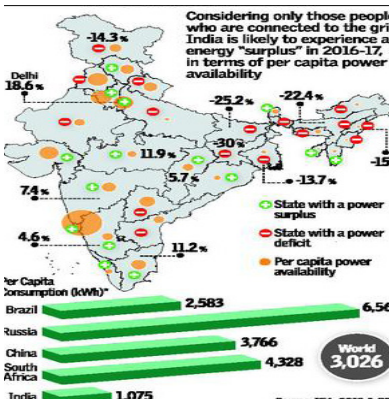

Figure 1. Power deficit status.

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Comparative Study of Erbium Doped KDP Single Crystals Grown by Different Techniques

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Keywords: crystal growth, SR method, SHG, optical properties.

ABSTRACT. Erbium doped potassium dihydrogen Orthophosphate (KDP) single crystals were grown by different techniques - SR method, Seed Rotation and Slow Evaporation with the vision to improve the properties of the crystal. The objective of this study is to show how the dopant Erbium influences the growth, morphology and characteristics of KDP crystal. The crystal size grown by SR method on unidirectional {101} pyramidal face was around 150 mm in length and 16 mm in diameter. The Chemical composition of the grown crystals is confirmed by EDAX Analysis. The grown crystals are subjected to PXRD analysis using XrdwinPD 4-dectris computer based diffractometer with a characteristic Cu Kα (1.540598) radiations from 10^0 to 60^0 at a scan rate of 10^0/min, confirm the crystalline nature and shifts in peak positions due to doping is observed. Using Scherer's equation crstallite size has been calculated and the crystallite size is around 44 nm. Solubility of crystals grown by slow evaporation technique is determined using water as a solvent. The solubility curve shows that that Erbium doped KDP crystals has higher solubility than the pure KDP. The SHG efficiency is determined by Kurtz powder technique. It is found that relative SHG conversion efficiency of crystal grown by SR method is greater compared to other techniques. Optical transmission spectra are recorded for the crystals in the wavelength region 200 to 1100nm using Perkin-Elmer Lambda 35 UV-Vis spectrophotometer. It is found that percentage transmission of crystals grown by SR method is more as compared to other techniques. The electronic band transitions is studied from the plot of $(\alpha h\nu)^2$ versus photon energy (hν) and the band gap energy has been calculated. The addition of Erbium improves the quality and transparency of crystals, which shows the suitability of the ingot for optical applications.

Introduction. With the advanced research approach on efficient nonlinear optical material (NLO) is intensively studied for various optical device applications. Potassium dihydrogen orthophosphate (KDP) is a best known NLO material and has been used for second harmonic generation for high pulse energy, laser frequency conversion, low repetition (<100 Hz) rate lasers, electro-optical modulation and Q-switching applications [1-3]. As a result, significant efforts have been made to find novel and efficient NLO materials.

The study of the crystallization behavior of KDP and the factors influencing its structural properties is still of great interest. The most important factor which influences the growth rate, the surface morphology of crystal is impurities [4, 5]. An impurity can suppress, enhance or stop the growth of crystal completely. Modern technical tasks like high power laser systems have a great demand for very large size crystals. The use of special additives is an effective way to accelerate the growth rate. The beneficial effect of additives on the growth process and properties of crystals has been applied in recent years [6-8].

The most efficient additives are reagents with metal ions that have the same properties as that of bulk solutions which can change the properties of solution such as viscosity, surface tension, etc. without deteriorating the optical qualities of crystals. Hence Erbium is selected as additive in the KDP solution and doped KDP crystals were grown from the aqueous solution with seed rotation, SR method and slow evaporation technique and the grown crystals are subjected to different characterizations like

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Investigation of SR method grown <101> directed Praseodymium doped KDP crystal and its Single crystal Xrd, LDT, thermal, mechanical, Etching, FTIR, SEM & TEM analysis

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Abstract : *An nonlinear optical unidirectionnel <101> single Crystal of Praseodymium doped potassium dihydrogen orthophosphate (KDP) was grown by Sankaranarayanan-Ramasamy (SR) method. The <101> oriented seed Crystal were mounted at the bottom of the glass ampoules and the Crystal of 16 mm diameter, 150 mm length were grown by SR method. The unit cell parameters were confirmed by single Crystal X-ray diffraction analysis and it belongs to Tetragonal system with a space group of* I42d. *The laser damage threshold (LDT) was measured using Q-switched Nd:YAG laser (1064nm) and was found to be 5.546 Gwcm^{-2} respectively. Its thermal stability has been studied using Vickers Microhardness tester and it exhibit higher hardness value. Chemical etching represent the distribution of structural defects in grown crystal. The presence of functional groups was examined by Fourier transform infrared (FTIR) analysis. The surface morphology and dislocations along <101> plane was observed using Scanning electron microscope (SEM) and Transmission electron microscope (TEM).*

Keywords: *Etching studies, Laser damage threshold, Mechanical properties, Single crystal growth, TEM*

I. Introduction

With the advanced research approach on efficient nonlinear optical material (NLO) is intensively studied for various optical device applications. Potassium dihydrogen orthophosphate (KDP) is a best known NLO material and has been used for second harmonic generation for high pulse energy, laser frequency conversion, low repetition (<100 Hz) rate lasers, electro-optical modulation and Q-switching applications [1-3].

As a result, significant efforts have been made to find novel and efficient NLO materials. The study of the crystallization behavior of KDP and the factors influencing its structural properties is still of great interest. The most important factor which influences the growth rate, the surface morphology of crystal is impurities [4,5]. An impurity can suppress, enhance or stop the growth of crystal completely. Modern technical tasks like high power laser systems have a great demand for very large size crystals. The use of special additives is an effective way to accelerate the growth rate. The beneficial effect of additives on the growth process and properties of crystals has been applied in recent years [6-8]. Several researchers have carried out a lot of studies in pure and doped KDP crystals [9,10]. However, there are no data on the effect of Praseodymium on unidirectional crystal growth and various properties of KDP. The most efficient additives are reagents with metal ions that have the same properties as that of bulk solutions which can change the properties of solution such as viscosity, surface tension, etc. without deteriorating the optical qualities of crystals. Praseodymium is used as catalyst in a wide variety of metallurgical applications, in lasers, masers, in industrial glass production, as polishing agent and still in electronic and thermoelectric components. It is valued for its magnetic, electrical, chemical and optical properties. Hence Praseodymium is selected as additive in the KDP solution and doped KDP crystals were grown from the aqueous solution with SR method and the grown crystals are subjected to different characterizations like micro hardness, chemical etching, thermal analysis (TG/DTA), single crystal xrd analysis, Laser damage threshold (LDT), FTIR, SEM & TEM analysis.

II. Experimental Procedure

2.1. Crystal growth

A suitable seed crystal having a size of 4x4x4 mm3 was selected for single crystal growth of <101> face. The chosen <101> plane of the seed crystal was mounted in the bottom of the ampoule without polishing the surface. The saturated solution of 0.1 mol% of Praseodymium added KDP solution was prepared at 27^{0}C. The solution was filtered using Whatman filter paper.

The apparatus consists of glass container of size 30x30x30 cm^3 and ampoule of inner diameter 16 mm using two ring heaters. The ampoule was kept in the glass water bath to maintain constant ambient temperature. The filtered Super saturated solution was poured carefully into the ampoule without disturbing the seed crystal. The ring heaters are positioned one at the top and another at the bottom of the growth ampoule.

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Dielectric, Mechanical properties and Raman Analysis of TGS-ADP Mixed crystals

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Abstract : TGS was synthesized by taking the AR grade Glycine (CH_2NH_2COOH) and concentrated Sulphuric acid (H_2SO_4) in the molar ratio 3:1 respectively. The synthesized pure TGS is mixed with ADP in the molar ratio (9:1), (8:2), (7:3) and the crystals were grown from aqueous solution by slow evaporation method at room temperature. The grown crystals are subjected to Dielectric studies using a LCR meter. The Dielectric study confirms the contribution of space charge polarization. Vickers micro hardness measurement of the grown crystals reveals that hardness increases with load. The log p versus log d were plotted and work hardening co-efficient or Meyer indices (n) is determined. The functional groups are identified by Raman analysis.

Keywords : Crystal growth, Raman Analysis, Mechanical and Dielectric properties.

Introduction

Triglycine Sulphate crystals have technological importance for room-temperature infrared detectors, earth exploration, radiation monitoring and astronomical telescopes. TGS undergoes a second-order ferroelectric phase transition at Curie temperature $T_C = 49^0C$, ferroelectric and pyroelectric materials are polar and possess a spontaneous Polarization. However, this polarity can be reversed through the application of an electric field with ferroelectric materials [1-4]. They are similar to ferromagnetic materials in that they exhibit hysteresis loops. This material has found application in the fabrication and development of infrared detectors due to its high pyroelectric coefficient (p), reasonably low dielectric constant and best figure-of-merit. TGS crystals have been focused in various aspects such as growth rate, structural modification, pyroelectric, mechanical, optical and ferroelectric properties. Also the crystals are of particular interest for the photo induced nonlinear optical effects. TGS has a tendency to depole, which can be prevented by suitably mixing optically active molecules in the glycine site of TGS.

This paper describes the crystal growth, Dielectric studies, Mechanical properties and Raman analysis of Triglycinesulphate (TGS) mixed with Ammoniumdihydrogen Orthophosphate (ADP) in the molar ratio 9:1, 8:2 and 7:3 grown by slow evaporation method. The effects of mixing ADP crystals on the quality and performance of the crystals are analyzed. The results of the TGS mixed with ADP crystals are compared with the pure TGS crystals.

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Dielectric and mechanical properties of TGS-KDP mixed crystals

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Abstract

The high purity Analytical Reagent (AR) grade Glycine (CH_2NH_2COOH) and concentrated Sulphuric acid (H_2SO_4) were taken in the molar ratio 3:1 for the synthesis of Triglycine sulphate (TGS) respectively. The synthesized pure TGS is mixed with KDP in the molar ratio (9:1), (8:2), (7:3) and by slow evaporation technique the crystals were grown at room temperature. The Dielectric studies were performed using a LCR meter for the grown crystals. The presence of space charge polarization is confirmed by Dielectric studies. Vickers micro hardness measurement of the grown crystals reveals that hardness increases with load. The log p versus log d were plotted and work hardening co-efficient or Meyer indices (n) is determined. The functional groups are identified by Raman analysis.

Keywords: Crystal growth, Raman Analysis, Mechanical properties, Dielectric properties.

Introduction

Triglycine Sulphate (TGS) crystals has many applications in the technological field of radiation monitoring, astronomical telescopes and earth exploration at room-temperature. At Curie temperature that is $T_C = 49^0C$, TGS undergoes a second-order ferroelectric phase transition, since spontaneous Polarization exists in ferroelectric and pyroelectric materials. However, by applying the electric field to the ferroelectric materials reverses the polarity[1-4]. They are similar to ferromagnetic materials in that they exhibit hysteresis loops. Due to low dielectric constant, high pyroelectric co-efficient and high figure of merit, this material has found various applications in the field of development and fabrication of infrared detectors. Many researchers have studied various aspects of TGS crystals such as its growth rate, pyroelectric, structural modification, mechanical, ferroelectric and optical properties. TGS has a tendency to depole, which can be prevented by suitably mixing optically active molecules in the glycine site of TGS.

This paper describes the crystal growth, Dielectric studies, Mechanical properties and Raman analysis of Triglycine sulphate (TGS) mixed with Potassium dihydrogen Orthophosphate (KDP) in the molar ratio 9:1, 8:2 and 7:3 grown by technique of slow evaporation. The quality and performance of the crystals after mixing KDP to the TGS are also analyzed. The results of the TGS mixed with KDP crystals are compared with the pure TGS crystals.

Materials and methods

Synthesis and crystal growth: The high purity Analytical Reagent (AR) grade Glycine (CH_2NH_2COOH) and concentrated Sulphuric acid (H_2SO_4) were taken in the molar ratio 3:1 for the synthesis of Triglycine sulphate (TGS) as shown in the reaction.

$$3(NH_2CH_2COOH)+H_2SO_4 \rightarrow (NH_2CH_2COOH)_3.H_2SO_4$$

The needed amount of concentrated sulfuric acid was diluted using triple distilled water. Then for the diluted sulfuric acid the known amount of glycine was added and dissolved. The glycine solution was slightly heated and dried for few days until the salt gets crystallized. The synthesized pure TGS is mixed with AR Grade Potassium dihydrogen Orthophosphate (KDP) in the molar ratio (9:1), (8:2) and (7:3) using triple distilled water separately in the three glass beakers.

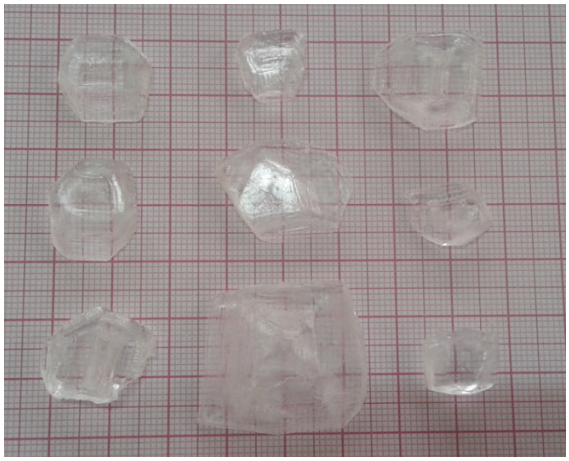

Figure-1: Photograph of Pure TGS single crystals.

The mixed compound is stirred continuously using a magnetic stirrer for 2-3 hours. The completely dissolved solution was filtered using micro filter paper and poured into separate petridish and allowed to evaporate slowly at room temperature.

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AC CONDUCTIVITY STUDIES OF POLYANILINE/CuO COMPOSITES

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ABSTRACT

In-situ polymerization was carried out in the presence of copper oxide, to synthesize Polyaniline CuO composites. The synthesis is reported here, characterization and ac-conductivity results of some polyaniline (PANI)based composites. These materials were synthesized through incorporation of various fractions of metal oxides.Paramagnetic metal oxide particles with appropriate surface properties have been widely used experimentally for numerous *in vivo* applications such as contrast enhancement in magnetic resonance imaging, tissue repair, immunoassay, detoxification of biological fluids, hyperthermia, and drug delivery and in cell separation *etc*. In the present investigation, polyaniline/ CuO composites with Copper oxide (50%) were synthesized by *in-situ* polymerization method. The composites were characterized by X-Ray Diffraction (XRD) and Scanning Electron Microscopy (SEM). The dc conductivity of the samples were measured as a function of temperature in the range 30-190 ^{o}C and it was observed that the increasing the concentration of the Copper oxide particles increases the ac conductivity of the Polymer composites.

Keywords: Conducting Polymers, Polyaniline(PANI), Cuo, Electrical Conductivity

A material whose structure is originally conductive,such as conductive polymer,can be used to prepare antistatic materials.Owing to its excellent properties and lower price, carbon black , in past decades, has been blended into polymers materials, to provide the conductivity of materials.Owing to its unique electro-optical properties,polyaniline (PANI) has been extensively investigated in the field of conductive polymers (Salmi et al, 2013). In recent years nanocomposites have become one of the most extensively studied materials all over the world, as they have shown to posseses several technological applications *e.g.* in effective quantum electronic devices, magnetic recording materials and sensors etc.(Salmi et al ,2013.) Further, nanocomposites composed of conducting polymers and metal oxides have opened many applications *e.g.* in drug delivery, conductive paints, rechargeable batteries, toners and smart windows etc.(Soloman et al 2007), and pinter et al. The present study especially aims to investigate PANI-CuO composites in order to obtain a new noble material which can be utilized for electrical applications.

CuO is a semiconducting material that has a direct wide band gap of 2.5 eV at room temperature. Indeed CuO is a peculiar material that exhibits multiple Properties that include piezoelectric, semiconducting, piezoelectric and photo catalytic activities ambalaji et al. In the present paper, PANI/CuO composites were prepared by *in situ* polymerization of aniline monomer with different doping concentrations of CuO9-10]. All the composites have been analyzed using X-ray Diffraction (XRD) and Scanning Electron Microscopy (SEM). The dc conductivity of these composites was studied as a function of temperature at different dopant concentrations.

EXPERIMENTAL

Synthesis of Polymer

The synthesis polyaniline (PANI) was based on mixing aqueous solution of aniline hydrochloride and ammonium persulphate at room temperature, followed by the separation of PANI hydrochloride precipitate by filtration and drying. An equi-molar volume of aniline and hydrochloride acid was dissolved in distilled water in a volumetric flask to obtain 100 ml of solution. Similarly, ammonium per sulphate (0.6M) was dissolved in 100 ml water. Both solutions were kept for 1 hour at room temperature and then mixed in a beaker, stirred with A

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International Journal of Science, Engineering and Technology
An Open Access Journal

Survey on Area Based Routing Protocols WSN

[1]Dr M. Nagendra, [2]Dr. P. Bindhu Madhavi

Abstract

Area based routings in remote sensor systems (WSNs) are attracting a ton of enthusiasm for the exploration group, particularly as a result of its adaptability. In area based directing, the system size is adaptable without in-wrinkling the flagging overhead as steering choices are inalienably restricted. Here, every hub knows about its position in the system through some positioning gadget like GPS and utilizations this data in the directing component. This paper, presents the essentials of WSNs including the design of the system, vitality utilization for the parts of a run of the mill sensor hub, and draw a detailed picture of grouping of area based steering conventions.

Keywords: WSN, Area based Routing Protocols, GPSR, and LAR

Introduction

Area based routing has developed as the noticeable range of re inquiry in the field of remote sensor systems (WSNs). Sensor nodes might not have the web convention (IP) addresses; in this way, IP-based convention can't be utilized for the sensor systems. Building an effective, versatile and straightforward convention for WSN is exceptionally testing because of constrained assets and the dynamic way of sensor systems. In area based routing, the node does not have to make complex calculations to locate the following bounce, as directing choices are taken utilizing the area data. This paper introduces a review and scientific classification of area based routing for sensor systems.

In area based routing, a node that has a packet to send (Source) includes a goal area (Sink) in every information bundle. Middle of the road hubs in the way get this parcel and send it to next one-bounce neighbors which are geographically nearest to the goal. The procedure is continued until the information parcels are gotten by the goal hub. In area based directing, the state required to be kept up in every node is least, due to the region. It has low correspondence overhead since notices of steering tables, as in conventional directing conventions, are not required. Area based steering subsequently does not require the foundation or upkeep of courses. In this way, area based routing monitors both energy and bandwidth since course demand and state spread are not required after one-bounce remove. With reference to the area based routing in WSN; we start with an outline on WSN based on scientific categorization of area based directing conventions for WSN. This paper gives a study on area based routing for WSNs based on normal designs of sensor systems, accessible conventions and application ranges in WSN.

Area Based Routing Protocols

In this area, we study the best in class area based directing conventions for WSNs. Sensor hubs might not have the web convention (IP) addresses, in this way IP-based conventions can't be utilized for the sensor systems. Building an effective, adaptable and basic convention for WSN is extremely testing due to limited assets and the elements way of sensor system. In area based directing, the hubs don't have to make complex calculations to locate the following jump, as steering choices are taken utilizing the area data. Area based conventions are exceptionally proficient regarding steering information bundle as they take the upside of immaculate area data rather than worldwide topology data.

Area based convention utilizes the area data of hubs to give higher productivity and adaptability. It requires three certainties. To begin with, every hub in the system must know its own area data by GPS or by some other methods [1] [2] [3]. Second, every hub must know about its neighbor hubs' location, which are one-jump far from it. Third, the source hub must know about the area of goal hub. Area

International Journal of Science, Engineering and Technology
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Performance Evaluation of a Metropolitan Air Pollution Sensing System Based on Prototype Design

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Abstract

Air pollution is supposed to be a major provider to early deaths and long-term diseases around the worldwide. Existing systems of metropolitan air pollution observing depends on static sites with low altitude resolution and moreover, lack the means to estimate exposures for individuals. This paper describes the design and evaluation of a low-cost participatory sensing system called Haze Watch that uses a combination of the portable mobile sensor units, smart-phones, cloud computing and mobile apps to measure, model, and personalize air pollution information for the individuals. The ideas are three-fold: 1) The design, prototype and it match the multiple hardware devices and software applications for gathering the air pollution data with high spatial density in real-time 2) The aim to develop web-based tools and the mobile apps for the visualization and estimation of air pollution exposure and 3) conducting field trials to validate our system and establish that it produces much more exact exposure estimates than existing systems.

Keywords: Performance, Metropolitan, and Sensing System.

Introduction

To be healthy, clean air is the basic fundamental requirement for human being. But, according to world health organization (WHO) more than 1.4 billion people are living in a area where the pollution is more than the suggested air quality guideline. The report tells that more than 7 billion people are affected by the pollution. Air pollution can cause cardiac arrest, lungs problem and breathing issues to humans. Observing and managing the air pollution is very important in both much developed countries and under developing countries. Many government organizations look after the air pollution contents and circulate the information regarding air pollution. These organizations have static monitoring devices which will gauge the air pollutant in vast area. But, fixing and controlling these stations are high cost so it limits their numbers. For example, the greater area Sydney has only 15 stations to measure the air pollutant and publish the data. The low altitude uses the mathematical model to calculate the pollutant concentration which can be incorrect.

The current study tells us that the pollutant data gathered from the home or the work, it will totally assume that user is at home or work at all times. But, this value will not be accurate because the user cannot be at home or work at all the time. We all know that as locations change the pollutant concentration will also changes. We develop a participatory sensing system-"Haze Watch" which mainly focuses on crowded place to give the correct location and value of the air pollutant and helps the users in managing the pollution through the personalized tools. The basic contributions are as follows.

(1) The design of a low cost system for users to give the pollution data which is attached with mobile phone application to upload the pollution data and a server to storing the data.

(2) The system will show how the data can be evaluated and consumed by users this also includes a correct models for adding the spatio-temporal data points. Visualization of pollution over a geographical area, and mobile apps that show individual data.

(3) The tests and calculations of a system with a minimum number of users to show that it gives much more accurate values to personal data than

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Performance Analysis of WMSN Based on Distinct Quality Based Routing Protocols

Dr. P. Bindhu Madhavi

Abstract

Wireless Multimedia Sensor Networks are more dominant distributed systems which belong to an exceptional type of WSN. Like WSN, WMSN network also consist of wireless portable interrelated sensor nodes for data collection, transmission and processing in different application areas. In real the multimedia sensor networks can handle normal data as well as multimedia data, such as image, audio, and video streams. Many routing protocols have been developed for WMSN like WSN to handle variety of data in wireless networks. This paper demonstrates the comparative performance analysis of different quality oriented protocols used in WMSN.

Keywords: WMSN, Qos Routing Protocols, Performance Metrics

Introduction

Wireless multimedia sensor networks (WMSNs) are an exceptional type of WSN which includes audio and video sensors integrated into wireless sensor nodes. Like normal sensor nodes these integrated nodes are also used to provide information about climate, pressure, temperature etc to monitor physical and environmental conditions. Different types of Routing protocols are used based on the design, processing, routing and topology to handle variety of data in wireless networks [4]. In WMSN the selection of routing protocol depends on the type of network application and routing approach. The performance of WMSN depends on the integrated video and audio sensors which improves the reliability and flexibility of application through standard operations and also extract data depending on the requirements of the application. WMSN can be classified into various classes:

(a) Flat and uniform single layered architecture

(b) Clustered and Miscellaneous single layered architecture

(c) Miscellaneous Multi layer architecture.

In Flat and uniform single layered architecture, set of nodes with related substantial capabilities are used [2] for distributed data processing. In Clustered and Miscellaneous single layered architecture, cluster heads (CHs) are used which are set of nodes with different speciation's, such as processing power, ability, batteries, and so on.

Through this architecture nodes communicate with CHs, for data transmission and processing to the base station through network. The information is put away in the central storage point. In Miscellaneous Multi layer architecture; there are numerous layers of hubs with various type of processing tasks at each layer. Here the information is handled and put away in a distributed manner.

WMSN ROUTING PROTOCOLS

As per the current trends in research, various routing protocols have been proposed in WMSN based on the type of Quality constraints [9]. These protocols maintain Quality of Service through quantitative performance parameters and are called as QoS based routing protocols.

QoS Based Routing:

Qos based routing protocols are primarily divided into latency constrained and multi constrained routing protocols [1]. Again, based on the time limitations, latency constrained routing protocols are sub divided into hard-real- time (HRT), soft-real-time (SRT), and firm-real-time (FRT) [7, 8].

QoS requirement for WMSNs is a set of constraints like reliability, latency, and bandwidth. Classification

Secure Data Sharing in Cloud Computing Using Revocable-Storage Identity-Based Encryption

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***Abstract*— Cloud computing provides a flexible and convenient way for data sharing, which brings various benefits for both the society and individuals. But there exists a natural resistance for users to directly outsource the shared data to the cloud server since the data often contain valuable information. Thus, it is necessary to place cryptographically enhanced access control on the shared data. Identity-based encryption is a promising cryptographical primitive to build a practical data sharing system. However, access control is not static. That is, when some user's authorization is expired, there should be a mechanism that can remove him/her from the system. Consequently, the revoked user cannot access both the previously and subsequently shared data. To this end, we propose a notion called revocable-storage identity-based encryption (RS-IBE), which can provide the forward/backward security of ciphertext by introducing the functionalities of user revocation and ciphertext update simultaneously.**

I. INTRODUCTION

CLOUD computing is a paradigm that provides massive computation capacity and huge memory space at a low cost [1]. It enables users to get intended services irrespective of time and location across multiple platforms (e.g., mobile devices, personal computers), and thus brings great convenience to cloud users. Among numerous services provided by cloud computing, cloud storage service, such as Apple's iCloud [2], Microsoft's Azure [3] and Amazon's S3 [4], can offer a more flexible and easy way to share data over the Internet, which provides various benefits for our society [5], [6]. However, it also suffers from several security threats, which are the primary concerns of cloud users [7]. Firstly, outsourcing data to cloud server implies that data is out control of users. This may cause users' hesitation since the outsourced data usually contain valuable and sensitive information. Secondly, data sharing is often implemented in an open and hostile environment, and cloud server would become a target of attacks. Even worse, cloud server itself may reveal users' data for illegal profit. Thirdly, data sharing is not static. That is, when a user's authorization gets expired, he/she should no longer possess the privilege of accessing the previously and subsequently shared data. Therefore, while outsourcing data to cloud server, users also want to control access to these data such that only those currently authorized users can share the outsourced data.

A natural solution to conquer the problem is to use cryptographically enforced access control such as identity-based encryption (IBE).

II. CLOUD SECURITY

Besides, to overcome the above security threats, such kind of identity-based access control placed on the shared data should meet the following security goals:

A. Data confidentiality:

Unauthorized users should be prevented from accessing the plaintext of the shared data stored in the cloud server. In addition, the cloud server, which is supposed to be honest but curious, should also be deterred from knowing plaintext of the shared data.

B. Backward secrecy:

Backward secrecy means that, when a user's authorization is expired, or a user's secret key is compromised, he/she should be prevented from accessing the plaintext of the subsequently shared data that are still encrypted under his/her identity.

C. Forward secrecy:

Forward secrecy means that, when a user's authority is expired, or a user's secret key is compromised, he/she should be prevented from accessing the plaintext of the shared data that can be previously accessed by him/her. the plaintext of the subsequently shared data that are still encrypted under his/her identity.

III. RIBE OPERATION

The concept of identity-based encryption was introduced by Shamir [13], and conveniently instantiated by Boneh and Franklin [14]. IBE eliminates the need for providing a public key infrastructure (PKI). Regardless of the setting of IBE or PKI, there must be an approach to revoke users from the system when necessary, e.g., the authority of some user is expired or the secret key of some user is disclosed. In the traditional PKI setting, the problem of revocation has been well studied [15], [16], [17], [18], [19], and several techniques are widely approved, such as certificate revocation list or appending validity periods to certificates. However, there are only a few studies on revocation in the setting of IBE.Boneh and Franklin [14] first proposed a natural revocation way for IBE. They appended the current time period to the ciphertext, and non-revoked users periodically received private keys for each

Brinkman ferroconvection

Effects of vertical heterogeneity in permeability and local thermal non-equilibrium

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Abstract

Purpose – The simultaneous effects of local thermal non-equilibrium (LTNE) and vertical heterogeneity in permeability on the onset of ferromagnetic convection in a Brinkman porous medium are analyzed in the presence of a uniform vertical magnetic field. The eigenvalue problem is solved numerically using shooting method for isothermal rigid-ferromagnetic boundaries for various forms of vertically stratified permeability function $\Gamma(z)$. The effect of vertically stratified permeability is found to either hasten or delay the onset of ferromagnetic convection. The deviation in the critical Rayleigh number between different forms of $\Gamma(z)$ is found to be not so significant with an increase in the Darcy number. It is observed that the general quadratic variation of $\Gamma(z)$ has more destabilizing effect on the system when compared to the constant permeability porous medium case. Besides, the influence of LTNE and magnetic parameters on the criterion for the onset of ferromagnetic convection has been assessed in detail. The paper aims to discuss these issues.

Design/methodology/approach – Ferroconvection in a porous medium has been analyzed considering heterogeneity in the permeability of the porous medium. The resulting eigenvalue problem has been solved numerically using shooting method as well as Galerkin method for realistic boundary conditions.

Findings – The novelty of the present study lies in understanding the effect of heterogeneity in the permeability of the porous medium on control of ferroconvection in a porous medium. In analyzing the problem, realistic boundary conditions are considered and the resulting eigenvalue problem is solved numerically using shooting method as well as Galerkin method.

Originality/value – Control of ferroconvection in a porous medium is an important feature in heat transfer-related problems and many mechanisms are being used to understand this aspect in the literature. The novelty of the present study lies in recognizing the effect of heterogeneity in the permeability of the porous medium on control of ferroconvection. This fact has been analyzed in detail for various forms of heterogeneity functions using numerical techniques by considering realistic boundary conditions.

Keywords Heterogeneity, Porous medium, Ferromagnetic convection, Thermal non-equilibrium

Paper type Research paper

1. Introduction

Ferrofluids or magnetic nanofluids are synthesized in the laboratory because of their increasing importance in heat transfer applications in electronics, engines, micro and nanoelectromechanical systems and other engineering applications. When a ferrofluid is submitted to a gradient of temperature, the momentum balance experiences a profound modification, through the Kelvin body force reflecting the magnetization of the ferrofluid. Such a study in a clear ferrofluid layer is well known since the classical works of Neuringer and Rosensweig (1964) and Finlayson (1970). The analogous buoyancy-driven convection in a layer of ferrofluid saturating a porous medium heated from below in the presence of a uniform magnetic field has also attracted considerable attention in the literature owing to its importance in stabilizing fingering in oil recovery processes, controlled emplacement of liquids or treatment of chemicals, and emplacement of geophysically imageable liquids into particular zones for subsequent imaging, etc. (Borglin *et al.*, 2000). Oldenburg *et al.* (2000)

Multidiscipline Modeling in Materials and Structures

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2018

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
68.	Fabrication and Mechanical Characterization of Bio-composite Helmet	Girisha C, B. Bharath, G, Chethan Kumar and S. Anand Kumar	Mechanical Engineering	Materials Today: Proceedings, Elsevier	ISSN: 2214-7853	UGC Care
69.	Effect of Cooling Water on the Performance of Lithium Bromide–Water (LiBr–H2O) Absorption Based Heat Pump	Girisha C, S. Manu and T. K. Chandrashekar	Mechanical Engineering	International Journal IOP Conference Series: Material Science and Engineering	Online ISSN: 1757-899X	UGC Care
70.	Smart Turn Indicators	Girisha C, Madhumohan R and Ankit Kumar Sinha	Mechanical Engineering	International Journal IOP Conference Series: Material Science and Engineering	Online ISSN: 1757-899X	UGC Care
71.	Mechanical Characterization of ceramic nano-B4C-Al2618 alloy composites synthesis by semi-solid-state processing	Madeva Nagaral, Shivananda B K, Virupaxi Auradi and S A Kori	Mechanical Engineering	Transactions of Indian Ceramic Society (Taylor & Francis)	Online ISSN: 2165-5456	UGC Care
72.	Mode I Fracture Characterization of Banana Fibre Reinforced Polymer Composite	Premkumar Naik	Mechanical Engineering	IOP Conf. Series: Materials Science and Engineering	Online ISSN: 1757-899X	UGC Care
73.	Study of Mechanical Properties of Coconut Shell Powder and Tamarind Shell Powder Reinforced with Epoxy Composites	Somashekhar T M and Premkumar Naik	Mechanical Engineering	IOP Conf. Series: Materials Science and Engineering	Online ISSN: 1757-899X	UGC Care
74.	Dry Sliding Wear Behaviour of Aluminium 6061-SiCGraphite Particulates Reinforced Hybrid Composites	Madeva Nagaral , V Auradi , K Parashivamurthy, Shivananda B K and S A	Mechanical Engineering	IOP Conf. Series: Materials Science and Engineering	Online ISSN: 1757-899X	UGC Care
75.	Impact of extrusion procession wear behavior of boron nitride reinforced aluminium 6061-based composites	Y.B.Mukesh, T.P.Bharathesh, R.Keshavamurthy and	Mechanical Engineering	International Journal of Mechanical and Production Engineering Research and Development (Trans stellar)	Online ISSN: 2249-8001	UGC Care
76.	Effect of hot extrusion on mechanical behavior of boron nitride reinforced aluminium 6061-based metal matrix composites	Y.B.Mukesh, T.P.Bharathesh, R.Saravanan and R. Keshavamurthy	Mechanical Engineering	International Journal of Materials Engineering Innovations	2249-8001 (online)	UGC Care
77.	Effect of chopped/continuous fibre, coupling agent and fibre ratio on Mechanical Properties of Injection Moulded jute/Polypropylene composites	Sandhyarani Pailoor, H.N. Narasihma Murthy and T.N. Sreenivasa	Mechanical Engineering	Journal of Natural Fibres, Taylor & Francis	Online ISSN: 1544-046X	UGC Care
78.	Analytical, Numerical and Experimental Study on Joining of Aluminium tube to Dissimilar Steel Rods by Electro Magnetic Pulse Force	K.Shanthala, T.N.Sreenivasa,	Mechanical Engineering	Journal of Mechanical Science and Technology, Springer	Online ISSN: 1976-3824	UGC Care
79.	Analysis of the Electromagnetic Impulse Technology for joining of Aluminium tube to coated Steel rod	K. Shanthala and T.N. Sreenivasa	Mechanical Engineering	Materials Today: Proceedings, Elsevier	ISSN: 2214-7853	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2018

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
80.	Production and quality testing of fuel briquettes made from pongamia and	Santhosh U and Sreepathi L K	Mechanical Engineering	Sadhana – Springer	Online ISSN: 0973-7677	UGC Care
81.	Evaluation of Physico-Mechanical-Combustion Characteristics of Fuel Briquettes Made from Blends of Areca Nut Husk,Simarouba Seed Shell and Black Liquor	Santhosh U and Sreepathi L K	Mechanical Engineering	Int. Journal of Renewable Energy Development	e-ISSN:2716-4519	UGC Care
82.	Influence of Hot Extrusion on Mechanical Characteristics of Al6063-TiC Metal Matrix Composites	Saravanan. R, Mukesh. Y. B, T. P. Bharathesh and R. Keshavamurthy	Mechanical Engineering	International Journal for Science and Advance Research in Technology	ISSN Online : 2395-1052	UGC Care
83.	Optimization of Physical and Rheological Properties in Extrusion Molding of Recycled Combined HDPE & LLDPE Polymer Composite Pipes	Saravanan. R and N. Nagesha	Mechanical Engineering	International Journal for Science and Advance Research in Technology	ISSN Online : 2395-1053	UGC Care
84.	Influence of Forging On Tribological Characteristics of Al6061-TiO2 Composite	T. P. Bharathesh, C. S. Ramesh, R. Keshavamurthy,	Mechanical Engineering	International Journal for Science and Advance Research in Technology	ISSN Online : 2395-1053	UGC Care
85.	Sentimental Analysis Using Recurrent Neural Network	Latha C A	Computer Science and Engineering	International Journal Of Engineering And Technology(IJET)	ISSN:2227-524X	UGC Care
86.	A Wrapper Based Feature se3lection approach using bees algorithm for extereme Rainfall prediction Via Weather pattern Recognition through SVM Classifier	V. Rajsekar	Computer Science and Engineering	International Journal of Civil Engineering and Technology (IJCIET)	ISSN Online: 0976-6316	UGC Care
87.	Software Predictive Classification Using Relational Association Rules and Naive Bayes Approach	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
88.	An Approach to Optimized Genetic based Clustering Algorithm in Mobile Ad-hoc Network	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
89.	An Optimize Genetic Based Routing Protocol for QoS in MANET	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
90.	A Survey on under water sensor Network	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
91.	Advanced Image Steganography by means of Secret-piece Noticeable Mosaic Images by Nearly-Reversible Color Transformation	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2018

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
92.	Iris Recognition System using Matlab	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications	ISSN 2319-2720	UGC Care
93.	Evaluation of Web Security Mechanisms using Vulnerabilities and Attack Injection	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
94.	Botnet Identification with Malware File Detection & Blocking	Arun Biradar	Computer Science and engineering	International Journal of Computing, Communications and Networking (IJCCN)	ISSN 2319-2720	UGC Care
95.	Analysis of transformer less inverter for PV application	Selvamathi R,	Electrical & Electronics Engineering	International Journal of Engineering & Technology	10.14419	UGC Care
96.	Better Robustness H.264 Video transmission and reception with dynaic scheduler for optimistic routing using super resolution	Aruna R	Electronics and Communication Engineering	Jour of Adv Research in Dynamical & Control Systems	1943-023X	UGC Care
97.	Adaptive Hexagonal search algorithm-based motion estimation for video coding	G. Senbagavalli	Electronics and Communication Engineering	IJARSE	ISSN: 1943-023X	UGC Care
98.	Comparative study of routing protocols and Dempster Shafer	Dr P B Manoj	Electronics and Communication Engineering	JASC: Journal of Applied Science and Computations	ISSN : 1076-5131	UGC Care
99.	Efficient Data Fetching with Supportive Caching in Mobile Distributed Networks	Dr. MANJUNATH RAMACHANDRA	Electronics and Communication Engineering	International Journal of Engineering Trends and Technology	ISSN: 2231-5381	UGC Care
100.	Channel Capacity Maximization using NQHN Approach at Heterogeneous Networks	Savita Patil	Electronics and Communication Engineering	International Journal of Electrical and Computer Engineering	ISSN: 2088-8708	UGC Care
101.	In-Vitro Screening of Acetyl Choline Esterage activity and Antioxidant activity of different crude extracts from alpiria purpurata:A New source of management of Alzheimer's Disease	V. Venkata Lakshmi and Vinay T	Chemistry	International Journal of Green and Herbal Chemistry	ISSN -2278-3229	UGC Care
102.	Synthesis and Characterization of Cloisite-30B Clay dispersed poly(acrylamide/sodium alginate)/Ag hydrogel composites for the study of BSA protein drug delivery and antibacterial activity	V. Venkata Lakshmi and B.H. Nanjunda Reddy	Chemistry	Asian Journal Of Chemistry	ISSN -0970-7077	UGC Care
103.	Synthesis and characterization of novel sa-pa-lsa/c-30b/ag nanocomposites for swelling, antibacterial, drug delivery, and anticancer applications	V. Venkata Lakshmi and B.H. Nanjunda Reddy	Chemistry	Asian Journal Of Chemistry	ISSN -0970-7077	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2018

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
104.	Development, formulation, and evaluation of sodium alginate-g-poly (acryl amide-co-acrylic acid/cloiste-30b)/agnps hydrogel composites and their applications in paclitaxel drug delivery and anticancer activity	V. Venkata Lakshmi and B.H. Nanjunda Reddy	Chemistry	International Journal of Applied Pharmaceutics	ISSN -0975-7058	UGC Care
105.	Effect of Oxalic Acid and Citric Acid on Recovery of Ni and Cd from Waste Batteries: Electrochemical and Thermal Investigation of Ni(OH)2 Obtained from Leach Solution	V. Venkata Lakshmi and Mylarappa	Chemistry	Research Journal of Chemistry and Environment	ISSN -0972-0626	UGC Care
106.	Polyaniline/Nickel Oxide –a Core/Shell Structured Nanocomposite	Mini.V, Devendrappa. H,	Physics	Materials Today: Proceedings	ISSN: 2214-7853	UGC Care
107.	Praseodymium doped KDP Single Crystal Grown by Different Techniques and its Optical, SHG and Dielectric Studies: A New NLO Crystal	Dr Roopa V	Physics	International Journal of Chemtech Research	ISSN: 0974-4290	UGC Care

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Fabrication and Mechanical Characterization of Bio-Composite Helmet

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Abstract

Recently, bio composite materials are synthesized using natural cellulose fibers as reinforcements together with matrix, which have attracted the attention of researchers due to their low density with high specific mechanical strengths, availability, renewability, degradable and being environmental-friendly. The present work attempts to make an improvement in the current existing helmet manufacturing methodology and materials used to have better mechanical properties as well as to enhance the compatibility between fibers and the matrix. The bio-composite are prepared with the epoxy resin matrix and fibers such as jute, sisal, coconut, areca and banana using hand lay-up method with appropriate proportions to result in helmet shell structure. The fabricated bio-composite are evaluated for mechanical properties such as impact strength and flexural strength. The bio-composite helmet was evaluated for drop weight impact test. The results show that bio-composite could be a potential application for helmet with further optimisation of volume fraction of natural fibers.

Keywords: Bio composite helmet, Epoxy resin, Natural fibers, Hand lay-up method, Mechanical properties.

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Effect of Cooling Water on the Performance of Lithium Bromide–Water (LiBr–H_2O) Absorption Based Heat Pump

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Abstract: The need for extracting high heat from the industries has encouraged the development of Lithium Bromide-Water (LiBr-H_2O) absorption based heat pump. This paper presents a simulation study of single-stage LiBr–H_2O vapor absorption heat pump. The detailed thermodynamic analysis of the single-stage LiBr–H_2O vapor absorption heat pump was carried out in this study. The validation of this model is performed by considering the values from the literature.The effect of cooling water on flow rates, COP (Coefficient of performance) and conductance are examined.

1. Introduction

Absorption heat pumps systems have been used to produce cold since 1850. They are gaining more attraction because of eco-friendly. There are operated by using low-grade energies like geological, solar and waste heat liberated from process industries. The device uses working fluids which have no effect on ozone. The LiBr -H_2O is announcing the best working fluid pair because its properties such has a high enthalpy of vaporization, not toxic and does not require a rectification step.

Numbers of researchers like Ghaddar et al., (1997) have studied LiBr-H_2O absorption system for space cooling. The simulation was developed and performance of the system was carried for all possible climatic condition at Beirut. Yoon et al., (2003) have conducted an experimental investigation on double-effect LiBr–H_2O absorption cycle. The performance of absorption chiller system was carried by using exhaust gases to preheat the weak absorbent solution coming from the absorber to the low-temperature generator. Park et al., (2004) have studied the performance of absorption refrigeration. The study showed that performance of the absorption system greatly depends upon the inlet temperature and flow rate of the water.

Asdrubali et al., (2005) have studied the performances of single stage LiBr–H_2O absorption machine by developing mathematical model. Vega et al., (2006) have performed experimental study on the performance of absorption chiller. The result showed cooling capacity and energy supplied to the absorption chiller had uncertainty margin was around 18-20%. Castro et al., (2007) have developed prototype of an air-cooled absorption chiller of cooling capacity of 2kW

Smart turn indicators

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Abstract. The paper discusses the development of a turn indicator that engages automatically if not turned on manually by making use of different inputs from the sensors and considering speed as the deciding parameter. The system comprises of an angle sensor, a steering rotary sensor, a speed sensor and a micro-controller. This instrumentation helps in reducing accidents especially caused in the highways.

1. Introduction

Turn signals are lamps mounted near the right and left rear and front corners of a vehicle (Automobile, especially a four wheeler) and on the either sides of the vehicle which blink when turned on. The driver actuates the turn signal to let the trailing drivers know of his intent to change lanes or take a turn[1]. Turn signals are vital components that come as standard on all the vehicles as a safety feature. Their use is made mandatory by the transportation authorities worldwide. Due to the negligence of the drivers the turn signals are not used as they should be and this brings down their usage rate to below a 100%. Despite the above fact no study or data regarding the use of turn signals is not available from National Highway Traffic Safety Administration or from Department of Transportation[4].

2. Need statement

The study is particular about the four-wheeler especially a car. Drivers are required to use the turn signals to indicate their intention to take a turn, lane changing or overtake a vehicle. Almost 50% of the drivers either fail to indicate while changing lanes or do not turn the indicator off. While failing to indicate a turn might seem like a small violation, a number of car accidents are caused while turning without indication or during lane changing.[2]

2.1. Present Study

A study from Society of Automotive Engineers reveals that the failure rate of a driver to indicate a turn during lane changing or failing to turn the indicator off is around 48%. The same study also reveals that the failure rate to indicate the turn while making a turn is around 25%. Further the study brings out that the drivers fail to use the turn signals around 2 billion times a day or 750 billion times annually, making failing to indicate the turn signal a bigger concern than distracted driving[3]. The above numbers describe the gravity of the problem which is ever increasing and persists worldwide. Yet no improvements have been made into the system and present turn signal technology is based on

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Mechanical Characterization of Ceramic Nano B_4C-Al2618 Alloy Composites Synthesized by Semi Solid State Processing

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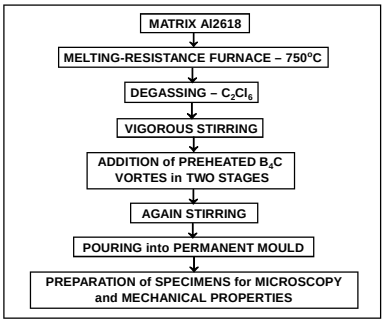
ABSTRACT

Al2618 alloy composites containing 6 wt% nano B_4C were prepared by liquid metallurgy two stage stir casting process. Characterization was performed using scanning electron microscope to validate the homogenous distribution of nano B_4C particles in the Al2618 alloy matrix. The presence of B and C elements was confirmed by EDS analysis in the nano B_4C reinforced metal composites. The mechanical behavior of the prepared nano composites were evaluated as per the ASTM standards, and it was noted that the tensile strength (ultimate strength and yield strength) and compression strength increased with the addition of 6 wt% nano B_4C particles. Finally, to understand the failure mechanisms the fractography analysis was conducted on the broken tensile specimens by using SEM images.

[Keywords: Al2618 alloy, Nano B_4C particulates, Liquid melt method, Mechanical behavior, Fractography]



Introduction

With a lot of research in the fabrication of new composites, still there is need of development of advanced light weight composites with enhanced mechanical and tribological properties.[1] In this need, aluminium as matrix finds its position in the area of automobile in various components such as cylinder liners, connecting rods, drive shafts, etc. Apart from automobile, demand of aluminium is also found in aerospace field where weight reduction is a major critical part with low density.[2] But the poor mechanical characteristics of aluminium and its alloy restricts its extensive utilization in different critical engineering applications. In this regard, aluminium metal matrix is reinforced with various ceramic particulates like SiC, Al_2O_3, graphite, etc, which shows improved inter metallic bonding between the matrix alloy and the ceramic reinforcements leading to better mechanical properties with high elastic modulus, strength, hardness and wear resistance.

The main aim involved in designing metal matrix composites is to combine the desirable attributes of metals and ceramics.[3, 4] With the size of at least one dimension less than or equal to 500 nm, the composites can experience a large change in the strength and stiffness. For producing metal matrix composites (MMCs) different fabrication techniques are evolved like solid state method, liquid state method and *in situ* process. Among the various techniques pertaining to aluminium matrix composites field, liquid state method, in particular two step stir casting process, has been found to be attractive because of its economic aspect which is one-third to half of competitive methods, and suitable for high volume production.[5, 6] However, stir casting process is also found to be more effective because it leads to uniform homogenous distribution of nano particulates and also enhances the grain size by providing good bonding by selecting the suitable processing parameters.[7]

From the literature survey as mentioned above most of the work on Al based MMCs are devoted to micron sized particulates like SiC, Al_2O_3, graphite, etc. However, the use of nano B_4C particulates as reinforcement in Al matrix is limited due to high cost and poor wetting with Al matrix below 1100°C. At present the most widely used reinforcement particles whose sizes range from 3 to 30 μm leads to a substantial reduction in ductility, toughness and ineffective consumption of strength and stiffness of the reinforcement.[8] Nano B_4C is considered as the third hardest material having hardness of 3800 $N.mm^{-2}$. It has a low density (2.52 $g.cm^{-3}$), which is less than that of Al matrix ensuring better interfacial bonding with aluminium

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Mode I Fracture Characterization of Banana Fibre Reinforced Polymer Composite 72

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Abstract: In this paper, fracture behavior and Mechanical properties of short banana fiber reinforced polymer composites is investigated. Fibers are extracted from banana plant,Further compositelaminates were prepared with randomly distributed fiberswith different weight fraction of banana ranging from 30%, 35% and 40%. Composites are prepared using hand layup technique.Tests were performed to determine fracture toughness(Mode I) and mechanical properties of these laminates.The tests were performed to examine the effect of weight fraction of fiber on the fracture toughness of the composite.As epoxy is a brittle material, stress intensity factor is utilized to evaluate the fracture toughness of the composites.From the experimental results were carried out on different weight fractions of banana. It is observed that the 40 % of banana fiber shows maximum fracture toughness,Composite plate of 30% shows the maximum tensile strength.

Keywords—Bannana fiber, Polymer Matrix Composites (PMCs*)*

1. INTRODUCTION

In recent decades, natural fibre composites are getting much attention in structural applications. However, due to a flaw-free material is extremely difficult to be produced and cracks may be introduced during service, understanding the crack resistance ability is thus essential. Good toughness and crack stopping capability are particularly important. It has been mentioned that toughness of a brittle thermosetting polymer such as polyester and epoxy can be improved through natural fibre reinforcement [1]. Fracture behavior characterization of polymers and composites are still at infant stage [2].

In principle, composites can be constructed of any combination of two or more materials, whether metallic, organic or inorganic. Advanced composites are a blend of two or more components, one of which is made up of stiff long fibers and the other, for polymeric composites, a resinous binder or matrix that holds the fibers in place. High performance fiber reinforced composite materials are comprised of high strength and modulus fibers, embedded in, or bonded to a matrix, with a distinct interface between them. In a composite, the fiber, as well as the matrix, retain their physical and chemical identities, but still provide a combination of properties that cannot be achieved with either of the constituents alone. In general the fibers play the role of load bearer. The matrix, while keeping the fibers in the desired location and orientation, act as a load transfer agent and protects the fibers from external conditions such as chemicals, heat and moisture [3]. Manmade fibers using glass, carbon,

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Study of Mechanical Properties of Coconut Shell Powder and Tamarind Shell Powder Reinforced with Epoxy Composites

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Abstract. Coconut shell is non-food part which is one of the hard agro wastes. Coconut shell is high potential material due to its high strength and modulus properties. Coconut shell powder exhibits admirable properties compared to other materials such as low cost, renewable, high specific strength to weight ratio, low density less abrasion to machine and environmental friendly. Mixing coconut shell powder with epoxy resin enhances its properties and creates a wide range of applications. Tamarind shell is also a non-food part which is an agro waste. After the tamarind fruit is extracted these shells are disposed as waste. As these shells are hard they provide better strength when used in composite materials as an additive. The components are made by mixing coconut shell powder, tamarind shell powder and epoxy resin at definite ratios and is tested for mechanical properties. The present study deals with preparation and experimentally testing the mechanical properties of Coconut Shell Powder and Tamarind shell powder reinforced epoxy resin composites. 3 different percentages of coconut shell powder and epoxy resins are made to form composite material and then results are analysed for those 3 composite materials. From the results it has been found that tamarind shell powder with coconut shell powder, increases the tensile properties by around 50%. The best result and increase in mechanical properties is obtained when the composition of the material is 50% of Coconut shell powder and 5% of Tamarind shell powder along with 45% of epoxy resin.

1. Introduction

In the latest years, composites fulfil optimal requirement criteria for several designers' materials.In the last 50 years, there have been major developments in the design and fabrication of light-weight, high strength materials, primarily due to the increase of polymer composite materials1. Several researchers have aimed at their work towards defining abundant combinations of biodegradable matrix/natural fillers in order to promote new classes of biodegradable composites with enhanced mechanical properties, as well as to attain products with lower cost. Among several investigated natural fibers in this area, different fillers have the significant importance[1].The Natural Fillers (NF) reinforced materials offer several environmental advantages, such as decrease dependence on non-renewable material sources, lower pollution and green house emission. Natural lignocelluloses fillers (flax, jute, hemp, etc.) represent an environmentally friendly alternative to conventional reinforcing fibers (glass, carbon). The Advantages of natural fillers over traditional ones are their low cost, high toughness, corrosion resistance, low density, good specific strength properties and reduced tool wear2. However, there are several disadvantages in natural fillers, like low tensile strength, low melting point, not suitable for high temperature application, poor surface adhesion to hydrophobic polymers, non-

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Dry Sliding Wear Behaviour of Aluminium 6061-SiC-Graphite Particulates Reinforced Hybrid Composites

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Abstract. In this present work, systematic study has been conducted to investigate the wear phenomenon by adding micron size silicon carbide and graphite particles into Al6061 base. Al6061 compound was taken as the base lattice to which SiC and graphite particulates were utilized as fortifications. 6 wt. % of SiC and 6 wt. % of graphite were introduced to the base framework. The micostructural behaviour was analysed through scanning electron microscopy, which uncovered the uniform appropriation of SiC and graphite content in the Al matrix. Pin-on-disc equipment was utilized to assess the volumetric wear loss of arranged samples, in which EN32 steel disc was utilized as the counter face. The outcomes uncovered that the volumetric wear misfortune was expanded with increment in applied load, disc speed and sliding distance for every one of the specimens. The outcomes additionally showed that the volumetric wear loss of the Al6061-6% SiC-6% graphite composite was smaller than the Al6061 lattice. The worn out surfaces were portrayed by SEM analysis.

1. Introduction

Metal matrix composites (MMCs) have been made to meet solicitations of lighter materials especially suited for applications requiring high calibre to weight extent with high specific quality, dimensional constancy, helper resoluteness, and strength for different applications like auto, space, flying machine, obstruction, and in other building divisions [1-3]. Aluminum is the most extensively used matrix material for the arranging metal system composites. Aluminum blends are extensively requested into tossed composites and formed mixes. Major alloying parts in aluminum blends are copper, manganese, silicon, magnesium and zinc. Aluminum has been used as a system material as a result of its light weight, high calibre, heavenly wear resistance properties, high temperature, easy to set up the composite and openness in abundance [4, 5]. From speedy couple of year's aluminum cross section composites are extensively used as a piece of different, non-essential and down to earth applications. The critical points of interest of aluminum based composites in transportation region are low fuel use, less air borne surges and lower uproar.

Numerous artistic materials like particulates of SiC, TiC, graphite, boron carbide are generally utilized fortifications in aluminum compound [6-8]. Aluminum amalgam based particulate fortified composites have a more number of designing applications, strengthening aluminum combinations with various hard clay particles is for the most part because of wide accessibility. The most normally utilized aluminum composite networks are 2024, 2014, 2219, 5083, 5052, 6061, 6068, 7010 and 7075 compounds.

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IMPACT OF EXTRUSION PROCESSION WEAR BEHAVIOR OF BORON NITRIDE REINFORCED ALUMINUM 6061-BASED COMPOSITES

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ABSTRACT

Aluminum (Al) 6000 alloy series are more industrial friendly among aluminum alloys since they are heat treatable and have superior formability. In the present experiment, Al 6061- boron nitride reinforced composites were developed by changing the boron nitride wt.% concentration. Composites samples were prepared for 3, 6 and 9 wt.% of boron nitride concentration. Boron nitride is used as reinforcement considering its superior hardness and thermal properties. The stir casting process is adopted for the fabrication of composites since it is a flexible and generally recognized method for developing castings economically. The prepared composites are successively hot extruded in nature. The extrusion process decreases defects in casting and modifies its grain structure resulting in an improvement in hardness and wear resistance. A metallographic study has done to determine the nature of boron nitride dispersion in matrix alloy. The microstructure photographs indicate the homogenous distribution of reinforcement in the Al6061 alloy. Study of hardness and wear resistance behavior has been carried out before and after extrusion. Al6061 -BN composites exhibited a decrease in wear rate compared to aluminum alloy. With an increase in sliding velocity and load, the wear rate of both aluminum alloy and composites increases, but when compared to conventional alloy the wear rate of in composite is less. The surface morphology has carried out on the worn out surface to identify the probable wear mechanisms.

Keywords: AL 6061, UTM, Wear Properties, Metal Matrix Composites, Boron Nitride, SEM & Hot Extrusion

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Original Article

INTRODUCTION

Aluminum matrix composites are the combination of particulate reinforcement and aluminum alloy in macro level. These combinations provide better performance in comparison with traditional aluminum alloy. Aluminum-based composites had widespread attention because of its high strength, ease of formability and resistance to wear [1]. Their tailored combination makes aluminum based particulate reinforced composites an attractive material for application in engineering. Among aluminum alloy, Al6061 has advantages such has good strength, excellent formability [2]. Further, its wear resistance can be improving by reinforcing it with much harder boron nitride [BN]. Various techniques such as stir casting [3], squeezed casting [4], mechanical alloying [5], liquid-solid powder metallurgy [6], etc., have been carrying out for the fabrication of composites. Among these

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Effect of hot extrusion on mechanical behaviour of boron nitride reinforced aluminium 6061-based metal matrix composites

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Abstract: In this present investigation Al 6061-based BN reinforced metal matrix composites were developed with 6 and 9 wt% of boron nitride. The Al 6061 was chosen as base material owing to its superior formability, light weight and moderate strength. Boron nitride was used as reinforcement keeping in mind its excellent wear and corrosion resistance along with superior strength and thermal properties. The stir casting method was adopted for development of composites since it is most flexible and universally accepted method for preparing castings economically. The developed composites were subjected to extrusion process. Mechanical properties were tested both before and after the extrusion to study the impact of extrusion process on properties of composites. It was observed that hardness and tensile strength of both casted and extruded samples were improved by the addition of the BN reinforcement. Whereas ductility of samples reduced with the increase of boron nitride concentration. Scanning electron microscopy (SEM) is used to identify the distribution of boron nitride (BN) and to study the fractured surfaces of Al 6061-BN metal matrix composites.

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Effect of chopped/continuous fiber, coupling agent and fiber ratio on the mechanical properties of injection-molded jute/polypropylene composites

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ABSTRACT

This paper presents the development of jute/polypropylene (PP) composites by twin-screw extrusion and injection molding. Jute/PP was compounded using twin-screw extruder and injection molded. The effects of chopped/continuous fibers, coupling agent and fiber ratio on mechanical properties were investigated. Tensile and flexural **moduli** of continuous jute/PP were greater than those of chopped fiber/PP. Tensile, flexural and impact strengths were greater in chopped fiber/PP along with elongation at break. Coupling agent improved the tensile and flexural strengths, and these increased with fiber content, whereas impact strength and elongation at break decreased with fiber loading. The results were analyzed using ANOVA and regression analyses.

摘要

介绍了双螺杆挤出成型技术在黄麻/聚丙烯复合材料中的应用。黄麻/聚丙烯采用双螺杆挤出机和注塑成型复合。研究了切碎/连续纤维、偶联剂和纤维比对机械性能的影响。连续黄麻/聚丙烯的拉伸模量和弯曲模量均大于短纤维/聚丙烯。短切纤维/聚丙烯的拉伸强度、弯曲强度和冲击强度随着断裂伸长率的增加而增大。偶联剂提高了纤维的拉伸强度和弯曲强度，随着纤维含量的增加而增加，而冲击强度和断裂伸长率随纤维负荷的增加而降低。结果用方差分析和回归分析进行分析。

KEYWORDS
Twin screw extruder; Injection Molding; Jute fibres; Mechanical properties; Regression Analysis; ANOVA

Introduction

The fabrication of natural fiber reinforced composites is challenging because of fiber handling and their intrinsic properties. The major advantages of natural fibers include excellent specific strength, low density (1.3–1.5 g/cm^3), low cost, biodegradability and vibration damping. Application of renewable resources and concern about the reduction of both greenhouse gases and CO_2 emissions drive plastic industries toward natural fibers. They reduce the wear of screws and barrels of plastic processing equipment compared with the commonly used glass fibers (Aggarwal et al. 2013; Bledzki et al. 2015; Ferreira et al. 2016).

While processing natural fibers, the main considerations are their hygroscopic behavior and low resistance to high temperature, which limit the choice of resins. Fortunately, the equipment and techniques used for natural fiber composites are relatively similar to those of conventional inorganic fiber composites, which make industries easily adopt natural fiber composites for different applications (Aggarwal et al. 2013). Use of well-compounded pellets in injection molding significantly improves the tensile strength and modulus of composites (Bledzki et al. 2015). Gunning et al. investigated the processing conditions of

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Analytical, numerical and experimental study on joining of aluminium tube to dissimilar steel rods by electro magnetic pulse force †

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Abstract

In this paper two different steels, low carbon steel and 304 stainless steel are lap joined to tubular 6063 aluminium by using high velocity electromagnetic force and the joint behaviour is evaluated for mechanical strength, microstructure and leakage proof. Analytical model is used to set the input energy needed to accomplish the welding. Numerical model is used for the analysis of the impact velocity along the length of electromagnetic coil. Aluminum joint with low carbon steel rod has a characteristic waviness at the joint interface whereas aluminum with 304 stainless steel has flat interface under identical electromagnetic force. Mechanical pull test confirmed that joint strength is acceptable for both the steels as failure took place in the base aluminium metal. Helium leak proof tests are found to be satisfactory in both the cases. Fair agreement is observed between experimental results, analytical and numerical analyses.

Keywords: Aluminium; Steel; Dissimilar; Electromagnetic; Joining; Impact velocity

1. Introduction

Dissimilar material structures are prevalent in many industries such as aerospace, cryogenic, nuclear, automobile and process engineering. Structures made of dissimilar materials like aluminium - steel can take advantage of light weight of aluminium combined with high strength of steel. But dissimilar materials are difficult to weld by conventional thermal methods due to incompatibility in melting points, thermal expansion coefficient, density and other physical properties. Solid state metallurgical bonding of dissimilar materials through electromagnetic welding (EMW) can easily overcome the problems associated with conventional joining processes [1]. EMW has advantage over other welding techniques in terms of shortest process time, minimal temperature rise and formation of limited or no intermetallic at the interface of the two materials to be joined.

Electromagnetic welding relies on the Lorenz forces generated by the interaction of the repelling magnetic fields due to the induced eddy currents between coil and the adjacent flyer workpiece. Lorenz force induces high velocity impact of flyer workpiece on to a target workpiece with severe plastic deformation, thus producing a metallurgical bonding at the interface of the two materials. In an EMW process, the flyer can achieve velocities of the order of few hundred meters in less than 25 microseconds [2].

Aluminium - stainless steel transition joints find many applications like cryogenic coupling for connections to liquefied storage vessels and pipe works, bus bar connections in electrolysis plants, drive shafts of automobiles. Dissimilar multipiece connecting rods are developed in the recent times with the body fabricated from aluminium and crosshead end connectors produced from steel [3].

Yu et al. investigated EMW of aluminium to steel tubes for varied radial gap, slope angle and discharge energy [4, 5]. However, no inference is drawn for selection of the process parameters. Kimchi et al. reported the EMW of Al6061 to 1010 steel bars [6]. Shim et al. related a numerical model for EMW with the experimental results of aluminium-steel pipe joint [7, 8]. However the quality of the joint in terms of mechanical strength is not ascertained much in the reported literatures. Variation of impact velocity in a multiturn coil is scarcely reported in the literature. Impact force and impact velocity are critical to ensure successful welding. Well-developed analytical models can be cost effective in predicting the parameters including impact force and impact velocity needed for welding.

In the present paper, authors have validated experimental results with both analytical and numerical analyses. Variation of the flyer tube velocity along the length of the coil is explained with the help of numerical analysis. Experimental

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Analysis of the Electromagnetic Impulse Technology for joining of Aluminium tube to coated Steel rod.

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Abstract

Automotive and aerospace industries are continuously focusing on the improved lightweight hybrid structures, leading to increased usage of dissimilar materials. Suitable joining methods are necessary for a reliable dissimilar structure. The objective of this paper is to analyze electromagnetic impulse technology, one of the solid state welding technologies for joining of aluminium tube to coated steel rods. In the present work, electromagnetic pressure required for joining is estimated and the mechanical behaviour of the work piece is analysed for the electromagnetic compressive force developed due to the interaction of induced current between the coil and the tubular workpiece.

Selection and Peer-review under responsibility of International Conference on Advanced Materials and Applications (ICAMA 2016).

Keywords:dissimilar material ; electromagnetic ; impact ; joining.

1. Introduction

Lightweight dissimilar material structures have gained importance due to their excellent functional and mechanical properties in various industries such as automotive, aerospace, nuclear, petro-chemical and process engineering. In the recent years, composite structures made of aluminium and steel have attracted attention to counter the serious problems of energy crisis related to weight reduction. Cost effective and sound quality joining technique is needed which can accommodate with different physical and mechanical properties of both aluminium and steel. Explosive welding [1], ultrasonic welding [2], laser brazing [3], friction stir welding [4], diffusion bonding

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Production and quality testing of fuel briquettes made from pongamia and tamarind shell

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Abstract. Biomass is receiving greater attention, especially in developed countries, mostly as a means of reducing greenhouse gas emissions, increasing energy supply security and decreasing their heavy reliance on imported fossil fuels. However, the low bulk density of biomass is the major limitation in its usage but briquetting overcomes this limitation. This research was carried out to identify the optimum blending ratio for solid fuel briquettes produced by pongamia (*Pongamia pinnata*) shell (PS) and tamarind (*Tamarindus indica*) shell (TS) with pongamia cake (PC) (0, 10, 20, 30%) as an additive. The cylindrical briquettes were produced with diameter of 3.6 cm and length of 4.5 to 5.5 cm at a pressure of 100, 150 and 200 MPa. The produced briquettes were evaluated for different briquette properties like compressed density, relaxed density, relaxation ratio, compressive strength and shattering index. The results indicated that the use of pongamia cake creates an adverse effect on the properties of briquettes and hence use of pongamia cake as an additive is not recommended. Briquettes produced with blending ratio of PS:TS:PC = 60:40:00 at 200 MPa have better quality and met the briquette standards for commercial use. The proximate analysis, the ultimate analysis and the calorific value of briquettes produced with blending ratio of PS:TS:PC = 60:40:00 at 200 MPa were conducted and the results indicated that overall combustion properties of the briquettes were improved than the original raw materials; and better than the agro waste briquettes. Thus, this work proved that the blending of PS and TS gives better quality briquettes which can be used as fuel in several applications.

Keywords. Biomass; briquette; pongamia shell; tamarind shell; pongamia cake.

1. Introduction

In the last decades, the problem of CO_2 emission in to the atmosphere has driven an increasing use of biomass fuels in addition to conventional fuels in power generating industries [1]. Direct use of agricultural wastes as solid fuel is often difficult due to their varied physical and combustion characteristics. The process of compaction of wastes into a product of higher density than the original raw material is known as densification [2]. Briquetting is a compacting or densification process to increase the low bulk density of biomass to high density (from 150–200 kg/m^3 to 900–1300 kg/m^3) [3]. The production of biodiesel will provide new fuel resources to the small and middle scale industries worldwide and it could provide a direction for a cost effective alternative fuel [4]. In India, currently, 611 M tons/year of agricultural field wastes are generated of which 158 M tons (25%) can be considered unutilized based on current utilization patterns and thus are potentially available for a bio-based industry [5]. Biodiesel is a renewable fuel mainly produced from edible and non-edible oil seeds. India depends on other countries to fulfill its edible oil demand and hence the use of same for biodiesel is impractical. Therefore, the focus needs to be shifted to non-edible oilseed plants available in India. In India, *Pongamia pinnata* is one of the promising and potential non-edible oilseed plants having an annual production of 200 thousand tons [6]. With the calorific value of about 16.5 MJ/kg and the presumed availability (estimated as 40 wt.% of total *Pongamia pinnata* mass) of *Pongamia pinnata* shells, the energy potential of this biomass residue in India can be roughly estimated to be 1320 TJ per year. According to Indian horticulture statistics 2015, the annual production of tamarind fruits in India is 188 thousand tons [7]. With the calorific value of about 16 MJ/kg and the presumed availability (estimated as 15 wt.% of total fruit mass) of tamarind shells, the energy potential of this biomass residue in India can be roughly estimated to be 450 TJ per year. As with many other shell-type biomasses exhibiting good combustion properties, tamarind shells can be considered as

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Research Article

Evaluation of Physico-Mechanical-Combustion Characteristics of Fuel Briquettes Made from Blends of Areca Nut Husk, Simarouba Seed Shell and Black Liquor 81

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ABSTRACT. In order to utilize the agro residues and non-edible oil seed shells for the energy purpose, Areca Nut Husk (ANH) and Simarouba Seed Shell (SSS) are considered as raw materials and pulp production industry byproduct Black liquor (BL) as a binder for the production of fuel briquettes. The cylindrical briquettes were produced in four different blending proportions at 3 different pressures between 60 MPa to 80 MPa and various briquette properties were evaluated. The mathematical regression equations between the independent variables (blending proportion and compacting pressure) and briquette properties were developed. The R^2 values for the regression equation between independent variables and (Briquette properties) compressed density, relaxed density, relaxation ratio, shattering index and compressive strength were 0.945, 0.743, 0.646, 0.862 and 0.839 respectively. The results confirmed that briquette produced with a blending proportion of ANH:SSS:BL=60:40:00 at 80 MPa have better properties. Thus, combustion characteristics such as proximate analysis, ultimate analysis, calorific value were estimated for a briquette produced with a blending proportion of ANH:SSS:BL=60:40:00 at 80 MPa; and compared with Barley and Sawdust charcoal briquettes. The overall results conclude that better quality briquettes can be produced from the blends of ANH and SSS and can be used for several heating applications.

Keywords: fuel; biomass; briquette; agro residue; non-edible oil seed shell

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1. Introduction

Economy of many developing countries is majorly affected by importing fossil fuels and hence, biomass plays a key role to produce quality sustainable renewable energy fuel to replace fossil fuel (Karin & Rodrigo 2012). The scope of biomass crop is very high for energy production, which is producing about 8 times the world energy consumption per year, but effective utilization is very less. The biomass is carbon neutral and produces very less NO_x, SO_x emissions compared to fossil fuels (Yufu et al. 2011). Biomass raw materials have received more attention due to their tremendous diversity, which contain agricultural residues, food waste, paper, green waste, municipal solid waste, cardboard and other waste (Demirbas 2009). But direct combustion of biomass is inefficient because it produces lot of fly ash which leads to the release of unburnt carbon into the atmosphere, this difficulty can be overcome by briquetting (Paul, Rajan & Dasappa 2014). Antwi & Acheampong (2016) defined that briquetting is a process of compressing low density biomass residues to produce high density solid block, which can be used as a substitute for coal in boilers, furnaces and as a heat source for domestic cooking. Kalyani et al. (2016) concluded that biomass briquetting shows potential toward cleaner energy application and can emerge as a beneficial alternative for rural people and other uses.

Rajaseenivasan et al. (2016) discussed the performance of the various blends of neem powder and sawdust briquette, results indicate that strength of the briquette increased with the increase of neem powder but a small decrease in burning rate. Antwi & Acheampong (2016) used assorted sawdust and logging residues to produce better quality briquettes which helps to meet the current power requirement and reduces emissions as compare to fossil fuel.

Shiv et al. (2013) concluded that India has good tropical condition to grow non-edible seed-bearing trees. Biodiesel from non-edible seed is a possible substitute to reduce the usage of petroleum based diesel fuel and deaccelerate the CO_2 emissions. Mishra et al. (2012) stated that at present biodiesel is one of the most important fuel to replace petroleum diesel. Simarouba glauca seed is one of the

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Influence of Hot Extrusion on Mechanical Characteristics of Al6063-TiC Metal Matrix Composites

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Abstract- *Of all the aluminium alloys Al 6000 series is quite popular choice has a matrix material to prepare metal matrix composites owing to its better formability characteristics and option of modification of the strength of composites by adopting optimal secondary processes. The simplest and commercially used technique is the vortex or stir casting technique for casting process. The various reinforcements that have been tried out to develop the metal matrix composites are graphite, silicon, carbide, titanium nitride, tungsten, boron Al2O3, fly ash, Zr, Si3N4, TiB2, etc. Further meager information is available in the literature as regards the Mechanical properties of TiC reinforced with Al6063 base metal matrix composites. Hence, the present investigation is aimed at developing aluminium metal matrix composite consisting of Titania reinforcement in Al6063 alloy and to characterize the effect of reinforcement on Mechanical properties in as cast and as extrusion*

Keywords- Al 6063, TiC, Tensile and Microhardness, Metal Matrix Composites and Extrusion.

I. INTRODUCTION

A Composite material can be defined as a combination of two or more materials that results in better properties than those of the individual components used alone. In contrast to metallic alloys, each material retains its separate chemical, physical, and mechanical properties. The two constituents are a reinforcement and a matrix. The main advantages of composite materials are their high strength and stiffness, combined with low density, when compared with bulk materials, allowing for a weight reduction in the finished part. Metal matrix composites exhibit significant increase in stiffness and mechanical strength compared to matrix alloys, but suffers from lower ductility and inferior fracture toughness [2]. Metal matrix composites (MMCS) containing hard particulates offer superior operating performance and resistance to wear. In industrial processes, elements fabricated from MMC materials exhibits higher abrasive resistance leading to longer service life [3]. Metal matrix composites are gaining widespread popularity in several technological fields owing to their several advantages. Several interesting applications are piston, connecting rod, microwave filters, vibrator component, contactors, impellers and space structures [4].

1.1. Aluminium Alloy

Aluminium matrix composites have been indicated as the material having the large potential for innovation, as evidenced by increased use of these materials in sectors such as the aircraft or automotive industries. One of the first examples of applications of Aluminium matrix composite implemented for production was the piston with a composite insert reinforced with Saffil fibres, manufactured on an industrial scale by the squeeze casting method. Another field of applications of Aluminium matrix composites is the electrical engineering where, above all, the dimensional stability of radiators working at elevated temperatures is utilized [5]. The main technologies for fabrication of these materials are based on the powder metallurgy porous ceramic preform infiltration, pressure die-casting and squeeze casting methods. However, the manufacturing costs, and first of all the costs of machining, are still indicated as important limitations in the implementation of composites on a wider scale. Aluminium matrix composites have shown high mechanical properties such as high strength, high stiffness, wear resistance and good elevated temperature properties, when compared to the un-reinforced matrix alloy, which has facilitated the use of aluminium matrix composite in the following automotive drive shaft, electronic heat sinks, jet fighters, air craft firms, electronic instrument racks, ground vehicles brake rotors and satellite struts.

The Chemical Composition and Mechanical Properties of Aluminium 6063 alloy are represented in Table 1 and 2.

The Physical and Chemical Properties of Titanium Carbide are represented in Table 3 and 4.

Optimization of Physical and Rheological Properties in Extrusion Moulding of Recycled Combined HDPE-LLDPE Polymer Composite Pipes

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I. INTRODUCTION

The concept of utilizing filler materials to enhance polymer performance in Composite materials has drawn a great deal of research interest. The science and technology of polymer composites has created considerable excitement and expectations in the last five years. In addition to that, researches in this area have been focusing on the second phase embedded in the polymeric matrix that gives physical and chemical properties that cannot be achieved. Researchers have also discovered that incorporating the right amount of fillers into a polymer matrix pose a remarkable strength and flexibility and that industries should be able to integrate the outcome of their researches widely in high performance applications in the field of electrical engineering, aerospace, marine, high speed parts in engines, packaging and sports gadgets. With the extrusion methods of synthesis and tools for characterization, polymer composite science and technology is now experiencing explosive growth. Taking advantage of the need and the properties of the polymer composite material through this research a new enhanced composite is developed through addition of fillers and granules into polymeric matrix to cater for varied applications.

1.1 Classification of Plastics

Plastics are usually classified by their chemical structure of the polymer's backbone and side chains. Some important groups in these classifications are the acrylics, polyesters, silicones, polyurethanes, and halogenated plastics. Plastics can also be classified by the chemical process used in their synthesis, such as condensation, poly addition and cross-linking. There are two types of plastics. (i.e. Thermoplastic and Thermosetting Polymers.)

1.1.1 Thermoplastic Polymers

Thermoplastics are the plastics that do not undergo chemical change in their composition when heated and can be moulded again and again. Examples include polyethylene, polypropylene, polystyrene, polyvinyl chloride (PVC), and polytetrafluoroethylene (PTFE). Common thermoplastics range from 20,000 to 500,000 amu, while thermosets are assumed to have infinite molecular weight. These chains are made up of many repeating molecular units, known as repeat units, derived from monomer; each polymer chain will have several thousand repeating units.

1.1.2 Thermosetting Polymers

Thermosets can melt and take shape once and after they have solidified, they stay solid. In the thermosetting process, a chemical reaction occurs that is irreversible. The vulcanization of rubber is a thermosetting process. Before heating with sulfur, the polyisoprene is a tacky, slightly runny material, but after vulcanization the product is rigid.

1.2 Recycling of Plastic Materials

Thermoplastics can be remelted and reused, and thermosets plastics can be ground up and used as filler, although the purity of the material tends to degrade with each reuse cycle. There are methods by which plastics can be broken back down to a feedstock state. The greatest challenge to the recycling of plastics is the difficulty of automating the sorting of plastic wastes, making it labor intensive. Typically, workers sort the plastic by looking at the resin identification code, although common containers like soda bottles can be sorted from memory. Typically, the caps for PETE bottles are made from a different kind of plastic which is not recyclable, which presents additional problems to the automated sorting process. Other recyclable materials such as metals are easier to process mechanically. However, new processes of mechanical sorting are being developed to increase capacity and efficiency of plastic recycling. A first success in recycling of plastics is Vinyloop, a recycling process and an approach of the industry to separate PVC from other materials through a process of dissolution, filtration and separation of contaminations. A solvent is used in a closed loop to elute PVC from the waste. This makes it possible to recycle composite structure PVC waste which normally is being incinerated or put in a landfill. Vinyloop-based recycled PVC's primary energy demand is 46 percent lower than conventional by produced PVC. The global warming potential is 39 percent lower. This is why the use of

Influence of forging on Tribological Characteristics of Al6061-TiO_2 composite

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Abstract- *Al6061 matrix composite reinforced with 8wt%TiO2 particles were synthesized by stir casting technique. Cast Al6061 alloy and Al6061-8%TiO2 composites were hot forged at a temperature of 500oC. Both as cast and hot forged Al6061 alloy and Al6061-8%TiO2 composites were subjected to microstructural studies, microhardness test and friction and wear studies. Co-efficient of friction of hot forged composite reduces with addition of TiO2 in both as cast and hot forged conditions. An increase in load leads to drastic reduction in co-efficient of friction for both as cast and hot forged alloy and its composites. an increase in sliding velocity has increased the COF. Wear studies on as cast and hot forged composites have revealed that wear rate decreases with addition of TiO2 particulates in the matrix alloy at all loads and sliding velocities. It is observed that wear rate decreases with the increase in sliding distance and increases with increase in load.*

I. INTRODUCTION

Metal matrix composites (MMCs) constitute an important class of design and weight-efficient structural materials that encourage every sphere of engineering applications [1]. They can be tailored to have superior properties such as high specific strength and stiffness, increased wear resistance, enhanced high temperature performance better thermal and mechanical fatigue and creep resistance than those of monolithic alloys [2-3].

In recent years, the secondary processing of composites have been gaining impetus as these processes such as extrusion, rolling and forging have profound impact on improvement in mechanical properties, wear and corrosion resistance of the primarily processed composites.

Although abundant literature is available on primary processing and characterization of the composites, no published information is available as regards the effect of secondary process in particular the hot forging. Further, it is well known that among many secondary processes available hot forging process ensures the best mechanical properties. This is why forgings are almost always used where only the best, reproducible, statistically guaranteed and repeatable performances are required always [4].

On the other hand, TiO2 is very hard reinforcement and possess low density, high fracture toughness and excellent strength exhibits excellent wear resistance and antifrictional properties, has not gained much importance as reinforcement in aluminum alloys [5]. Further, meagre information is available in the literature as regards the mechanical, tribological or corrosion properties of metallic coated TiO2 reinforced aluminum based composites subjected to hot forging.

In the light of the above, the present investigation deals with synthesis and tribological characterization of as cast and hot forged Al6061-TiO2 composite.

II. EXPERIMENTAL METHOD

Aluminum alloy was melted in a 6kw electric resistance furnace. The melt was degassed using commercially available chlorine-based tablets (hexachloroethane). The molten metal was agitated by the use of mechanical stirrer rotating at a speed of 400 rpm to create a fine vortex.

8wt% of TiO2 (Electroless nickel coated) particles in powder form was added slowly into the vortex while continuing the stirring process. A stirring duration of 10min was adopted. The composite melt maintained at a temperature of 720ºC was then poured into preheated metallic moulds. The cast Al 6061 and Al6061-TiO2 composite was subjected to open die hot forging using 300T hydraulic hammer at Fitwell Forgings Pvt. Ltd, Tumkur, Karnataka, India. Both as cast and hot forged alloy and its composites were subjected to microstructure studies, hardness and friction and wear test. Microhardness tests were performed with a load of 100 g for duration of 10 seconds using a Vickers microhardness tester. Friction and wear behavior studies were carried out on both as cast and hot forged alloy and its composites using instrumented Pin-on Disc equipment. Pins of diameter 8mm and height 30mm were used as specimen while hardened steel

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Research paper

Sentimental analysis using recurrent neural network

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Abstract

Sentiment analysis has been an important topic of discussion from two decades since Lee published his first paper on the sentimental analysis in 2002. Apart from the sentimental analysis in English, it has spread its wing to other natural languages whose significance is very important in a multi linguistic country like India. The traditional approaches in machine learning have paved better accuracy for the Analysis. Deep Learning approaches have gained its momentum in recent years in sentimental analysis. Deep learning mimics the human learning so expectations are to meet higher levels of accuracy. In this paper we have implemented sentimental analysis of tweets in South Indian language Malayalam. The model used is Recurrent Neural Networks Long Short-Term Memory, a deep learning technique to predict the sentiments analysis. Achieved accuracy was found increasing with quality and depth of the datasets.

Keywords: Sentimental Analysis; Deep Learning; Neural Network; Recurrent Neural Network.

1. Introduction

Facts and opinions are the two major types of textual information. Expressions that are objective regarding an entity or event are called as Facts. Likewise, expressions that are of subjective nature are called Opinions. Opinions are so important that whenever a decision is to be made others opinions are always taken into consideration. It applies not only to an individual but also to organisations. The word sentiments or opinion is of great importance to humans. "What others think about" is the primary concern of an individual in society. When it comes to business impact is still bigger which intends to significant decisions. The word Opinion Mining, Sentimental Analysis is more relevant to future than the past. It has become the monetary measure for most probable business spanning out areas from product to politics.

E-commerce and social media have raised the level of sophistication of online users. There are varieties of platforms available on the Internet to express the opinions, share the ideas, emotion and interests. Twitter, Blogs, Facebook and Google Plus are most popular social media platform where instant views are broadcasted. Prevailing factors such as availability of opinion mining systems which can automatically classify and summarises users' reviews have also marked the importance of sentimental analysis. Finding opinion orientation in a piece of text concerning a topic is called sentimental analysis. The semantic direction of the content is critical information in the reviews or opinions, but current search engines are not providing it.

Sentimental Analysis being the research topic can be dated back on to 2001. Since then the major work was carried out in English, the language is widely accepted. Natural language processing gained the recent interest of researchers. Taking Malayalam- south Indian language as a case study, according to census 2001, 33,066,392 of Indian population speaks the Malayalam language. In the early days of last decade, Malayalam Unicode has widely adopted user-generated contents like websites, forums and blogs. There is an exponential increase in the amount of user-generated content in Malayalam as Malayalam Unicode key inputs are supported by almost all latest handheld devices currently.

In this paper, a sentimental analyser for the Malayalam Language based on neural network is proposed. The analyser classifies the positive and negative sentiments associated with each sentence. The analyser is based on recurrent neural network and long short-term memory that mimics the learning system in human brains. Layered approach of a neural network is to attain a much higher level of accuracy. The training of the model happens in several folds until target accuracy is achieved.

2. Related works

With the advent of machine learning algorithms, machines were likely to interpret natural languages with much greater accuracy. Statistical machine Translations were widely used in the natural language Processing [1]. Development of the parallel corpus was the main method used in statistical machine translation [2]. Machine Learning algorithms can be best evaluated while using it to parse Garden Path sentences or the sentences having complex structures[3].In the area of Sentimental Analysis, there are basically two basic approaches in sentimental analysis namely lexicon based and machine learning. Algorithms based on lexicon approaches compares sentiment words and seed words [4]. Corpus and Dictionary based are the prominent lexicon based algorithms. These approaches are relative simple to implement since Dictionary is already available for almost all languages. But it more suited for textbook Language rather than Natural Language. Supervised and Unsupervised algorithms [5, 6] categorization showed much differentiation in results and methods used in training and classifying datasets.

Supervised algorithms were based on features that need to be specified beforehand. The probabilistic model of Naïve Bayesian is one of the most popular algorithms [7]. Based on these features identified; rules are formed that classify the results. There are two phases of feature extraction, first, primary extraction of web data

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A WRAPPER BASED FEATURE SELECTION APPROACH USING BEES ALGORITHM FOR EXTREME RAINFALL PREDICTION VIA WEATHER PATTERN RECOGNITION THROUGH SVM CLASSIFIER

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ABSTRACT

Rainfall prediction is a major problem in metrological department and it is closely associated with the economy and life of human. Accuracy of rainfall prediction is a very important for countries like india, because Indian economy is mainly dependent up on the agriculture. Most of the statistical methods are unsuccessful due to dynamic nature of atmosphere. In this paper, SVM classifier is used for classification, before SVM classifier, bees algorithm is used for feature selection. Keeping all the features and instances in the training set is not a good approach for better classification because all the features are not contributing more information during classification, removing those features will not affect any classification accuracy. The experimental result shows that the proposed method provides better detection rate, false positive

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Software Predictive Classification Using Relational Association Rules and Naive Bayes Approach

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ABSTRACT

Software quality is taken into account to be of nice importance within the space of software system engineering and development. So as to extend the potency and also the quality of software system modules, software system defect predictionis employed to spot defect prone modules and this helps in achieving high software system responsibility. Software fault prediction is usually a posh space of analysis and software system practitioners and researchers have applied various ways that to predict wherever the fault is probably going to occur within the software system module and their variable degrees of success. These prediction studies ends up in fault prediction models and it permits software system personnel to target the defect free software system code, thereby leading to software system quality improvement and using the higher utility of the resources. During this Paper style Approach for software system. Defect Prediction is adopted.

Keywords: Fault, Quality, Prediction, Software.

1. INTRODUCTION

Software defect prediction is often a herculean space of analysis and software system practitioners and researchers have allotted various ways that to predict wherever the fault is probably going to occur within the software system module and their varied degrees of success. These prediction studies leads to fault prediction models and it permits software system personnel to target the defect free software system code, thereby leading to software system quality improvement and using the system quality comes into image, then software significant role. Software system is represented. This analysis work primarily concentrates on the ASCII text file of software system systems and not their functions or behavior of the system. The prediction of software system defects at AN early stage can build the corporate professionals to deliver a high quality product to the tip customers, because the value incurred for the event play a significant role.

2. RESEARCH METHODOLOGY

To improve software system quality, it's essential for software system developers to spot defective software system modules at any section of software system Development Life Cycle (SDLC). Several machine learning based mostly classification models were designed and area unit still obtaining improved to unravel the matter of defect prediction. The effectiveness of those models area unit influenced chiefly by 2 key quality information of factors – set of software system metrics won't to build the models and proportion of defect-prone instances within the software system measure data set. During this thesis chapter, a classification model is projected that could be a combination of relative association rules and ancient Naive Thomas Bayes technique. The projected classifier discovers relative association rules on the metrics information supported user outlined confidence & support throughout coaching stage and integrates with ancient Naive Thomas Bayes at testing stage to predict whether or not a software system module is flawed or non-defective.

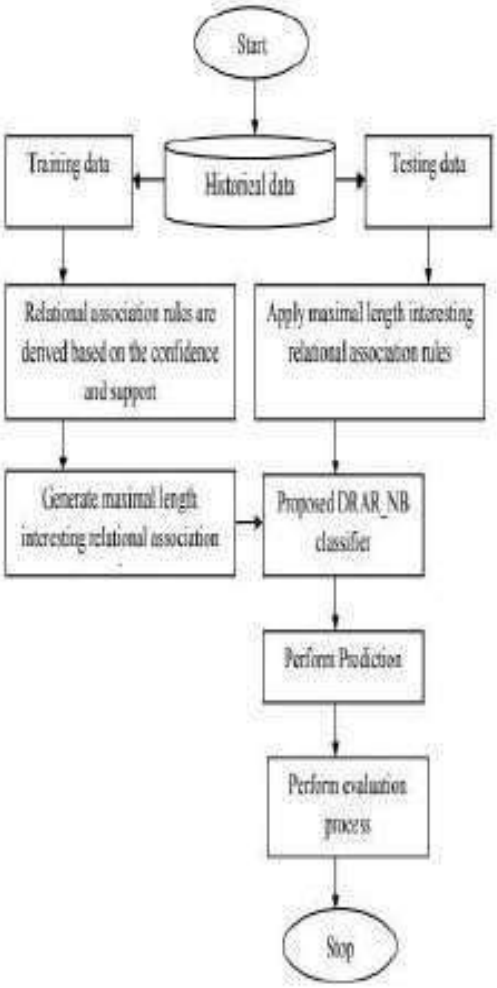

Figure 1 Proposed Design approach for software detection process

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An Optimize Genetic Based Routing Protocol for QoS in MANET

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ABSTRACT

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Mobile Ad hoc Networks is autonomous, multi hop network in which Quality of Service (QoS) for a network is measured in terms of the exact amount of data which a network transfers from one place to another during a certain time. QoS for Mobile Ad hoc Networks is a distinct task due to limited resource and dynamic topology environment. The link state information in the network such as bandwidth, node energy, error rate, jitter and delay should be accessible and manageable. The proposed work is to show a genetic based routing approach to optimize the routing in MANETs. The genetic approach will generate an optimized path on the basic of congestion over the network. The result path in NS2 will improve the data delivery over the network. The paper is to study about MANET, QOS and tries to develop a network on which genetic algorithm is applied to generate an optimized path.

Key words : MANET, QOS, Genetic, Delivery, Routing, Optimized

1. INTRODUCTION

A network which is a collection of self configurable mobile nodes with no fixed infrastructure is referred as the mobile ad-hoc network. MANET have a dynamic topology as the nodes are roaming in the network continuously therefore, routing is a critical and challenging task due to high node mobility.

Genetic based approach is developed by the linguistic variables namely average packet drop rate, average packet delivery ratio; average end-to-end delay and average hop count. As routing is highly challenging task for MANET due to high node mobility various routing protocols have been developed where dynamic optimization in routing is utilized for finding paths that satisfy some optimality criterion (shortest distance, minimal bandwidth usage and minimum delay) and constraints (limited power and limited capability of wireless links). Proactive, reactive and hybrid are the major categories of routing protocols.

The QOS parameters of MANET is done by GA application. As the designing of a QOS routing approach is the most challenging issue in MANET therefore; GA is utilized for the selection of the most optimal (fittest) route from source to destination, from a set of routes having their corresponding connectivity qualities. The GA based QOS routing methodology in the following sections selects the fittest route and optimizes various performance parameters like average packet delivery ratio, average packet drop rate, average end-to-end delay and average hop count. Simulation study justifies that optimized genetic stowed approach to potent QOS in MANET improves the performance factors when compared with conventional routing approach.

1.1 QOS PROTOCOL PERFORMANCE ISSUE/FACTORS

Even after overcoming the challenges of MANET, a number of factors [26] have major impacts while evaluating the performance of QoS protocols. Some of these parameters are of particular interest considering the characteristics of the MANET environment. They can be summarized as follows:

Node mobility: This parameter has been the focus of research studies such as [11]. This factor generally encompasses several parameters: the nodes' maximum and minimum speed, speed pattern and pause time. The node's speed pattern determines whether the node moves at uniform speed at all times or whether it is constantly varying, and also how it accelerates, for example, uniformly or exponentially with time. The pause time determines the length of time nodes remain stationary between each period of movement. Together with maximum and minimum speed, this parameter determines how often the network topology changes and thus how often network state information must be updated.

Network size: Since QoS state has to be gathered or disseminated in some way for routing decisions to be made, the larger the network, the more difficult this becomes in terms of update latency and message overhead. This is the same as with all network state information, such as that used in best-effort protocols [3];

Node transmission power: Some nodes may have the ability to vary their transmission power. This is important, since at a higher power, nodes have more direct neighbors and hence connectivity increases, but the interference between nodes increases as well. Transmission power control can also result in unidirectional links between nodes, which can affect the performance of routing protocols. This factor has also been studied extensively, e.g. [4, 3, 2]; Channel characteristics: As detailed earlier, there are many reasons for the wireless channel being unreliable, i.e. many reasons why bits, and hence data packets, may not be delivered correctly. These all affect the network's ability to provide QoS.

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A SURVEY ON UNDERWATER SENSOR NETWORKS

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ABSTRACT

Wireless sensor networks (WSN) behave as a digital skin, providing a virtual layer where the information about the physical world can be accessed by any computational system. In our earth 75% covered by water that could be river and ocean also. The underwater sensor network are enabling technology and become more and more popular for monitoring vast area of oceans. Underwater sensor Networks consist of a variable number of sensors that are deployed to perform monitoring tasks over a given area. The UWSNs provide continuous monitoring for various applications like pollution monitoring, submarine detection, disaster prevention etc.

In this paper discuss an invaluable resource for realizing the vision of the Internet of Things (IoT). we will focus on the issues that take place at the network level and applications and challenges of underwater sensor, we also discuss the main problem or issue in underwater sensor network.

Keywords- Internet of Things; Internet; UWSN, UWASNs.

1. INTRODUCTION

In the upcoming Internet of Things (IoT), the everyday objects that surround us will become proactive actors of the Internet, generating and consuming information. The elements of the IoT comprise not only those devices that are already deeply rooted in the technological world (such as cars or

fridges), but also objects foreign to this environment (garments or perishable food), or even living beings (plantations, woods or livestock). By embedding computational capabilities in all kinds of objects and living beings, it will be possible to provide a qualitative and quantitative leap in several sectors: healthcare, logistics, domotics, entertainment, and so on. In fact, one of the most important elements in the IoT paradigm is wireless sensor networks (WSN). The benefits of connecting both WSN and other IoT elements go beyond remote access, as heterogeneous information systems can be able to collaborate and provide common services. This integration is not mere speculation, but a fact supported by several international companies.

Oceans represent more than 2/3 of the Earth's surface. Underwater wireless sensor networks (UWSNs) have gained the attention of the scientific and industrial communities due their potential to monitor and explore aquatic environments. UWSNs have a wide range of possible applications such as to monitoring of marine life, pollutant content, geological processes on the ocean floor, oilfields, climate, and tsunamis and seaquakes; to collect oceanographic data, ocean navigation assistance, in addition to being utilized for tactic surveillance applications

Networks of sensors and AUVs, such as the Odyssey-class AUVs, can perform synoptic, cooperative adaptive sampling of the 3D coastal ocean environment.

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ADVANCED IMAGE STEGANOGRAPHY BY MEANS OF SECRET-PIECE NOTICEABLE MOSAIC IMAGES BY NEARLY-REVERSIBLE COLOR TRANSFORMATION

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ABSTRACT

Another photograph steganography framework is proposed, which makes regularly from a discretionarily picked target picture an expected mystery territory unmistakable mosaic picture as a veil of a given enigma picture. The mosaic picture is yielded by disconnecting the confound picture into portions and changing their shading attributes to be those of the bits of the objective picture. Skilled systems are proposed for use in the shading change process with the target that the mystery picture might be recouped about lossless. The strategy not just has a stenographic impact obliging for secure keeping of conundrum pictures, yet besides gives another approach to manage comprehend the bother of concealing riddle pictures with colossal information volumes into target pictures. Amazing trial happens demonstrate the believability of the proposed strategy. The simulation output is taken by using mat lab software. The algorithm achieving good accuracy and integrity, noise resistance compared to the exiting method. Another image steganography technique has been proposed, which not exclusively can be utilized for secure keeping of perplex pictures yet likewise can be another choice to grasp the bother of masking pictures with goliath information volumes behind cover pictures. By the use of fashioned pixel shading change and moreover able treatment of surges/undercurrents in the changed over pixels tones, conundrum piece obvious mosaic pictures of high similarities to self-definitively picked target pictures can be made with no need of an objective picture database.

Keywords: image steganography, secret image, encryption, decryption.

1. INTRODUCTION

Today picture security is an essential issue while transmitting pictures over the web for different applications, for example, for online individual photos, gatherings, private real records, military picture database, storing up frameworks, and remedial imaging structures.

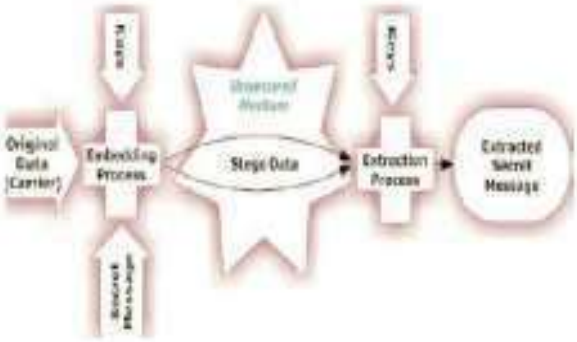

Figure 1: architecture of image steganography

These photographs may contain private or described data with the target that they ought to be shielded from spillages/hardship amidst transmissions. Along these lines different systems have been proposed for

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IRIS RECOGNITION SYSTEM USING MATLAB

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ABSTRACT

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A biometric system provides automatic identification of a human being based on some unique physical or behavioral feature of the individual. The world today is making rapid progress in its quest to realize the dream of a creating a user friendly, customer caring ambience. With every new dream comes the nightmare of a security of the system lapse which may allow the misuse of the system. A major success in trying to bridge the advent of a security lapse is the use of biometrics. Biometric technologies such as fingerprint, facial recognition, and iris recognition are deployed for verification and/or identification in applications such as access control, border management, and Identification systems. Iris is regarded as the most reliable and accurate biometric identification system being used in modern world. Most commercial iris recognition systems use patented algorithms developed by Daugman's and these algorithms are able to produce perfect recognition rates. However, published results have usually been produced under favorable conditions, and there have been no independent trials of the technology. The work presented in this paper developing an open-source" for segmentation and normalization of human iris image for iris recognition system using Hough Transforms for iris image segmentation and Daugman's Rubber Sheet Model for image normalization with empirical mode decomposition(EMD) in MATLAB.

Keywords: MAT LAB, Image processing, EMD, Daugman's Rubber Sheet Model, SVM

1. INTRODUCTION

Biometrics refers to statistical analysis of the physical and behavioral traits inherent in human beings.

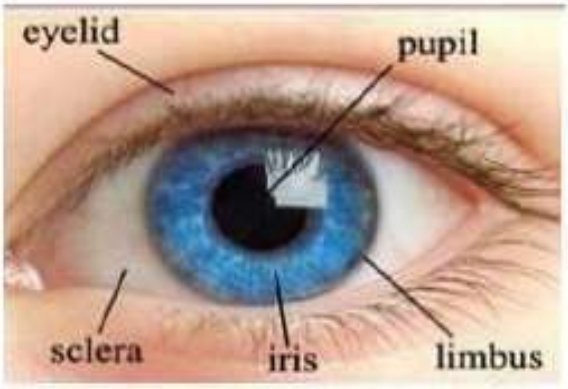

Figure (1): normal structure of human eye

Iris recognition is a biometric used for purposes of identification and security. The complexity, randomness, and the proven stability of iris patterns over one's lifetime makes it an ideal candidate for biometric identification. A challenging, yet crucial step in the iris recognition process is iris segmentation. The circular Hough transform is used to detect the iris and pupil. First, preprocessing steps involving morphology and filtering takes pace. Then, the outline of the eye is found using the Canny edge detector. The edge image is then transformed to

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Evaluation of Web Security Mechanisms Using Vulnerabilities and Attack Injection

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ABSTRACT

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The methodology is based on the idea that injecting realistic vulnerabilities in a web application and attacking them automatically can be used to support the assessment of existing security mechanisms and tools in custom setup scenarios. To provide true to life results, the proposed vulnerability and attack injection methodology relies on the study of a large number of vulnerabilities in real web applications. In addition to the generic methodology, the paper describes the implementation of the Vulnerability & Attack Injector Tool (VAIT) that allows the automation of the entire process. We used this tool to run a set of experiments that demonstrate the feasibility and the effectiveness of the proposed methodology. The experiments include the evaluation of coverage and false positives of an intrusion detection system for SQL Injection attacks and the assessment of the effectiveness of two top commercial web application vulnerability scanners. Results show that the injection of vulnerabilities and attacks is indeed an effective way to evaluate security mechanisms and to point out not only their weaknesses but also ways for their improvement.

Keywords: Security, fault injection, internet applications, review and evaluation.

1.INTRODUCTION

Almost everything is stored, available or traded on the web. Web applications can be personal websites, blogs, news, social networks, web mails, bank agencies, forums, e-commerce applications, etc. The omnipresence of web applications in our way of life and in our economy is so important that it makes them a natural target for malicious minds that want to exploit this new streak. The security motivation of web application developers and administrators should reflect the magnitude and relevance of the assets they are supposed to protect. Although there is an increasing concern about security (often being subject to regulations from governments and corporations), there are significant factors that make securing web applications a difficult task to achieve:

1. The web application market is growing fast, resulting in a huge proliferation of web applications, based on different languages, frameworks, and protocols, largely fueled by the (apparent) simplicity one can develop and maintain such applications.

2. Web applications are highly exposed to attacks from anywhere in the world, which can be conducted by using widely available and simple tools like a web browser.

3.It is common to find web application developers, administrators and power users Without the required knowledge or experience in the area of security.

4.Web applications provide the means to access valuable enterprise assets. Many times they are the main interface to the information stored in backend databases, other times they are the path to the inside of the enterprise network and computers.

To fight this scenario we need means to evaluate the security of web applications and of attack counter measure tools. To handle web application security, new tools need to be developed, and procedures and regulations must be improved, redesigned or invented. Moreover, everyone involved in the development process should be trained properly. All web applications should be thoroughly evaluated, verified and validated before going into production. However, these best practices are unfeasible to apply to the hundreds of millions of existing legacy web applications, so they should be constantly audited and protected by security tools during their lifetime. This is particularly relevant due to the extreme dynamicity of the security scenario, with new vulnerabilities and ways of exploitation being discovered every day. This paper proposes a methodology and a tool to inject vulnerabilities and attacks in web applications. The proposed methodology is based on the idea that we can assess different attributes of existing web application security mechanisms by injecting realistic vulnerabilities in a web application and attacking them automatically. This follows a procedure inspired on the fault injection technique that has been used for decades in the dependability area. In our case, the set of "vulnerability" þ "attack" represents the space of the "faults" injected in a web application, and the "intrusion" is the result of the successful "attack" of a "vulnerability" causing the application to enter in an "error. In practice, a security "vulnerability" is a weakness (an internal "fault") that may be exploited to cause harm, but its presence does not cause harm by itself. Conceptually, the attack injection consists of the introduction of realistic vulnerabilities that are afterwards automatically exploited (attacked). Vulnerabilities are considered realistic because they are derived from the extensive field study on real web application vulnerabilities presented and are injected according to a set of representative restrictions and rules. The

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Botnet Identification with Malware File Detection & Blocking

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ABSTRACT

Botnets are the foremost common vehicle of cyber-criminal activity. They're used for spamming, phishing, denial-of-service attacks, brute-force cracking, stealing non-public data, and cyber warfare.

In this work, we offer basically these contributions:

We use traffic monitoring technique to gather traffic flow information. We implement an inference algorithm for botnet detection. We develop a program to detect & block the malware file. We detect the original IPv4 address of the bot in the botnet.

Key words – Botnets, Server, Client, Cyber Security, Network Security, Bot Master, Servent Bot, Traffic Monitoring, Course Grained, C&C (Command & Control), DoS (Denial of Service), DDoS (Distributed Denial of Service), GUI (Graphical User Interface), HTTP (Hyper Text Transfer Protocol) IPv4 (Internet Protocol version 4), P2P (Peer to Peer), TCP (Transmission Control Protocol), UDP (User Datagram Protocol).

1. INTRODUCTION

Network Security consists of the policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources.

Cyber Security refers to the technologies and processes designed to protect computers, networks and data from unauthorized access, vulnerabilities and attacks delivered via the Internet by cyber criminals.

One of the most popular threats is the Denial-of-Service (DoS) attack, which can be broadly categorized as a *volumetric* attack, where the target destination is overwhelmed by a huge number of requests, eventually leading to the impossibility of serving any of the users.

In particular, with a Distributed DoS (DDoS) attack, such a huge number of requests is produced in parallel by a net of robots. According to one of the classical DDoS representations, a relatively large ensemble of machines acts cooperatively under the supervision of one or more coordinators.

Botnets are networks of compromised, remotely controlled computer systems. So far, their main purposes include the distribution of spam e-mails, coordination of distributed denial-of-service attacks, and automated identity theft, e.g. credit card information and general banking data for financial fraud. Their presence is supported by the increasing global availability of broadband access to the Internet for network-enabled devices, which at the same time increases the value of the assets they threaten.

A botnet is a collection of Internet-connected user computers (bots) infected by malicious software (malware) that allows the computers to be controlled remotely by an operator (BOT MASTER) through a Command-and-Control (C&C) server to perform automated tasks, such as to steal personal data and passwords, attack public and private networks, exploit users' computing power and Internet access, and carry out Distributed Denial of Service (DDoS) attacks.

Botnets are a complex and continuously evolving challenge to user confidence and security on the Internet. Combating botnets requires cross-border and multidisciplinary collaboration, innovative technical approaches, and the widespread deployment of mitigation measures that respect the fundamental principles of the Internet.

A number of issues must be considered when addressing the problem of botnets. These include:

1.1 Geographic dispersion

Botnets can be widely spread across distance and geography, with infected computers and botnet herders operating in different countries and locations. Same applies to the C&C servers. As such, botnets are transnational and require a collaborative approach to detection, mitigation, and law enforcement.

1.2 Impacts on user rights

It is important to consider the impact on fundamental user rights and expectations when approaching strategies to combat botnets. Overly broad botnet-mitigation strategies, such as blocking all traffic from an infected network, could unintentionally keep innocent users from accessing the Internet and exercising rights, such as freedom of expression and opinion. In addition, some methods to detect and trace botnets, such as the indiscriminate collection of network traffic data, could violate the privacy of legitimate Internet users.

1.3 Impacts on technology use and innovation

Some technical and legal mitigation strategies, such as restricting access to suspected infected networks, may have negative consequences on the openness,

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Research paper

Analysis of transformer less inverter for PV applications

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Abstract

To enhance the effectiveness and decrease the cost of a Photovoltaic (PV) system, the utilization of transformer less PV inverters is an option of expanding interest. In any case, this topology should be considered in detail, as it shows a few issues like effectiveness degradation and safety issues identified with the galvanic association between the system and the PV generator.
In this research paper, a review of standalone and grid-connected PV inverter structures has been done. From one viewpoint, a few options in light of established structures have been introduced. At last parasitic capacitance in PV arrays and leakage current produced from PV systems are examined.

Keywords: *Photovoltaic; Transformer Less Inverters; Grid Connected Systems; Leakage Current; Parasitic Capacitance.*

1. Introduction

The improvement of recent energy sources is constantly upgraded as a result of the basic circumstance of the chemical industrial fuels, for example, oil, gas and others. In this manner, the sustainable power sources have turned into a more vital supporter of the aggregate energy expended on the globe. Truth be told, the interest for sun based vitality has expanded by 20% to 25% in the course of recent years [1]. The marketplace for PV systems is becoming around the world.
Total installed Renewable Energy Sources (RES) capacity India is shown in Fig.1. PV is presently, after hydro and wind control, the third most imperative sustainable power source as far as all around introduced limit. The development rate of PV amid 2013 came to very nearly 70%, a remarkable level among every renewable innovation.
The 80 billion kWh energy yield is adequate to cover the yearly power supply needs of more than 20 million family units on the globe with a specific end goal to get advantage from the uses of PV systems, explore exercises are being led trying to increase advance change in their cost and effectiveness. There are numerous kinds of sustainable power sources, for example, wind, hydroelectric and a standout amongst the most famous is the energy from sun.
Fig.2 demonstrates the consequence of a worldwide energy office learn about the world's energy utilization. Today, the sun oriented energy covers just 0.5% of the world's power utilization, however will end up a standout amongst the most imperative sustainable power sources later on. In 2050, it has been evaluated that (30 – 60) Terawatt power every year being required and nearby solar system is the greatest supporter.
The requirement for a cleaner domain and the constant increment in vitality needs makes decentralized sustainable power source creation more vital. This ceaselessly expanding power utilization over-burdens the distribution grids and in addition the power stations, consequently negatively affecting force accessibility, safety and excellence. One of the answers for beating this is the Distributed Generation (DG). DG's are utilizing sustainable power sources like sunlight based, wind or hydro have the preferred standpoint that the power is delivered in closeness to where it is expended.
In recent years solar technologies have seen a precipitous reduction in costs and a dramatic rise in operative efficacy. Solar power has become the go to solution for those looking for clean and environmentally friendly sources of energy, as well as a viable alternative to fossil fuels and nuclear. The chief advantage of Photovoltaic technologies is the simplicity of their design. By having no moving parts, PV equipment possesses a significantly long operative lifetime and require very little in terms of maintenance. Currently, PV panels find themselves used in all aspects of modern life; from aerospace industry applications to supplying energy to remote sites. PV panels are increasingly coming into contact with the general public as, more and more, public opinion shifts towards identifying viable sources of green energy.

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Better Robustness H.264 Video Transmission and Reception with Dynamic Scheduler for Optimistic Routing using Super Resolution

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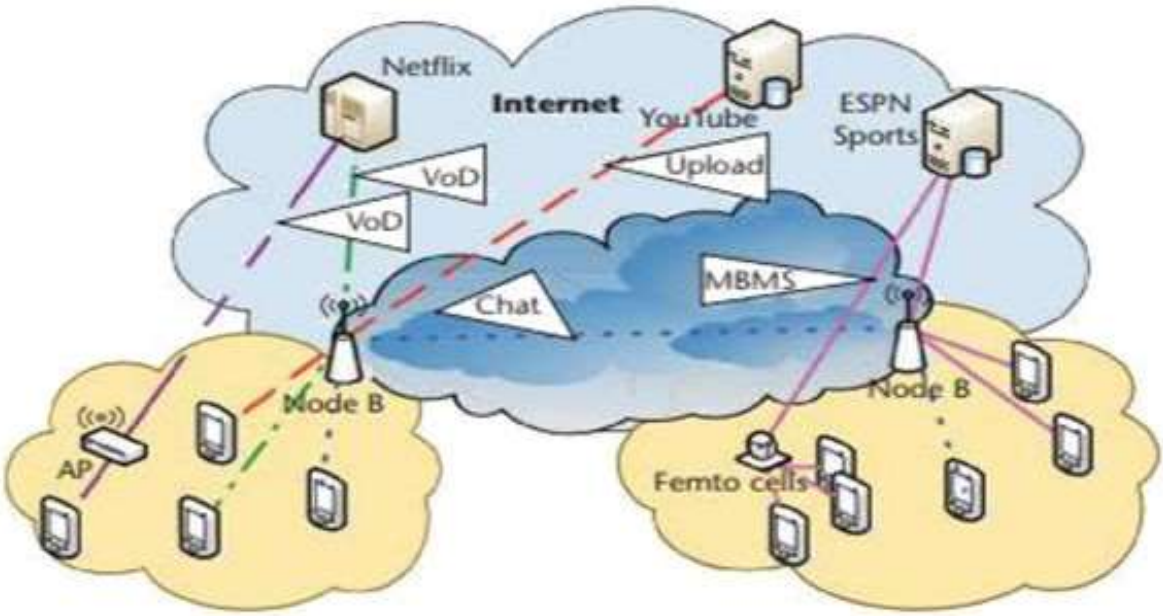
Abstract—Versatile video spilling is quickly picking up fame because of the expansion in the quantity of cell phones, for example, advanced cells and tablets. Accordingly, the measure of video movement through cell phones has expanded quickly. Web substance and IP based TV has expanded the transfer speed prerequisite of 4G systems. In this paper we propose the incorporation of standard calculations for video transmission over LTE and the execution comes about for different parameters are displayed. This includes the joining of standard calculations like H264 Video Codec (Source Coding) and Channel Coding alongside Scheduler considering the needs of the parcel/payload. To enhance video quality, post handling channel along the super-determination scanty regularization system is utilized. RF channels are used to diminish the commotion. Parameters tried are outline rate, bit blunder rate, PSNR and mean squared mistake. Transmission time, parcel conveyance proportion, jitter throughput are a portion of the essential estimations watched.

I. Introduction

Video information needs unique treatment considering enormous volumes as well as because of the time affectability of the media information that is being transmitted. Time postponement or idleness, jitter and bundle misfortune can be considered as the primary QoS parameters identified with information transmission over a system. Transmission, spread, arranges lining, and preparing delays are the four noteworthy defers that add to the system information inertness. Bundle quality may fluctuate broadly with the parcels transmitted for various reasons. A specific and equivalent measure of parcel misfortune may prompt different degrees of misfortune in the perceptual nature of two recordings relying upon the video content, video codec utilized, holder utilized, piece rate and gathering of pictures (GOP).

4G advancements, for example, LTE-A permit expanded bitrates, transporter collection, committed multicast channel for video downlink, agreeable interchanges, different information, various yield (MIMO) and other empowering innovations. This makes LTE an alluring alternative to serve the expanding requests for video transmission. Femto cells are utilized to off-stack movement from base stations (developed Node B [ENB]) in home or independent company settings. Wi-Fi associations can likewise be utilized as a part of hotspots, for example, a bistro or different areas for an indistinguishable reason from appeared in fig1.



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Adaptive Hexagonal Search Algorithm based Motion Estimation for Video Encoding

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Abstract---Motion estimation plays an important role in the video encoding process. Computational complexity and motion estimation time are the main factors which affect the performance of the video encoding process. The block-based motion estimation algorithms are the widely used methodology and its search patterns have more impact on searching speed and distortion performance in the video encoding process. In this paper, the adaptive hexagonal search (AHS) based motion estimation algorithm is proposed for efficient video encoding systems with the help of two hexagon shaped search patterns such as Large Hexagon Search Pattern (LHSP) and Small Hexagon Search Pattern (SHSP). The search process of AHS initiates from the center of the search window using LHSP which is continuously utilized until the center position of LHSP satisfies the minimum bounding distortion (MBD). The search pattern is changed from LHSP to SHSP when the position of MBD within the boundary of LHSP. During this process, the obtained MBD point is considered an optimal solution for the motion vector. Finally, the motion vector is obtained based on the MBD from the SHSP. The adaptive hexagonal search based motion estimation is implemented in the MATLAB version 2018 software tool. The proposed AHS methodology is compared with the FSA, DS, ABC-BM algorithms in terms of PSNR and the experimental results showed that the proposed AHS based motion estimation improved the performance a averagely 24.27% in terms of PSNR.

Keywords---Large hexagonal search pattern, Motion estimation, Small hexagonal search pattern, Sum o absolute differences, Minimum bounding distortion, Zero motion prejudgment.

I. Introduction

The process of minimizing the repetitious data representation is defined as data compression which is utilized for reducing the storage cost. The video coding is an essential process in visual communication application where the data compression ratio is an essential performance measure. The vast quantity of tempora correlation among the adjacent frames is defined as temporal redundancy, which needs to appropriately recognize and rejected to achieve the video coding [1]. In most of the motion compensated video coding standards, the motion estimation (ME) placed a vital role. Motion estimation (ME) plays a vital role in most o the motion-compensated video coding standards [2]. It is a process for estimating Motion Vectors (MV) for a current macro block that is transformed from the reference frame to the current frame in a video sequence coding. Block Matching Algorithm (BMA) is a temporal redundancy elimination technique which is used fo finding the correlation between two or more consecutive frames for video compression. BMA has been utilized in different video coding standard techniques such as MPEG-1/2/4 [3–5], H.261/3 [6, 7], and H.264/ AVC [8] These video coding techniques are utilizing their high compression efficiency. Among all of these existing block-matching search algorithms, the comprehensive method, Full Search (FS) obtain the best accuracy fo motion estimation by processing all possible blocks within the search window [9].

Fast search algorithm significantly improves the encoding speed with negligible loss in image quality. There are many fast search techniques that have been proposed such as three step search (TSS) [10], New Three Step Search (NTSS) [11], Four Step Search (FSS) [12], and Hexagon-Based Search (HEXBS) [13].

The above methodologies help to minimize the number of candidates' blocks by finding the appropriate possible location of candidates' blocks. Among that, fixed search pattern methodology minimizes the number o candidates effectively, which leads to minimize the computational complexity and load. Even though, the existing algorithms help to minimize the number of candidate blocks, when the motion not matching with the predefined pattern. [14].

To avoid problems in the existing search algorithm, diamond search [15], the Enhanced Diamond Search (EDS) [16], the cross-diamond search [17], new cross diamond search [18, 19], UMHexagonS search [20] and

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Polyaniline/Nickel Oxide –a Core/Shell Structured Nanocomposite as Electrode Material in Supercapacitor Applications

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Abstract

In this paper, the supercapacitor electrode properties of a core/shell multifunctional nano composite, with unique physiochemical properties, is presented. The synthesis method of polyaniline /NiO (PAESNI) with polyaniline (PANI) shell on NiO core, their morphological studies including Scanning Electron Microscopy (SEM) and Transmission Electron Microscopy (TEM) to know their surface chemistry and most important property required for explaining super capacitor properties like Cyclic Voltammetry (CV) and Charging Discharging studies (GCD) are explained. TEM and SEM images reveal that the polyaniline shells as-prepared are narrowly dispersed on NiO nano particles and possess uniform morphologies. CV shows that the PAESNI exhibits multiple redox behaviour during potentiodynamic cycling in acidic media at different potentials. A simple and cost-effective preparation technique with hierarchical structure and good capacitive behaviour (362 Fg-1 at 1 Ag-1 current density and 372 Fg-1 at 20 mVs-1 scan rate), Energy density (50.2 WhKg-1 at 1 Ag-1 current density), Power density (2 kWKg-1) and 99% coulombic efficiency at 4 Ag-1 current density encourages its commercial use as a high performance supercapacitor electrode.

Selection and Peer-review under responsibility of the Conference Committee Members of International Conference on Advances in Energy Research 2015 (ICAER-2015).

Keywords: Polyaniline; Nano composite; Nickel Oxide; Core/shell; Supercapacitor

1. Introduction

Supercapacitors have emerged as energy storage devices by virtue of their low cost, environment friendly nature, long lifespan, and their high power density [1]. Based on the type of charge storage mechanism, supercapacitors are categorized into two classes: electrochemical double layer capacitors (EDLCs) where electric charge is stored in a

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Praseodymium doped KDP Single Crystal Grown by Different Techniques and its Optical, SHG and Dielectric Studies : A New NLO Crystal

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Abstract : Praseodymium doped Potassium dihydrogen Orthophosphate (KDP) single crystals were grown using different techniques - SR method, Seed Rotation and Slow Evaporation. The single crystal grown by SR method on unidirectional {101} pyramidal face was around 150 mm in length and 16 mm in diameter. Kurtz powder technique is used to determine the SHG efficiency. It is observed that relative SHG conversion efficiency of crystal grown by SR method is greater compared to other techniques. Optical transmission spectra was recorded in the wavelength region 200 to 1100nm for the grown crystals using Perkin-Elmer Lambda 35 UV-Vis spectrophotometer. It is found that percentage transmission of crystal grown by SR method is more as compared to other techniques. The electronic band transitions was studied from the plot of photon energy (hν) versus $(\alpha h\nu)^2$ and the value of band gap energy (E_g) has been calculated.
The dielectric constant, dielectric loss and a conductivity of the grown crystals were studied as a function of frequency and the results are discussed. The addition of Praseodymium improves the quality and transparency of crystals, which shows the suitability of the grown NLO material for optical applications.
Keywords: Single Crystal growth; SR method; SHG; Optical properties; Dielectric properties.

Introduction

The nonlinear Optical (NLO) material is widely studied for different optical device applications. Potassium dihydrogen orthophosphate (KDP) is a well known NLO material which can be used for laser frequency conversion, low repetition (<100 Hz) rate lasers, Q-switching applications, electro-optical modulation and for second harmonic generation of high pulse energy[1-3].Since it is having many significant applications, research hasbeen going on tofindefficientand novelNLOmaterial.

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Node Deployment Based on Shortest Path Creation on Mountain Road for Wireless Sensor Networks

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ABSTRACT

In wireless sensor networks (WSN), node deployment and optimal path creation are the most important tasks and also critical issue. WSN is much constrained for computational power, energy and memory. Nodes in wireless sensor network works on battery power and energy consumption plays a very important role in WSN. Usually communication i.e. transmission and reception consumes more energy compare to data processing and sensing. Hence maximum energy can be saved by controlling the communication with the help of proper routing. Wireless sensor networks on mountain roads will form winding and long transmission paths. As per the reception and data transmission analysis maximum energy wasted due to longest path, unnecessary route request flow and due to some attacks. To increase lifetime of network by reducing energy consumption new shortest path technique on mountain road is introduced in this proposed paper. Dijkstra's technique is used in this system is to create shortest path and also explains functional steps involved in Blackhole node estimation and solution procedure to overcome that problem. In this paper, it has been analysed thevarious parameters such as maximum transmission rounds, network lifetime comparison and packet delivery ratio.

Keywords: *Wireless Sensor Networks, Dijikstra's Technique, Shortest Path, Blackhole Attack, Transmission.*

I. INTRODUCTION

Wireless sensor networks (WSNs) are called as wireless sensor and actuator networks (WSAN). Wireless networks are circulated or distributed large collection of sensors to monitor environmental or physical conditions. The WSNs development was inspired by military applications such as battlefield supervision. In recent days such networks are utilized in several consumer and industrial applications, such as machine healthiness monitoring, industrial process monitoring and control etc.

WSN composed of thousands of sensor nodes. These sensing nodes are able to sense at least single environment phenomenon. Sensor nodes are battery motorized. Recharging or replacement of battery is not achievable in so many scenarios such as rescue operation, battlefield supervision and unmanned missions. Sensor nodes have to perform process like detection of certain object presence, object observation and tracking, data fusion, localization and event monitoring. This process of sensor nodes makes sensor nodes to create large quantity of

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Structural and Optical Properties of Polypyrrole/NiO Doped Nanocomposites

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ABSTRACT

This study reports the synthesis of polypyrrole/NiO doped nanocomposites (NCs) as a shielding pigment in organic coatings. Polypyrrole/NiO doped NCs were prepared by in-situ chemical oxidative polymerization of pyrrole monomer. Here dopant NiO nanoparticles (NPs) were synthesized by solution combustion method using *Aloe vera* gel as fuel with ammonium per sulphate (APS) as oxidant. Different concentrations of NiO (10-50 wt%) NPs were incorporated into the polypyrrole. The synthesized nanocomposites were characterized by means of powder X-ray diffraction (PXRD), scanning electron microscopy (SEM) and atomic force microscopy (AFM). The size of the NPs were calculated by Scherer method, and found to be around 20 nm. TEM results are in consistent with the XRD results. The morphology of the obtained composites shows the porous and agglomerated particles which are due to large amount of gas evolution during NPs synthesis by solution combustion method and optical properties were studied.

1. Introduction

Conductive polymers such as polyaniline (PANI), polypyrrole (PPy), and their composites are widely uses as sensors [1, 2], energy storage materials, due to the facile synthesis and flexibility in processing [3]. Conducting polymers including polypyrrole (PPy), polyaniline (PANI), PPV, polyethylene di-oxythiophene (PEDOT), and polythiophene (PT) have both electrochemical double layer capacitance and pseudo-capacitance arising from the fast and reversible oxidation and reduction processes related to their p-conjugated polymer chains [1-3]. Among these conducting polymers, PPy is outstanding as a promising electrode material for supercapacitors, because it has various significant advantages such as high specific capacitance, good conductivity, bio-compatibility and outstanding mechanical properties [4]. However, like other electronically conducting polymers, PPy suffers from volumetric shrinkage during discharge process which can lead to decrease in cyclic stability [5-9]. To improve the cyclic stability of the conducting polymer, researchers have recently synthesized various PPy-based composites with hierarchical structured materials to hinder the volume change of the conducting polymer during the charge–discharge processes [10-12]. As it is known to all, transition metal oxides have been massively reported as electrode materials for pseudo-capacitors because of their large capacitance and fast redox kinetics [3]. In this paper we report the synthesis of NiO nanoparticles using *Aloe vera* gel, synthesis of polypyrrole/Ni nanocomposites and their structural, morphological and optical studies in detail.

2. Experimental Methods

2.1 Synthesis of Polypyrrole

The synthesis of polypyrrole (PPy) was based on mixing aqueous solution of pyrrole and ammonium persulphate at ice temperature, followed by the separation of pyrrole precipitate by filtration and drying. An equimolar volume (0.1 M) of pyrrole and hydrochloride acid was dissolved in distilled water in a volumetric flask to obtain 100 mL of solution. Likewise, ammoniumpersulphate (0.2 M) was dissolved in 100 mL water. Both solutions were kept for 1 hour at room temperature and then mixed in a beaker, stirred with a mechanical stirrer and allowed to polymerizing. After a day, the PPy precipitate was collected using filter water, washed with acetone and deionised water repeatedly. The obtained polypyrrole powder was then dried in air in vacuum at 60 °C for 24 hours, then make it as a fine powder.

2.2 Facile Green Fabrication of NiO Nanoparticles

The nickel oxide nanoparticles were synthesized using self-propagating low temperature solution combustion method, employing nickel nitrate ($Ni(NO_3)_2.6H_2O$)) as precursor and *Aloe vera* gel as a fuel. 2.14 g of nickel nitrate was taken in 300 mL petri-dish and 10 mL of *Aloe vera* gel was added to the petri dish and kept on a magnetic stirrer for ~10 min. The uniform mixture of both oxidizer as well as the fuel was then introduced into the pre-heated muffle furnace kept at 450 °C. The mixture boils with froth yielding finally a black powder of NiO nanoparticles. The average particle size of the NiO was calculated by Debye-Scherer formula and it was found to be ~20 nm.

2.3 Synthesis of Polypyrrole/Nickel Oxide Nano-Composite

Synthesis of polypyrrole–nickel oxide nano-composites were carried out by in-situ polymerization method. Pyrrole (0.1 M) was mixed in 1 M HCl and stirred for 15 min. Nickel oxide nanoparticles were added in the mass fraction to the above solution with vigorous stirring in order to keep the nickel oxide homogeneously suspended in the solution. To this solution, 0.2 M of ammonium persulphate, which acts as an oxidizer was slowly added drop-wise with continuous stirring at ice temperature for 4 hours to completely polymerize. The precipitate was filtered, washed with de-ionized water and acetone, and finally dried in an oven for 24 hours to achieve a constant mass. The Polypyrrole -nickel oxide nano-composites were thus obtained containing various weight percentage of nickel oxide (i.e., 10, 20, 30, 40, annd 50%).

3. Results and Discussion

3.1 XRD Analysis

X-Ray Diffraction studies were performed using Shimadzu-7000 diffractometer with Cu as the target (1.54 Å) and nickel as the filter. Fig. 1 shows X-ray diffraction pattern of polypyrrole. A broad peak centered at $2\theta = 25.53°$ may be assigned to the scattering from the pyrrole chains at interplanar spacing which clearly implies the amorphous nature of

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2019

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
117.	Drilling of In-line compression moulded jute/Polypropylene composites	Sandhyarani Pailoor, T.N. Sreenivasa	Mechanical Engineering	Journal of Natural Fibres, Taylor & Francis	ISSN: 1544-046X	Scopus Indexed Journal
118.	Joining of tubular steel-steel by unconventional magnetic pulse force: An environmentally friendly technology	K.Shanthala, T.N.Sreenivasa,	Mechanical Engineering	Bulletin of Materials Science, Springer	ISSN: 0973-7669	Scopus Indexed Journal
119.	Biodiesel - A Sustainable option for irrigation	C. Solaimuthu, Sreenivasa T N	Mechanical Engineering	Journal of The Institution of Engineers (India): Series, Springer	ISSN: 2250-0553	Scopus Indexed Journal
120.	Effect of hot extrusion on mechanical behavior of boron nitride reinforced aluminium 6061-based metal	R. Saravanan & R. Keshavamurthy	Mechanical Engineering	International Journal of Materials Engineering Innovation	ISSN: 1757-2762	Scopus Indexed Journal
121.	Impact of Extrusion Procession Wear Behavior of Boron Nitride Reinforced Aluminum 6061-Based Composites	Y. B. MUKESH,R. Keshavamurthy	Mechanical Engineering	International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)	ISSN:2249 - 8001	UGC Care
122.	Survey on the Applications of Sentimental Analysis	Latha CA	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
123.	Safe ballot system using Blockchain Technology	Latha CA, Ananthanagu U, Vinutha A.N	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
124.	Elliptic Curve Cryptosystem Technique for Data Security in Cloud Computing	Santhosh Kumar G, Latha C A	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
125.	Security Framework for Near Field Communication Enabled Devices and its Applications – A survey	Arunkumar, G GSivasankari	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
126.	Market Basket Analysis for Retail Stores	Kiran Kumar K, Nithin H A, Arun Kumar, Vinayak V H,	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
127.	A Study on Artificial Intelligence in Agriculture	Rajasekar V, Ananthanagu U, Nida Noorain, Ali Taha	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
128.	IoT- Donation: An Excess Material Redistribution Framework	Rajasekar V, Ananthanagu U, Srividya R, Ramya G	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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130.	Authentication Mechanism using Encrypted Negative Password	Rajasekar V, Ananthanagu U, SaranyaD	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
131.	Stock Market Analysis and Prediction	Gokulnath M.P, MoosaDurrani, Sampath Raj.K, Shilpa.C, Asha S	Computer Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
132.	Traffic Management for Emergency Vehicular Using Smartphone	Subhash Thapa, Suraj B, Kavya Shekarappa, Nirmala S,	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
133.	Traffic Management System for Emergency Vehicle Through Visual Sensing	Nandita, Dr. Nirmala S, Pavithra N D, Neha Nayan, P Swetha	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
134.	Diagnosing the Blood Sample for Detecting Malarial Parasites	Nirmala S, Mona N Gowda , Manasa B S, Kavana C M ,	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
135.	Intrusion Detection Based on Machine Learning and Deep Learning Algorithms	Aliya Tarannum S, DaniyaSeher Shaik, Fathima Anjum Z K, Hajeera Begum	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
136.	A Hack Free Authentication and Authorization System Using 3 Layered Security	Aishani Priyal Singh, Antaja Dey, Dhanya Maria D, Srividhya	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
137.	Prediction of Depression among Type 2 Diabetic Patients using Machine Learning	Madhu SudhanM, Prerana NP, Pallavi SL, M.Krithika, Doddegowda BJ	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
138.	Recommendation System for Education Using Machine Learning Techniques	Kalpitha M, Doddegowda B J	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
139.	Prediction of Heart Disease using Machine Learning	Ashwani Kumar, Chitiz Vatsal, Archit Kumar, Rabindranath	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
140.	Digital Liquid Level Indicator	Neelesh S, Preetham J, Rahul N, Sudarshan S,	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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141.	Air Pollution Data Analysis and Prediction	Abhishek L Bharadwaj, Abhishek SD, Chethan	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
142.	Industrial Safety, Monitoring & Tracking with Voice Alerts	Bhumika S, Gayithri B A, Pavithra V, Ramya C T, Jayashubha J	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
143.	A Deep Learning Approach to Detection of Malicious Web Content	Jayashubha J, Rithika A R, Sushmitha T V, Tejaswini Ramachandra Hegde Usha Nandhini S	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
144.	A Survey Based on Software Defined Networks Using MININET	Abhishek Nayak, Ahsan Ali Hyder, ShaliniS, Annapurna P Patil	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
145.	RSU Cloud Communication in Vehicular Networks using Raspberry Pi	Souveek Kurmi, Rupak Kumar, Shalini S, Annapurna P Patil	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
146.	Krishak	Amrit Prasad, Eashita Banerjee, Akshatha, Nandita B	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
147.	Sparsh- A Modular Platform of Touch	Ashutosh Mohanty, Jeevika, Vineeta	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
148.	Underground Cable Fault Distance Detector Using 8051 Micro-controller and Wi-Fi Module	Adithi Vijay, Aradhana Prakash, Ashwija, Ashwini G H, Srividhya	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
149.	Integrating Smart Healthcare System by using Rescue Portal App	Sonali S Dash(Rath),Sushil RajeevaBhandary, Umme Anjum Turabi	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
150.	Crash Analytics Using IOT and Datamining	Ananthanagu U, Harish G, Karthik C, Kavitha S, Piyush M	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
151.	Smart Garbage Management System	Devi Naveen, Amrithaa LA, V Shiva Kumar, Vignesh N	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
152.	Advanced Electric Voting Machine for Elderly and Blind People	Jeevitha R, Pavithra G, Nadagoudra, Naveen Kumbar	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
153.	Automatic Detection of Potholes and Humps Based on IoT	Mushtaq Ahmed D.M, Thanushree MR,	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
154.	Image Rectification using Convolutional Neural Network	Venu G, Shravani B G, Shirisha R, Sahana S, D SalangaiNayagi	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
155.	Implementing Smart Helmet System to prevent accidents using Arduino UNO with location tracker	Sowmya B K, Sindhu S, Eshwari T, Shilpa R, Shashikala M	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
156.	Android based Fingerprint Voting System	Veena Bhat, Deeksha S, Prithvi Pai, Kavya G, Machamma P A	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
157.	Semantic Matching Application Based On Ontology	MuskanSehar , Mohsina Fathima G, Meghana G, D Neeraja, Satish Kumar	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
158.	Gesture Keyboard using Arduino by Machine Learning	Ranjitha G, Rakshith B, Shashidhar R, Sree Vishnu S, Swaroop S	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
159.	NFC- Based Smart Restaurant Ordering System	Snigdha Kesh, SufiyaKouser, Shwetha K	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
160.	Survey Process for Privacy-Preservation Biometric Identification in Cloud Computing	Yeshwanth S, Shruti, Sushmitha M, Ms Namrata Vardhaman	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
161.	Two-Cloud Secure Database for Numeric-Related SQL Range Queries with Privacy Preserving	Indu B, Sai Kiran D, Archana N	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
162.	Analysis of QoS Parameters for Routing Protocols in MANETs	Sanjana K R, Ranjitha G	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
163.	Pothole Detection System using Drone	Jyothi SulochanaR, DharaniR, KHemavathi, ChaithraK, YSaanjanna	Computer Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
164.	IoTBased Garbage and Weather Monitoring System with Location Tracking and Alert System	Mala B A	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2019

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
165.	Smart Ranch Application	Mala B A	Information Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
166.	Log Based Video Investigations for Store	Bineet Kumar Jha	Information Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
167.	A User Trust System for Gaming World: An Interactive Approach for Trust Presentation	Prof Parvathy S	Information Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
168.	An effective framework for coin framing, smart and secure transactions service	P Bindhu Madhavi and R.Amutha	Information Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
169.	Automated Method for Detection and Grading of Diabetic Retinopathy	Manjunath Swamy C	Information Science and Engineering	International Journal of Management, Technology and Engineering	e-ISSN No: 2249-7455	UGC Care
170.	Encryption and Decryption of Image BY Using ECC	P Bindhu Madhavi and R.Amutha	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
171.	Performance Analysis of Human Action Recognition System Using CNN Models	Pavithra Sridhar	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
172.	A Security System to Detect Botnets in IOT	Rahul B	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
173.	Android-Based Application for Real Time Vehicle Seat Tracking System	Parvathy S	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
174.	Automatic Medication Pill Dispenser	Srushti C S	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
175.	Cloud Computing for Mobile Users with Secure Data Sharing Scheme	R.Amutha	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
176.	Collective Sifting Based Suggestion of Online Social Voting	Rintumoul Thomas	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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177.	Data Analytics Fraud Detection	Bineet Kumar Jha	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
178.	Detection of Brain Tumor Type Using MRI Adaboost	P Bindhu Madhavi	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
179.	Diagnosis and Prediction of Heart Disease using Machine Learning	Rajashree D Ingale	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
180.	Enhanced File Security using Version Control System	R.Amutha	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
181	Implementation of Smart and Secure Automated Home using IoT	Rajashree D Ingale	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
182.	Job Search Chatbot Using Slack	Smitha JA	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
183.	Medical Data Classification and Storage Minimization Technique Using Big Data	P Bindhu Madhavi	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
184.	Real-time classification of Worldwide tweets based on profiler and location	Smitha JA	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
185.	Sentiment Analysis of Twitter Corpus Based on AI Assistants	Harshitha	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
186.	Taxi Proposal: Recommending Raid Bunches to Cab Drivers Utilizing Positioning-Based Machine Learning	Rahul B	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
187.	EduIN Android Application	P Bindhu Madhav and Parvathy S	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
188.	Online Distance Metric Learning with Image Retrieval	Pavithra Sridhar	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care
189.	Energy -aware VM migration using dragonfly crow Optimization and support vector regression model in cloud	P Bindhu Madhavi	Information Science and Engineering	International Journal of Management, Technology And Engineering	e-ISSN No: 2249-7455	UGC Care

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SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
190.	Design and Development of Voice based Writing machine for Alphabet	J. Jenitta	Electronics and Communication Engineering	International Journal of Science and Innovative Technology and Engineering	ISSN NO : 2249-7455	UGC Care
191	Security Framework for SWS Using IoT	P BindhuMadhavi, Rahul B and Rintumol M Thomas	Information Science and Engineering	IJSART-International Journal for Science and Advance Research in Technology	ISSN:2395-1052	UGC Care
192.	Forecasting Volatility with LSTM Techniques	Basavaraj S Patil	Information Science and Engineering	International Journal of Science and Research (IJSR)	E-ISSN:2319-7064	UGC Care
193.	An Automatic Localization of Optic Disc in Low Resolution Retinal Images by Modified Directional Matched Filter	T.Kavita	Electronics and Communication Engineering	International Arab Journal of Information Technology	1683-3198	UGC Care
194	Heterogeneous Networks Optimization using Robust Power and Resource Based Algorithm	Savita Patil	Electronics and Communication Engineering	International Journal of Electrical and Computer Engineering	ISSN: 2088-8708	UGC Care
195	An Efficient Computational Approach to Balance the Trade-off between Image Forensic and Perceptual Image Quality	Shashidhar	Electronics and Communication Engineering	International Journal of Electrical and Computer Engineering	2088-8708	UGC Care
196	Performance Analysis of Multi-level HAAR in Background Removal for Object Detection	Meena Deshpande	Electronics and Communication Engineering	Indian Journal of Science and Technology	ISSN : 0974-5645	UGC Care
197	Pilot Based Channel Estimation 4G LTE OFDM Utilizing Time Space Procedure in Video Transmission	Dr.R. Aruna	Electronics and Communication Engineering	International journal of Recent Technology and Engineering	ISSN:2277-3878	UGC Care
198	Advanced Surveillance System Using OpenCV	Guruprasad U	Electronics and communication engineering	Journal of Emerging Technologies and Innovative Research (JETIR)	ISSN-2349-5162	UGC Care
199	Grid Connected, Transformer less Single-phase Inverter Topologies for Photovoltaic system for Grid Tied PV Power System with Reactive Power Control	Selvamathi R	Electrical & Electronics Engineering	International Journal of Recent Technology and Engineering (IJRTE), March 2019	2227-3878	UGC Care
200.	Accurate Neighborhood Resolving Sets of a Graph	Lalita S. Lamani	Mathematics	Internacional Journal of Applied Engineering Research	ISSN 0973-4562	UGC Care
201.	Synthesis, Characterization and DC Conductivity Studies of CoCl2-PEO Doped Polyaniline Complexes	Dr Chakradhar B	Physics	International Journal of Science and Research (IJSR)	ISSN: 2319-7064	UGC Care
202.	Joining of tubular steel-steel by unconventional magnetic pulse force-an environmental friendly technology	K. Shanthala, T. N. Sreenivasa, H.N. Narasimha Murthy.	Mechanical	Bulletin of Materials Science	eISSN: 0973-7669	UGC Care

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Drilling of In-Line Compression Molded Jute / Polypropylene Composites

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ABSTRACT

Compression molding can be used to fabricate polymer composites with long-, short- and intermediate-length fibers. In-line compression molding reduces cycle time through a single-step process in which fibers are directly introduced into the molten polymer in the extruder which is directly molded. It eliminates additional stage of heating and processing and hence is preferred in industries. This paper deals with the influence of fiber type and direction, coupling agent, spindle speed, feed rate, drill material and diameter on delamination and thrust force in in-line compression molded jute/polypropylene. Thrust force was greater in the specimens with 30 wt% long fiber, in longitudinal direction processed without coupling agent and drilling with high-speed steel drill. Delamination was severe in chopped fiber composites, in longitudinal direction processed without coupling agent and with cobalt-high-speed steel tool. Effect of speed, feed, drill diameter and tool material was analyzed using ANOVA, signal-to-noise ratio and Grey relational analysis. Residual tensile strength reduced by 24.7% in the composites drilled using the optimized parameters.

摘要

压缩成型可用于制备长、短、中长纤维的聚合物复合材料.直列式压缩成型通过一个单步过程缩短了循环时间，在此过程中，纤维直接被引入挤出机中的熔融聚合物中，而挤出机是直接成型的.它消除了额外的加热和加工阶段，因此在工业中是首选.本文研究了纤维种类、方向、偶联剂、主轴转速、进给速度、钻头材料和直径等因素对直列挤压成型黄麻/聚丙烯脱层和推力的影响.长纤维为30%的试样，在无偶联剂的纵向加工和高速钢钻钻孔时，其推力较大.短切纤维复合材料经无偶联剂和钴高速钢刀具纵向加工后，脱层严重.采用ANOVA、S/N比、灰色关联分析等方法，分析了速度、进给量、钻头直径、刀具材料等因素对钻头性能的影响.在优化参数下，复合材料的残余拉伸强度降低了24.7%.

KEY WORDS

Drilling; In-line Compression molding; Twin-screw Extruder; Jute Fiber; Grey Relational analysis; Polypropylene

Introduction

Compression molding is preferred for mass production of composites due to high precision and low processing times. It has two stages, namely, compounding by using twin-screw extruder and compression molding. It involves higher cost along with degradation of mechanical properties due to heating in both the stages (Bureau et al. 2011). On the other hand, in-line compression molding also called direct long-fiber thermoplastic molding (DLFT) is a single-stage process (Figure 1) in which fibers are directly introduced into the molten polymer in the extruder and the hot extrudate is instantaneously molded and hence involves reduced cycle times. In-line compression molding is

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Color versions of one or more of the figures in the article can be found online at www.tandfonline.com/wjnf.

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Joining of tubular steel–steel by unconventional magnetic pulse force: environmentally friendly technology

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Abstract. Electromagnetic welding uses environment-friendly, unconventional non-contacting magnetic pulse force for joining of two metals. The present paper focuses on the welding of tubular mild steel to two different steel bars, ferrite-pearlite 1018 carbon steel and austenite 304 stainless steel using a 40 kJ electromagnetic instrument. A qualitative metallurgical bonding was obtained for a selected set of optimum process parameters. The bonded region did not show localized melting for a mild steel–carbon steel joint and was found to be homogeneous liquid state bonding for a mild steel–stainless steel joint within a restricted distance of 3 μm from the interface. Both the joints indicated good peel strength and leak tightness. Simulation studies were validated using experimental parameters such as voltage, current, impact velocity, magnetic flux and displacement.

Keywords. Carbon steel; stainless steel; electromagnetic; joining; welding.

1. Introduction

Welding of steel is always associated with a detrimental heat affected zone due to the high-melting temperature of steel. Electromagnetic welding (EMW) has demonstrated strong metallurgical bonding between a wide range of metals of a high-melting point without any heat affected zone [1,2]. EMW can be treated as environment-friendly technology which uses non-contacting electromagnetic pulse force for joining. EMW is a type of solid state impact welding analogous to the explosive welding (EXW). Unlike an EXW, which uses harmful chemical explosives or additional filler metals in conventional welding, in EMW, electromagnetic Lorenz force (magnetic pulse force) accelerates one of the constituent materials known as flyer onto a target material, causing collision between the two materials and resulting in joining. Joining takes place under high-impact force within few microseconds in the velocity range of 300−500 ms^{-1} [3].

Extensive research is reported on EMW of lightweight aluminium and highly conductive copper as flyers joined to target materials such as aluminium [4], copper [4,5], steel [2,6], magnesium [7], titanium and brass [4,8] either for the lap configuration of sheets or for tubular structures. The literature indicated the presence of waviness and related severe plastic deformation at the weld line. A metallurgical bond was also observed at the interface with a thin layer of intermetallics which were reported to have limited or no influence on the mechanical strength of the joint.

As the focus is mainly on lightweight flyer materials, very limited information is available on EMW of steel to steel. Stern and Aizenshtein [9] reported EMW of the ferritic steel tubular structure. They reported the formation of a fine grained melt layer with higher hardness at the interface. However, this report has no reference to process parameters and does not mention the geometrical parameters of the flyer and target. The microstructure of the interface is not clearly detailed and mechanical strength of the joint is not predicted. Ghosh *et al* [10] reported EMW of plain carbon steel sheets. They reported the formation of distinct zones of both the solid state and liquid state along the weld length. For a flyer-target with a length of 200 mm, the weld length is reported at 1 mm which is very insignificant. A larger weld interface was observed in the presence of micro-pores and micro-cracks and is not in correlation with the sample length for tensile strength. Some of the open literature studies reported joining of a steel flyer to steel target, both the plate and tubular configuration by EXW [11–13]. In summary, EXW reported the presence of both the flat and wavy morphology with an occasional melt zone in accordance with the explosive loading. There are no references on the strength of weld joints.

Practically, joining of steel with sound quality is not very well established in the open literature. The reported literature on simulation of EMW of steel is very scarce. Simulation data are especially useful in selecting the complex process parameters of EMW experiment. In this study, sound quality joint is obtained between the mild steel flyer and steel targets of

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ORIGINAL CONTRIBUTION

Biodiesel: A Sustainable Option for Irrigation

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Abstract An experimental study has been carried out to assess the suitability of selective catalytic reduction (SCR) technique in reducing NO_x. To arrive at accurate results, property characterization has been carried out for various blends. Tests were conducted on a single cylinder diesel engine at 1500 rpm, and for loading, an eddy current dynamometer was employed. The injection nozzle opening pressure was set to 250 bar with constant static injection timing of 20° before top dead centre. This study presents the results for full load, employing SCR technique, and the results are compared with conventional engine results under same operating condition where no reduction technique is employed. It is found that there is a significant reduction in NO_x (around 13.3%) when the engine is operated with 25% biodiesel saving 25% diesel. This study establishes that SCR technique with 25% biodiesel addition is a viable option without any modification in the engine and without any compromise on the engine performance. Therefore, this option can be considered as sustainable for agricultural operation.

Keywords Mahua biodiesel · Performance · Combustion · Emissions · SCR technique · NO_x reduction

Abbreviations

NOP	Nozzle opening pressure
SIT	Static injection timing
SCR	Selective catalytic reduction
HC	Hydrocarbon
NO_x	Oxides of nitrogen
B-0	0% biodiesel and 100% petro-diesel
B-25	25% biodiesel and 75% petro-diesel
B-50	50% biodiesel and 50% petro-diesel
B-75	75% biodiesel and 25% petro-diesel
B-100	100% biodiesel and 0% petro-diesel
cSt	Centi stroke
NH_3	Ammonia
NO	Nitric oxide
$(NH_2)_2$ $CO{\cdot}H_2O$	Diluted urea
EGR	Exhaust gas recirculation

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Introduction

India is an agricultural country. As of now, the cost of one litre of Mahua oil is INR 45 as on 01.01.2018. Mahua is cultivated in Western Ghats of Karnataka and Maharashtra. Since there is a large potential for cultivation of this tree, it has been chosen for the present study. Solaimuthu et al. [1] stated that the conventional diesel used in engines have higher amounts of aromatics and sulphur, which is considered as the main source for global warming. Further, large amount of diesel consumption is not desirable since the reserve of diesel in the country is negligibly small and the fuel has to be imported. In order to reduce the consumption of fossil diesel, oxygenated fuel additives are a suitable proposition. In this connection, biodiesel seems to be the best choice, especially for agricultural operation. This study is an attempt towards that direction. Of various nonedible vegetable oils available for making biodiesel,

Effect of hot extrusion on mechanical behaviour of boron nitride reinforced aluminium 6061-based metal matrix composites

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Abstract: In this present investigation Al 6061-based BN reinforced metal matrix composites were developed with 6 and 9 wt% of boron nitride. The Al 6061 was chosen as base material owing to its superior formability, light weight and moderate strength. Boron nitride was used as reinforcement keeping in mind its excellent wear and corrosion resistance along with superior strength and thermal properties. The stir casting method was adopted for development of composites since it is most flexible and universally accepted method for preparing castings economically. The developed composites were subjected to extrusion process. Mechanical properties were tested both before and after the extrusion to study the impact of extrusion process on properties of composites. It was observed that hardness and tensile strength of both casted and extruded samples were improved by the addition of the BN reinforcement. Whereas ductility of samples reduced with the increase of boron nitride concentration. Scanning electron microscopy (SEM) is used to identify the distribution of boron nitride (BN) and to study the fractured surfaces of Al 6061-BN metal matrix composites.

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IMPACT OF EXTRUSION PROCESSION WEAR BEHAVIOR OF BORON NITRIDE REINFORCED ALUMINUM 6061-BASED COMPOSITES

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ABSTRACT

Aluminum (Al) 6000 alloy series are more industrial friendly among aluminum alloys since they are heat treatable and have superior formability. In the present experiment, Al 6061- boron nitride reinforced composites were developed by changing the boron nitride wt.% concentration. Composites samples were prepared for 3, 6 and 9 wt.% of boron nitride concentration. Boron nitride is used as reinforcement considering its superior hardness and thermal properties. The stir casting process is adopted for the fabrication of composites since it is a flexible and generally recognized method for developing castings economically. The prepared composites are successively hot extruded in nature. The extrusion process decreases defects in casting and modifies its grain structure resulting in an improvement in hardness and wear resistance. A metallographic study has done to determine the nature of boron nitride dispersion in matrix alloy. The microstructure photographs indicate the homogenous distribution of reinforcement in the Al6061 alloy. Study of hardness and wear resistance behavior has been carried out before and after extrusion. Al6061 -BN composites exhibited a decrease in wear rate compared to aluminum alloy. With an increase in sliding velocity and load, the wear rate of both aluminum alloy and composites increases, but when compared to conventional alloy the wear rate of in composite is less. The surface morphology has carried out on the worn out surface to identify the probable wear mechanisms.

Keywords: AL 6061, UTM, Wear Properties, Metal Matrix Composites, Boron Nitride, SEM & Hot Extrusion

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Original Article

INTRODUCTION

Aluminum matrix composites are the combination of particulate reinforcement and aluminum alloy in macro level. These combinations provide better performance in comparison with traditional aluminum alloy. Aluminum-based composites had widespread attention because of its high strength, ease of formability and resistance to wear [1]. Their tailored combination makes aluminum based particulate reinforced composites an attractive material for application in engineering. Among aluminum alloy, Al6061 has advantages such has good strength, excellent formability [2]. Further, its wear resistance can be improving by reinforcing it with much harder boron nitride [BN]. Various techniques such as stir casting [3], squeezed casting [4], mechanical alloying [5], liquid-solid powder metallurgy [6], etc., have been carrying out for the fabrication of composites. Among these

Survey on the Applications of Sentimental Analysis

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Abstract

Sentimental Analysis has been an important area which has emerged in few decades in the field of Natural Language Processing. Processing the text in Natural Language has been a remarkable area of research that has its prominence in a Multilinguistic Country like India. This paper surveys some of the key applications in the area of Sentimental Analysis.

Keywords: Multilinguistic, Sentimental Analysis, Neural Network, SVM, , Machine Learning

1. Introduction

Sentimental Analysis is an area of research under Natural Language processing. Natural Language Processing is machine learning approach to learn and analyze Natural Languages used by human beings in their daily life. Major challenges dealing with the Natural language Processing is the difficulty in not having a common structure or strict formatting as that of programming language. Even though each language has a strict grammar, while usage of the language, complete grammar is not followed considering intelligent factor of humans. While the machine is concerned, to analyze text, machine has to be trained in all possible extensive datasets, to prevail accurate results. Contextual information is also to be taken care because meaning changes according to the context used. This paper provides an extensive survey of the application of sentimental analysis in real life scenarios.

2. Literature Survey and Review

2.1. Literature Collection & Segregation

SL:NO:	YEAR	AUTHOR	OBJECTIVE	METHODOLOGY
1	2019	Mike Thelwall	Big Data and Innovation in Tourism, Travel, and Hospitality	Google trends tools
2	2018	Jose Saura, Ana Reyes-Menendez, Cesar Alvarez-Alonso	Do Online Comments Affect Environmental Management? Identifying Factors Related to Environmental Management and Sustainability of Hotels	data mining and machine learning sentimental algorithm
3	2018	C. Gao, J. Zeng, M. R. Lyu and I. King	Online App Review Analysis for Identifying Emerging Issues	Automated framework IDEA
4	2017	Valdivia A, Luzón MV, Herrera F	Sentiment analysis in trip advisor	Automatic sentimental analysis algorithm
5	2017	Zhao W, Guan Z, Chen L, He X, Cai D, Wang B, Wang Q	Product review sentiment analysis	Weakly-supervised deep Learning

SAFE BALLOT SYSTEM USING BLOCKCHAIN TECHNOLOGY

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ABSTRACT

In the current elections there are lot of challenges like counting of votes and authentication of voter which should be taken care with mere use of human resources and Machines in several stages.The blockchain technology presents a kind of solution to many of the existing and emerging technologies which assures security, reliability, transparency, accessibility etc. Normal elections as yet utilizing central authority system, there is a single association that handles it. A segment of the perspective that can happen in conventional ballot systems that has authorized by an association has the complete authority on the schema and implementation. It is conceivable to alter the schema of extensive chances. To overcome this problem we can use Blockchain Technology where database is distributed among the numerous clients. Information stored in a database system should be in encrypted format by make use of Advanced Encrypted Standard (AES) algorithm. Blockchain voting consists of users and administrators. End users acts as voter and every voter have one opportunity to vote, casting a vote, transfer one vote to the particular contestant. The voter can't change their vote once casting a ballot is occurred. Admin has the responsibility to verify end users, conducting the election, counting the votes, declaring results so on.

Keywords: Blockchain, e Voting System, BEV, Cryptography.

1. INTRODUCTION

Casting a ballot plays a huge job in a just society. Pretty much every neighborhood authority dispenses a lot of spending plan on giving an increasingly robust and trusty casting ballot system. Blockchain technology with the developing fame and amazing accomplishment in digital currency gives another worldview to accomplish the open undeniable nature in such electronic casting a ballot frameworks. In a blockchain-based framework, there is no confided in incorporated facilitator; rather, every hub that is associated with the blockchain framework holds the information square locally. In light of the suspicion that the decentralized accord convention is secure and an adequately huge extent of blockchain arrange hubs are straightforward, the idea of the blockchain technology is a reasonable outsider that can be trusted for rightness and accessibility. Information present in a block is affix just and any activity that modifies the information in any square abuses the blockchain agreement regulations and is dismissed by the authority. Blockchain innovation is bolstered by a circulated system comprising of a substantial number of interconnected hubs. Every one of these hubs has their own duplicate of the dispersed record that contains the full history of all exchanges the system has handled. There is no single expert that controls the system. On the off chance that most of the hubs concur, they acknowledge an transaction. Clear points of interest of voting a ballot utilizing blockchains incorporates: i) More

Elliptic Curve Cryptosystem Technique for Data Security in Cloud Computing

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Abstract

In recent years the cloud computing is rapid growing technology which can be represented in the form of distributed computing environment where the resources in the cloud can be shared in distributed manner. There are thousands of computers who run parallel that performs the assigned task within minimal time as compared to the traditional systems. Because of the low cost of these virtualized hardware resources the computation happens in parallel. In this paper we present various cloud deployment models and how the security in the deployment models differs from traditional computers. This security can be analyzed by different ways that mitigates cloud and limitation to existing cryptographic methodologies. To analyze the security in deployment models this paper presents elliptic curve cryptographic technique for various cloud based applications and comparing this technique with existing RSA algorithm based applications. This paper also presents the experimental and theoretical results to prove the proposed elliptic curve based public key cryptography for securing data in cloud is better than the existing RSA algorithm based applications. Our experimental results describe the proposed ECC technique has more performance by compare within RSA algorithm. This helps in implementation of security techniques for various deployment models analyzed in the cloud computing.

Keywords: Elliptic Curve Cryptographic [ECC], RSA technique, deployment models, security techniques.

1. Introduction

The cloud computing is rapidly growing and most widely used domain over the globe, providing security to the cloud users is most important. The global scenario of cloud describes an effective communication in such way that the computers within wired communication has been replaced by smarter wireless communication is each and every filed. The data protection and the authentication is in demand for most of net banking applications.

Cloud computing is a technology that incorporates many other kinds of technologies within it including grid as well as distributed computing and parallel programming etc. It has revived the IT sector as it allows many start-up organizations as well as medium scale ones to utilize their expertise and skills with no investments on deploying the hardware, software infrastructure resources to mark their growth.

There are many different definitions available for cloud computing in the literature and industry. Cloud computing is a technological advancement that offers hardware, software and infrastructure resources dynamically as a service on top of huge, distributed internetwork with least maintenance and economic pricing. Alternatively, a cloud is also described as distributed computing framework comprised of large number of virtual

Security Framework for Near Field Communication Enabled Devices and It's Applications – A survey

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Abstract— Near Field Communication (NFC) is a set of standards for smart phones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity, within few inches. Present and anticipated applications include contactless transactions, data exchange, and simplified setup of more complex communications such as Wi-Fi. This paper presents the concept of NFC technology in a holistic approach from different perspectives, including communication essentials and standards, applications, secure elements, privacy and security.

Keywords— NFC, NFC Survey, NFC Applications, NFC security, Secure Element

1. Introduction

The NFC technology is simple. It's a short-range, low power wireless link evolved from radio-frequency identification (RFID) technology that can transfer small amounts of data between two devices held a few centimetres from each other. Unlike Bluetooth, no pairing code is needed, and because it's very low power, no battery in the device being read. By tapping your phone on a contactless payment terminal in a shop, train station or coffee shop is able to identify your account (and even personal preferences, shopping habits) and takes payment through an application on phone. Passive NFC 'tags' on posters, in shops and on trains could contain a web address, a discount voucher, a map or a bus time table that passers-by could touch their phones on to receive – or to instantly pay for absolutely anything.

After the innovation of RFID technology, many applications utilizing RFID soon took over. Sensors were provided with the flexibility to communicate wirelessly, with very low impact on power consumption. However, once the information generated by these sensors required to be processed, a personal computer was needed, which meant that a link was essential between a personal computer and the sensor. A specialized RFID reader would be used to gather information from the sensing device, and then the reader would be physically or wirelessly connected to a computer. These techniques are getting progressively outdated and more versatile methodology is needed in various applications.

For this NFC is a promising technology which is a set of standards for smart phones and similar devices to establish radio communication with each other by touching them together within a close range of less than 10 to 20 cm. Near Field Communication is based on inductive coupling, where loosely coupled inductive circuits share power and data. NFC is a branch of High-Frequency (HF) RFID, and both operate at the 13.56 MHz frequency. NFC involves an initiator and a target; the initiator actively generates an RF field that can power a passive target. This enables NFC targets to take very simple form factors such as tags, stickers or cards that do not require batteries.

MARKET BASKET ANALYSIS FOR RETAIL STORES

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Abstract

The exponential development of information because of headway in system and PC advances has driven the requirement for productive and constant continuous itemset mining calculations. Besides, as frameworks are delivering vast information volumes, there is requirement for best advancements that can mine and successfully examine information to acquire essential data. Affiliation rule mining includes the extraction of affiliations or associations among information from a given informational index. In this exploration a market container examination for retail locations is presented where mined information affiliations help advertisers to sell much of the time bought blends of items to their forthcoming and current clients. Leaders can additionally utilize the extricated guidelines to foresee future events what's more, demonstration in like manner. This paper presents an improvement of the Apriori algorithm. The principle objective is to diminish the extensive asset prerequisites and limit correspondence overheads that are brought about in incessant itemset information extraction utilizing confined split incessant itemset age and early disposal of rare information.

Keywords- Data mining; Apriori; Market basket; Association rules .

I. INTRODUCTION

Information mining is the uncovering of valuable connections from gigantic information utilizing numerical and software engineering innovations. Information digging apparatuses exist for both directed and unsupervised learning. In administered learning, a known dataset test is used to create preparing models while in unsupervised learning obscure informational indexes can be utilized for preparing models for information extraction. Information mining strategies can be used to create digging models for explicit datasets and can be portrayed dependent on their capacity and reason. Affiliation rule mining is one of the for the most part utilized unsupervised information mining strategies to separate successive itemsets.

II. LITERATURE SURVEY

The Apriori algorithm also used in web domain to analyze frequently browsed data. For this, one should understand the visitor behavior that is the number of times page been visited and keep track of entire session. This help enhances the web data and web server for better performance [2].

Apriori algorithm was used for web analysis, but the same concept of Apriori algorithm can also be used for analyzing the pattern in which the customers of a retail market tend to buy the products in the market. Making use of this algorithm helps find out which are the

A Study on Artificial Intelligence in Agriculture

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Abstract

The paper provides an introduction of the newly evolving technology, Artificial Intelligence applied to the field of Agriculture. It provides a brief significance of use of Intelligence in Agriculture and gives an overview of Agriculture Intelligence. This model facilitates information availability from various sources and gives an answer utilizing the techniques of agriculture intelligence and this paper provides a case study method of automated plant disease detection, tracking and forecasting and provides the future scope of Artificial Intelligence in Agriculture.

Keywords: Deep CNN Trainer; Agriculture Intelligence; Data Warehouse; Neural Networks;

1. Introduction

Agriculture assumes a pivotal job in the advancement of any nation's GDP. 75% of the populace reside within common territories and rely on agribusiness. Farmers don't get profits on their produce because of few Markets in vicinity, value data absence, absence of mechanical learning, technical information and so on.

Atmosphere variety, population development, advertising, request and supply, sanitation concern are a portion of the issues before farming industry. AI powered technology has better work rate, to handle issues with respect to crop yield, soil richness and herbicide resistance in the field of agriculture. Milking robots are commonly utilized in dairy cultivating.

2. Importance of AI in Agriculture

A National Sample Survey Office survey, says that almost 40% of ranchers stop cultivating, if they have the option to do as such [1]. Barely any purposes behind such circumstance, increasing growing area cost, working costs, less profit, mechanical unproficiency, lacking provision such as storage rooms, promotions, advertisements, coordination and so on.

In Agriculture Market, AI innovation has been fragmented into mechanical technology such as robotics, crop, soil management and animal cultivation. Algorithmic models making out of members and market conduct to value developments of different years tell their possible cost in not so distant future which avoids distress for agricultural farmers. Man-made intelligence models, AI store crop explicit moisture requirement and survey the moisture content in the fields by utilizing satellites. It additionally offers flag to farmers through instant messages for water necessity through auto-irrigation system.

IoT- Donation: An Excess Material Redistribution Framework

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Abstract

The main factor in material waste minimizing and its management is a trusted and active community aid over Internet of Things (IoT). A framework based on context aware IoT that can get dynamic and real time needs of donators as well as consumers and perform dynamic matching based on available data is explained in this paper. The framework enables technology that could incorporated in smart material sharing container and the proposed solution been described. The feasibility of proposed prototype system is established using embedded sensors with smart container.

1. INTRODUCTION

There is psychological as well as physical impact on humans due to food and clothing insecurities for long/short duration. Fatigues, weight loss, concentration loss, reduced immunity are some of the physical impacts. There are other few studies which statistically gives us information about material wastage. If there is proper management between surplus material which are wasted and those which in need of materials, there will be balance between them. A system called Information and communication technology gives us scenarios of wastage of material management along with their strengths and drawbacks. Internet of Things helps in addressing the strengths and drawbacks by real time match making. A Smart material container along with the presence of different sensors is used for capturing images of donation items by the vendors to consumers. The concepts are proposed for Material waste management. Specific structure is being followed in this paper. There are four different sections in which each summarizes different MWM. Strengths and drawbacks in 2nd Section. Architecture along with full concept in the framework which is proposed in the 3rd Section. Overall view of smart food container is present in the with few results and prototypes. The last section describes conclusion with some works which can be in future.

2. RELATED WORK

The Table1 illustrates few systems which are existed by using ICT. Selected geographical areas are picked up and managing of waste materials between the donators and the consumers is done using Measurement from trusted mechanism, decision of consumers, media, matching donators and consumers based on locations, Shopping's, storage, Amount etc.

Enabling Smart Mobility using the Blockchain Technology

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ABSTRACT:

Smart Cities have been empowered with a wide range of smart devices such as automatic smart toll gate system, smart traffic signals, smart street lighting and smart parking and so on. Mobility is a field where individuals travel from one location to another. The individuals can belong to any organisation, business agent, government policy or any other field and there will a number of individuals who travel to the same location for any purpose of conduct of work. The paper proposes a method to incur ride-sharing strategies that makes it possible for the individuals to have a inexpensive method to reach their destination by sharing their personal data to the network of Blockchain. Blockchain is an emerging new technology and is been used to provide smart mobility in the cities and to ensure to secure the user personal data.

Keywords: *Blockchain, Intelligent Transport System (ITS), mobility, Supply chain management, ledger.*

1. INTRODUCTION

Generally close to home portability, information was requested by means of small-scale reviews and governments would assume the liability to verify the individual data before sharing for open use. Now-a-days cell phones, cell phone towers, Wi-Fi hotspots, travel counters, traffic sensors, travel counters, automatic toll instalment frameworks among others provide a itemized versatility information of the urban populace. Handling the possibility to help governments and analysts to better comprehend human portability for structuring more intelligent, request driven, solid secure and safe transportation frameworks. Later the requested information incorporates delicate individual data such as GPS logs or excursion and action propensities hence safe guarding the individual's security furthermore verifies the data to be secure from the untrusted parties.

In the recent times, digital security ruptures have happened all around the globe and transportation issues are no special case. In the year 2015 a gathering of metro programmers usually referred as the civic hackers were deciphered and found the reasons for the non-functional transportational frameworks that are a part of area information subjected to Baltimore [2]. In the year 2016 travel history of the San Francisco was been hacked and this hacking was done to provide a free access to the individuals or the subordinates for complete two days [3]. In the equivalent year, data that is been associated with around 57 million customers who were using Uber cabs, the information about clients and the drivers were been overturned [4]. In the year 2018 a transportation organisation called Ontario's

Authentication Mechanism using Encrypted Negative Password

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ABSTRACT:

Storing and securing the password through a Password authentication structure which can be easily incorporated in to the prevailing password protection system. The paper interprets input plain password into hashed cryptographic function. The converted password has to be encrypted to form a negative password, firstly the entered plain password received from the client has converted into hashed cryptographic function. The converted hashed password has been transformed to negative password. Post to the conversion the negative password will be converted into Encrypted Negative Password (ENP) expending an algorithm with symmetric-key. A multiple iteration to be used to further advance the security of the password. To extract passwords from ENPs has made it tough with symmetric encryption. Furthermore, a lot of consistent Encrypted Negative password which reduces hacker attacks very difficult. ENP does not introduce any extra elements which make it more vital. Most remarkably the Encrypted Negative Password is the first protection mechanism which combine hashed cryptographic function, symmetric-key algorithm and the negative password, without any additional extra elements with the plain password.

Keywords: Authentication data table, Negative Data Base (NDB), Secure Password Storage.

1. INTRODUCTION

India has been reported as the third vulnerable country on the cyber-attacks. The volume of threads has been increased from year on year. Crypto criminals demand ransom for the theft data, causing a serious threat to the cyber and the personal security. Sometimes the leak of data creates biggest security breaches on the display of personal data in the open forums. Thus the importance on the security of the internet has been treated as a very serious threat to the society. Due to rapid progress in the Internet, a large number of web services has been evolved, in which authentication security mechanism extensively used is password. Hence an authentication through password attracts great interest from the industry and the research scholars. In spite of vast research and achievements in password authentication, cracking the password poses a serious challenge to the industry. For example many clients often uses select weak passwords, so that they tend to remember easily and use the same password in many systems. Password protection is one of the widely used methodology to have a safe access of your cyber data, despite its some security flaws. Due to flaws, password is not a fool proof technique to keep your data safe. There are several malware which can hack your weak password. Password encryption is one of the technique to keep you password protected from the hackers. Password encryption is a two layer protection compared to the regular single layer password. Password exposures are constantly being found, timely finding and avoiding

STOCK MARKET ANALYSIS AND PREDICTION:To Predict The Stock Market Value

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Abstract

The prediction model is designed to forecast the monthly and daily prediction in stock market. The historical data and news from social data is collected to design the prediction model. The monthly prediction uses the historical data of NSE and BSE data. The daily prediction uses the historical data and the social media data which includes Economic Times Website, Money Control Website and Twitter. The expression of each individual varies and it is analyzed in social media data. The polarity of each word is evaluated. The polarity can be neutral, positive and negative. The correlation between the news and actual price is determined.

Keywords- Stock Market Analysis; Polarity; Correlation; Neural networks

I.INTRODUCTION

Humanity always looks for ways to earn wealth as easily and as fast as possible, so it is not surprising that there has been so much work done on ways to predict the market values of the stock. Various technical indicators have been proposed and used with varying results. Till now no single technique or combination of techniques has been successful throughout. Researchers and investors had faith that market mysteries can be solved with the development of neural networks.

Stock market is a public market for the trading of company stock at an agreed price. These prices are listed on a stock exchange as well as those only traded privately [1]. It is an organized set-up with a regulatory body and the members who trade in shares are registered with the stock market and regulatory body SEBI [1]. Stock market rallies investors together to buy and sell their shares. Share market sets prices accordingly with respect to demand and supply. Price will increase for the stocks whose demand is high in market, whereas stocks that are being heavily sold will decrease their price. Corporate which are permitted to be traded in market place are called "listed companies" [1].

Traffic Management for Emergency Vehicular Using Smartphone

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ABSTRACT : The population of vehicles on road has increased especially in IT cities. This causes traffic throughout the road due to which Ambulance service and Fire service are affected. To synchronize the ambulance movement in traffic we are proposing a paper with the solution to the existing problem i.e, "Traffic Management For Emergency Vehicular Using Smartphone". In this system we use android app that connects both the ambulance , traffic police and Control room using GPS network. The basic idea behind the proposed system is, if the Ambulance and Fire service encounters traffic jam before it reaches the destination , then control room and Police will be notified if the vehicle is within (500m -1 KM) range using the help of GPS Live Sharing System. To keep police alert, an alarm using RFID and sensors is installed at Traffic Controller Booth which helps the police to know about the emergency in case of unavailability of mobile and this process will be controlled using mobile app.

Keywords- Ambulance, GPS, GSM, Arduino, RFID, Traffic Control

INTRODUCTION

In today's era, there are many cities which are working on transforming themselves into Smart Cities. If the city is said to be a Smart City, then it should have all possible advancements in the sector of smart technology. Improving efficiency in healthcare and emergency sector like Ambulance and Fire service are the challenging problem. Traffic congestion is the major problem in urban areas, which has caused many hindrances for the ambulance due to which road accidents in the city has been increased and to overcome the losses we came with a new idea which provides the functionality for path clearance to those emergency vehicles.

In this paper we have proposed the framework using android application that associates both emergency vehicle and the control room . The user can also track the status of that particular vehicle. This framework utilizes GPS Live Sharing System. This system will share the live location through GPS and the driver is given an option to select the destination and the police gets an alert which emergency vehicle is arriving at that particular route. Whenever a vehicle is about to reach a specific signal then before 500m – 1km far automatically the app will send an alert message to that particular Police near the signal as well as the control room with the alarm alert. This project uses RFID to resolve the Traffic Management problem [1]. Mobile will share the live location provided by the GPS Module i.e, The Latitude and Longitude of the position to be located. The GPS module are connected to the system using the mobile app. Above functions are developed using JAVA platform. The output of the App is converted into a text message through which the Police/control room will get a text message of the Latitudes and the Longitudes of that particular vehicle . The text message is connected to the IDLE (Java) software and a Java code is written to get the location of that particular Latitude and Longitude by linking it with Google maps. The exact

Traffic Management System for Emergency Vehicle Through Visual Sensing

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ABSTRACT

Traffic congestion worldwide has lead to loss of human lives due to failure in maintenance o f traffic and these leads to failure in critical patients, medical equipment, medicine on time, etc. Traffic is increasing drastically day by day and leading to terrible effects. Even though t here are traffic signal boards maintained (displayed) but due to heavy traffic, emergency ve hicles are in trouble and face lot of negative effects to man kind. Therefore, emergency vehic les such as ambulances, police cars,fire engines, etc stuck in traffic jam and delayed in reac hing their destination can lead to loss of property and valuable lives. They must be given a p riority and made easy way to pass on their way so that many lives are saved. With unending growth of vehicular traffic everywhere, this approach of visual sensing through sensor mark s a promising platform for an intelligent way of controlling traffic for emergency vehicle to r each their destination in a faster way. The approach of this paper is based on visual sensing and the measurement of distance between the emergency vehicle and the signal board, and t he alert transmission within the sensor network. So this method is implemented for visual mo nitoring using microcontroller. By making use of micro-controller we can develop an applic ation to clear the traffic which is coming in the path for emergency vehicle.

Keywords: traffic, micro-controller, visual sensing, emergency vehicle.

I.INTRODUCTION:

Rapid growth in world population has tremendously increased and there is high in demand f or smart city initiatives; however there are many issues for smart cities .Government and pri vate sectors both have to contribute and maintain the safety and welfare of the society. Moni toring traffic is a prominent issue in the current scenario It has become a global issue with th e escalation of vehicular density and population growth since past few decades. Road traffic not only leads to wastage of time, environmental pollution, etc but lead to loss of lives and p roperty. Controlling traffic through traffic light has become an integral part of any traffic ma nagement system. In traffic light there is a sequence set for green light and the vehicle pass b y and this is followed for regular and stable traffic but not for dynamic traffic situations. In c ase of emergency vehicles such as ambulance ,fire engines, etc their waiting time increases t hereby increasing the response time. Reducing the response time just by one minute can sav e lot of people's life increasing the response time. Thereby ,we introduce this advance system where based on priority of vehicles such as emergency vehicles, the signal light should be g reen and moved forward and where all other signals should be closed and given a priority fo r emergency vehicles first to move forward. This system has been proposed for an automatic sensing of the emergency vehicles to travel at faster rate. The emergency vehicles have to w ait in the intersection of roads as shown below.

Diagnosing the Blood Sample for Detecting Malarial Parasites

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ABSTRACT

Malaria is one of the deadliest diseases ever exists in this planet. Automated evaluation process can notably decrease the time needed for diagnosis of the disease. This will result in early onset of treatment saving many lives. As it poses a serious global health problem, we approached to develop a model to detect malaria parasite accurately from giemsa blood sample with the hope of reducing death rate because of malaria. In this work, we developed a model by using color based pixel discrimination technique and Segmentation operation to identify malaria parasites from thin smear blood images. Various segmentation techniques is been tested like watershed segmentation, HSV segmentation, Ostu segmentation have have been tested in this method to decrease the false result in the area of malaria detection. Machine learning like SVM and neural network plays an important role in classification We believe that, our malaria parasite detection method will be helpful wherever it is difficult to find the expert in microscopic analysis of blood report and also limits the human error while detecting the presence of parasites in the blood sample.

Keywords: Malaria, HSV,SVM

1. INTRODUCTION

Malaria is one of the severe diseases caused by the protozoan parasites of the genus Plasmodium, transmitted via female Anopheles mosquito. During the process of complex life cycle of parasites in growing and reproducing inside the human body, the red blood cell (RBCs) are used as hosts and destroyed afterwards.

World Health Organization estimates that in 2015 mentioning in their website http://www.who.int/en/, 212 million clinical cases of malaria occurred, and 429,000 people died of malaria, most of them children in Africa. Also as malaria causes so much illness and death, the disease hampers on many national economies and WHO also discovers that many countries with malaria are already among the poorer nations it is difficult for them to break the a vicious cycle of disease and poverty. Normally malaria happened because of four types of plasmodium species called Plasmodium falciparum, Plasmodium vivax, Plasmodium ovale, Plasmodium malariae. Among all of this Plasmodium falciparum is responsible for malaria fever in most of the cases.[11]

After collecting blood samples, the diagnosis of malaria infection is done by searching for parasites in blood slides through a microscope by experts most of the cases by a pathologist. Figure 1 shows blood sample with the presence of malaria parasites in blood cell. Recognition and detection of parasite in blood sample can be possible by applying a chemical process called (Giemsa) staining. This process slightly colorizes the red blood cell (RBC) and plasmodium parasites. The detection of the Plasmodium parasites requires detection of the stained objects.

Intrusion Detection Based on Machine Learning and Deep Learning Algorithms

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Abstract

With the development and integration of the Internet and social life, cyber-attacks are changing rapidly and the Cyber Security situation is not optimistic. As the distant areas of the world are connected by the communication industry using advances in Network Technology, intruders or attackers have also increased attacks on networking infrastructure equivalently, the defenders or protectors need a more efficient network detection approach which has the benefits of quick-responding learning potential of new network behavioural features for network intrusion detection motive . In recent years, Machine Learning algorithms have been gaining popularity in Intrusion Detection Systems(IDS) and also in many applications, the potential of Deep Learning algorithms has been confirmed to outperform classic approaches. This paper aims to introduce the concepts of Machine Learning and Deep Learning for Intrusion Detection. It highlights the concepts of Machine Learning-Ensemble Technique and Deep Learning-Convolutional Neural Network and provides a scenario for adopting Machine Learning/ Deep Learning methods for Intrusion Detection.

Keywords: Cybersecurity, Intrusion Detection, Machine Learning, Deep Learning, Neural Network, Convolutional Neural Network, Ensemble learning.

1. Introduction

In today's globalised era, everyone knows the importance of network which is a system of interconnected computers. Trillions of bytes of data of varying importance is exchanged over the internet every minute. Currently, due to the increasing in-depth integration of social life and the Internet, the internet is changing how people learn and work and it also shows us the serious security threats that are increasing. The data transferred over network might be valuable for someone, some documents, credentials or business transcripts, which play a very important part in our day to day life. To prevent information theft, privacy spoofing, and information misuse, it is important to ensure a sound network security. Identification of different network attacks, specifically previously unseen attacks, is a major issue to be resolved.

Cyber security is a set of technologies and processes that are designed to protect computers, networks, programs and data from attacks and unauthorized access, alteration or destruction. A network security system comprises of a network security system and a computer security system. These systems include firewalls, antivirus software, and intrusion detection systems (IDS). An Intrusion Detection System monitors network traffic flow for identification of attacks. Additionally, IDSs assist in discovering, determining and identifying unauthorized system behavior such as misuse, modification, copying and destruction.

A Hack Free Authentication and Authorization System Using 3 Layered Security

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Abstract

The overall objective is to develop an application that primarily aims at creating a definite solution to tackle shoulder surfing attacks as well as third party system hackers to make it an impenetrable system to secure confidential data. The first module is basically a Graphical Authentication System which involves a one-time login indicator as well as circulating horizontal and vertical bars covering the entire scope of the pass images and functions using the pass matrix mechanism. The second level of authentication is a passkey module and a honey-pot database scheme. Authorised users are given access to the original database when they enter the pass key while other unauthorised users are given access to the fake database which consists of irrelevant data. The security scheme is believed to be impossible to break through by hackers and also would provide adequate security for confidential and important data like finance transactions, project reports, passcode etc. With the combination of these three layers, the hacker would not be able to crack through the software for the confidential files of the user.

Keywords: PassMatrix, AES, Honeypot, Authentication

1. Introduction

Passwords are largely used in application authentication for computer security and privacy. However, with the vulnerability involved with human actions that could compromise the security of systems, such as choosing a bad password and inputting passwords in an insecure way are regarded as "the weakest link" in the authentication chain. Rather than choosing arbitrary alphanumeric strings, users tend to choose passwords that are either short or meaningful for the sake of easy memorization and convenience. With the augment of web applications and mobile apps revolving around every domain that an enterprise or an individual is connected to, there has been a huge rise in demand for an impenetrable authentication system that can match up to the vulnerabilities the hackers of today pose to confidential data. These applications can be accessed only by authentic users only. Different graphical secret word verification plans were created to address the issues and shortcomings related with printed passwords. Various graphical watchword validation plans were produced to address the issues and shortcomings related with literary passwords. In light of a few reviews, for example, those in people have a superior capacity to remember pictures with long haul memory (LTM) than verbal portrayals. Picture based passwords were turned out to be less demanding to remember in a few client thinks about. Therefore, clients can set up an intricate verification secret word and are fit for recalling it after quite a while regardless of the possibility that the memory is not enacted occasionally. Be that as it may, the greater part of these picture based passwords are powerless against shoulder surfing assaults (SSAs). This kind of assault either utilizes coordinate perception, for example,

Prediction of Depression among Type 2 Diabetic Patients using Machine Learning

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Abstract

Most of humankind feels sadness, tragic, feeling down from time to time; a few people encounter these emotions strongly, for long period of time and usually with no evident reason. Depression is not a low mood only; it's a genuine condition that affects the physical and mental health of the human. It is a persistent problem, not a passing one, lasting on average 6 to 8 months. There are many studies that demonstrate a close association between depression and type 2 diabetes. Therefore, this paper aims to consolidate prediction of depression operation through the developing and applying the machine learning techniques.

Keywords-Machine learning; classification; optimization ;Diabetes type 2; Depression; support vector machine (SVM); K-MEAN; F-CMEAN; Probabilistic Neural Network (PNN).

1. Introduction

Emotional instability is ascending at widespread rates far and wide. According to NICE, people who are diagnosed with a chronic physical health problem such as diabetes are 3 times more likely to be diagnosed with depression than people without it.The World Health Organization (WHO) expected that people in the world will be influenced by mental and neurological issue sooner or later in the life as a percentage of 25% by 2020; depression will be in the second place, after heart disease but will overcome all other diseases[5]. It is a very dangerous indicator and requires serious preparation at all levels with all technical aspects and necessary human resources. It's necessary to find the fate of diabetic patients since we know that there is a close association between their diseases on the one hand and depression on the other. Certainly it will be one of the ways to deal with the depression is to find out before it happens so it will be ready to deal with or to ease its consequences. Machine learning techniques can be used to map many indications and classified to possibility of the depression. The final stage of the machine learning and pattern recognition is the classification stage[2].

The Classification term is defined as a machine learning issue, data is mapped into one of several predefined categories based on a training data, and data includes instances whose class membership is known. Classification algorithms or techniques are responsible for building a model that will accurately predict the category of unseen instances. Classification has a wide variety of applications in a number of diverse domains such as medical diagnosis, document organization, and many others[2]. This has prompted to many proposed classification algorithms and techniques, for example, and not as a limitation, Support Vector Machines (SVMs), K-Nearest Neighbor algorithm, Logistic Regression, Radial Basis Function network, Naive Bayes, Artificial Neural Networks, and many of these algorithms. As a result, many surveys and test examinations have been completed by

Recommendation System for Education Using Machine Learning Techniques

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Abstract

With the appearance of web based e-learning systems, a very large amount of educational data is getting generated. These colossal data gave lead to big data in educational sectors. Presently, big data techniques and Analytics are being used to examine these educational data and produce different predictions, analysis and recommendations for the field of education. Already Recommendation systems have proved their weightage in e-commerce, service industry and social networking sites. In a short time recommendation systems are proved to be efficient for education sector as well. In this work we are using recommendation system for education. This work uses Machine Learning techniques and big data analytics to recommend library books at library and also elective subjects for student depending upon their grade points obtained in other subjects. We are using eclipse platform along with net beans java with the help of machine learning algorithms to predict the student interest in the library choice of books and also in the elective subject to choose. The outcome of this can be used by schools, colleges or universities to suggest library recommendation of books and alternative elective courses to students.

Keywords: Recommendation system, education, big data, library system.

1. Introduction

Recommender Systems (RS) generally apply techniques and methodologies from other adjacent areas – such as Human Computer Interaction (HCI) or Information Retrieval (IR). All of these systems bear in their deep core an algorithm that can be understood as a particular instance of a Data Mining (DM) and Machine Learning (ML) techniques. The data mining process mainly consists of three steps, which is carried out in succession: Data Preprocessing, Data Analysis, and Result Interpretation. In particular, we use data mining methods and machine learning algorithms like classification, clustering and association rule discovery.

2. Related work

Recommender system for big data in education: This section describes about few of the big data tools like Hadoop, Mahout, MLlib, R, and Python – Crab etc. [1].

Recommender system: an overview of different approaches to recommendations [2], an overview of the fields of recommender systems and describes the present generation of recommendation methods. Recommender systems or recommendation systems (RSs) are a subset of information altering system and are software tools and techniques providing suggestions to the user according to their need.

Prediction of Heart Disease using Machine Learning

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Abstract

Heart disease is the leading cause of the death of the population all around the globe. Predicting the heart attack is very difficult as it is very complex and doctors need to have great expertise and knowledge in that field. In today world Health Care industry has a lot of data and information that is hidden. Various machine learning algorithms like Naïve Bays, CART, and REPTREE are used to predict the heart attacks in an individual. The research states that the accuracy level of prediction of heart disease using machine learning algorithms is about 99 percent. Data mining algorithms can be used to generate the pattern among the hidden data present in the health care industry.

1. Introduction:

Now day's heart disease is a main reason for death in the world. Heart is very useful part of our human body. This disease is number one problem for in the world. But not only heart attack some of the disease attacked form valve, ventricle, lung cancer, breast cancer, diabetes etc. Most of hospitals admitted in heart disease patient. This disease mostly affected in male because smoking habits. This paper analyzes the different kinds of heart disease using the classification techniques. A lot of information which can be in various organization such as numbers, content, graphs and pictures yet tragically, this repository that includes rich data is seldom utilized for clinical choice making. There is a considerable measure of data put away in vaults that can be utilized viably to bolster decision making in human services. This brings up a critical issue Different types of data mining techniques available are classification, cluster, feature selection, association rule can be analyzing the heart disease prediction. Data mining tools perform data analysis and may uncover important data patterns, contributing greatly to business strategies, knowledge bases, and scientific, medical research.

1.1. Aim of the proposed work:

Today in this world there are many people who dies because of heart attacks and some of them because they find it too late to be cured. Aim of this work is to predict the heart disease patient if any so that there will be ample time to cure it or to find the cure.

2. Data Source:

Clinical databases have collected a huge amount of information about patients and their medical conditions. The term Heart disease holds lots of diverse conditions that affect the heart. Heart disease is the leading cause of loss of people in the world. The term cardiac disease comprises a ample range of conditions that affect the heart and the blood vessels and the way in which blood is pumped and circulated through the body. Records set with medical attributes were obtained from the Cleveland Heart Disease database. With the help of the dataset, the patterns related to the heart attack diagnosis are extracted. The records were split

Digital Liquid Level Indicator

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Abstract

Liquid level present in tanks of both general storage and automobiles are to be estimated for the effective usage of the present liquid. The estimation level of present liquid is paramount for the optimum usage of the liquid which is of utmost importance in certain cases. The effective indication of the liquid, the ongoing data-transmission, the enhancement of the signal and the receiving of the subsequent signal in are covered in this paper.

INDEX : Liquid level, data-transmission.

I. INTRODUCTION

In this digitized world, if the indication of liquid levels in automobiles and tanks are also made digital it will help know the exact amount of liquid available in the tank. The above furnished fact is considered in the paper, and a proper solution for indicating the accurate availability of liquid in the tank via our phone at any given place or time within a certain range. This paper focuses on the technology used in order to indicate the exact volume of liquid present in a tank by means of a floating sensor used alongside a transmitter which sends signals to the receiver, which in this case is a mobile-phone. The main advantage is that the user will be notified when the fuel is critically low or in the reserve state hence keeping the person informed and prepared. Here we use floating sensors to accurately read the liquid level. The reading here, is transmitted to the mobile phone which in-turn reads and interprets the received values and produces the necessary output. To avoid tampering of the connection, we provide authentication to the respective user alone. This in turn makes the data not interpretable by any other device keeping the users' data safe.

The basic and existing systems as of now are, fuel gauge found in bikes(which does not indicate accurately in volume). Manually opening the lid of the given tank and checking the availability of liquid(which again is inaccurate). Automatic water pumps which indicate one of empty, full or half full which is insufficient for efficient planning. Mileage of vehicles is also an estimate based on an approximation of the remaining fuel.

This project acts as an effort to notify the running out of fuel in bikes' fuel tanks beforehand. At times, we forget to check the fuel level and thereby face problems as a result.The approximate distance travelable is also unknown which is a problem that this app will solve. Overhead tanks with manual pump systems, in cases of power cuts can cause household problems, such as lack of water for daily activities and cooking. Not knowing the accurate level of liquid in the tank hinders the chances of planning with respect to the liquid resource at hand thereby causing unnecessary wastage of resources. Digital Liquid Level Indicator is invented to detect the liquid level in the tank as the input and the percentage of the tank from its full capacity will be displayed on the mobile application along with other information which turns out to be crucial at times. This project in turn aims to keep the owner fully aware of the liquid conditions of the tank at any given time or place.

Air Pollution Data Analysis and Prediction

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Abstract

Air Pollution Data Analysis is the concept which uses both Big Data and Machine Learning techniques to analyze the real time data of pollutants in the air. The data of individual concentration of pollutants in the air such as CO, NO_2, SO_2 etc. are collected from Central Pollution Control Board. The data obtained is cleansed to a particular format and loaded to the system and using the EDA Machine Learning algorithm, the computer analyses the data and predicts the amount of pollutants that will be present in the air in the graphical format. The project aims to create awareness among the general public about the effects of poisonous pollutants present in the air which are responsible for causing Air Pollution. Usually pictorial representation of any information is quickly grasped by everyone compared to raw data and hence we represent the output in the form of graphs which can be understood easily. The last section of the project offers some conclusions and recommendations for people to control their contribution to the air pollution being caused.

Keywords: Big Data, Machine Learning, Air Quality Index (AQI), Exploratory Data Analysis (EDA)

1. Introduction:

Urbanization leading to growth in industrialization and traffic has resulted in the increase of pollution in terms various factors such as air, water, soil, etc. Increasing Vehicular population and deteriorating quality of air is the by-product of rapid growth of population and haphazard urbanization in India.

Bangalore is one of India's fastest growing metropolises and although benefiting economically due to its fast development, has a rapidly deteriorating environment. A number of epidemiological studies have shown that ambient air pollutants, especially fine and ultrafine particulates, have an adverse effect on human health. This is due to the fact that these tiny particulates can penetrate deep into the lungs and even be dissolved in the blood. The health effects can be especially hazardous for sensitive groups, like children, senior citizens, and people with asthma, obstructive lung disease (Chronic Obstructive Pulmonary Disease – COPD), and cardiovascular diseases. Scientists have defined the main air pollutants that pose a health risk for humans in urban areas. For each of these pollutants, the World Health Organization (WHO) has defined air quality guidelines for protection against harmful health effects. The guidelines define the specific limits or concentrations that should not be exceeded. Countries often have their own standards that are similar but the specific levels can vary slightly.

Air Quality Index (AQI) is a tool to disseminate information on air quality in qualitative terms (e.g. good, satisfactory, and poor) as well as its associated likely health impacts. [1] A vast amount of data on ambient air quality is generated and used to establish the quality of air in different areas of Bangalore.

INDUSTRIAL SAFETY, MONITORING & TRACKING WITH VOICE ALERTS

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Abstract:

This development mainly focuses on the controlling of home safety and monitoring the security system mainly in a industry using sensors and transfer the related sense to data using the GSM technology. The system is SMS based and user uses wireless technology (GSM) thus providing universally access to the system for automated appliance control.8051 Micro Controller is the core component of this project. The objective of this project is to investigate a cost effective solution that will provide controlling of home appliances[6] and industrial needs remotely providing a well secured environment to the users. Reminders or alerts in existing system allows user to do some task at particular time.

This work includes the study of GSM modem using sensors. GSM network operators have roaming facilities; user can often continue to use the mobile phones when they travel to other countries etc,.This work also includes picture capturing of the defected area if needed.

Keywords: This paper explains the safety and monitoring of industrial needs or home appliances with some degree of sources and allows user to do particular task at the same time.

1. Introduction:

"Industrial Safety and monitoring[2][3][4] using 8051 microcontroller" implements the emerging applications of the GSM technology. The main functionality can be summarized on a high level to performing control operations in the physical world using actuators, based on physical measurements obtained by sensors. Using GSM networks, a control system has been proposed that will act as an embedded system which can monitor and control appliances and other devices locally using built-in input and output peripherals.

Industrial Safety and monitoring systems can range in complexity from simple gadgets that provide control over individual components to individual Industrial subsystems and integrated whole house systems[6]. It can turn on or off devices connected to it or can control the various parameters related of the appliance. An integrated whole house system would unify all such devices and subsystems within the Industrial with a central control system, which is called the base static controller.

Remotely the system allows the user to effectively monitor and control the house/office appliances and equipments via the mobile phone set by sending commands in the form of SMS messages and receiving the appliances status. Industrial automation encompasses lighting, security, telecommunications, access and safety, information and entertainment

A DEEP LEARNING APPROACH TO DETECTION OF MALICIOUS WEB CONTENT

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Abstract

Malicious web content is a serious problem on the Internet today. In this paper we propose a deep learning approach to detecting malevolent web pages.

While past work on web content detection has relied on syntactic parsing or on emulation of HTML and Web to extract features, our approach operates directly on a language-agnostic stream of tokens extracted directly from static HTML files with a simple regular expression.

This makes it fast enough to operate in high-frequency data contexts like firewalls and web proxies, and allows it to avoid the attack surface exposure of complex parsing and emulation code.

Unlike well-known approaches such as bag-of-words models, which ignore spatial information, our neural network examines content at hierarchical spatial scales, allowing our model to capture locality and yielding superior accuracy compared to bag-of-words baselines.

Our proposed architecture achieves a 97.5% detection rate at a 0.1% false positive rate, and classifies small-batched web pages at a rate of over 100 per second on commodity hardware. The speed and accuracy of our approach makes it appropriate for deployment to endpoints, firewalls, and web proxies.

1. Introduction

Nowadays cyber attack is a main problem. Detecting the malicious web content using Deep Learning[1]. It is a subfield of machine learning concerned with algorithms inspired by the structure and function of the brain called artificial neural networks.

Deep learning is a machine learning technique that teaches computers to do what comes naturally to humans: learn by example. Deep learning is a key technology behind driverless cars, enabling them to recognize a stop sign, or to distinguish a pedestrian from a lamppost[2]. It is the key to voice control in consumer devices like phones, tablets, TVs, and hands-free speakers. Deep learning is getting lots of attention lately and for good reason. It's achieving results that were not possible before. In deep learning, a computer model learns to perform classification tasks directly from images, text, or sound[3]. Deep learning models can achieve

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A Survey Based On Software Defined Networks Using MININET

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Abstract

The Vehicular adhoc Networks (VANETS) consists of different sensors and microcontrollers to form an intelligent vehicle grid. This increases traffic flow and road safety. In connected vehicles there are challenges to communicate. Vehicle and road side infrastructures are used for effecient communication on roads in cities and highways. The use of SDN(software Defined Network) in VANETS helps in reducing the delay in delivery of information.The SDN improves the network control and helps in efficient communication between vehicle to RSU , vehicle to vehicle and even vehicle to cloud.The concept of SDN can be emulated using Mininet tool.Mininet runs on standard Linux platforms .They can be used to create and emulate an entire Openflow network.Virtual hosts,switches,controllers and links can be created with mininet.Packet flows in different topologies can be examined. in The Mininet tool has a controller which controls the flow of packet.SDN flow table entries are observed with this tool.The challenges in VANETS such as scalability,realiabilty,flexibility and security can be improved with the use of SDN enabled communication networks.

Keywords: VANETS, SDN, IoT, Mininet ,Miniedit

1. Introduction

Advances in MicroElectroMechanical system (MEMS) technology have enable the development of smart sensor to be dispersed in our environment. These can essentially sense data, process and communicate it to other sensor, base station, and /or Internet gateways. They are deployed for various applications, ranging from tracking and environmental monitoring in military application, to control and actuation in manufacturing plants. Inter-networking of these sensors, base stations, and Internet gateways makes them an ideal candidate for the Internet of Vehicles(IoV)[1] in general . In the IoV, the integration of sensors and microcontrollers in the vehicles and fixed roadside infrastructure from an intelligent vehicle grid to cooperatively increase traffic flow and road safety. Vehicles equipped with different sensors, Networking and communicating device. This is capable of communicating with other device within the vehicle, communicating with similar vehicles and communicating with fixed infrastructure. The challenges are facing in communication are Security, Privacy, Scalability, Reliability, Quality of service and Lack of global standards.

The vehicular cloud reside on the top of the vehicle grid and is the backbone of its operations. RSU are the sensors and microcontroller installed alongside and in the road. In vehicular cloud the data are going to perform their operation. As part of the vehicular cloud and connected vehicle are the part of IoT. These are the enabler of the IoV. So the different user and the stakeholder of connected vehicle includes Academia , Law Enforcement, Automobile companies, Government agencies, Standardization group and Cloud service provider .The

RSU Cloud Communication in Vehicular Networks using Raspberry Pi

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Abstract

The Internet of Vehicle (IoV) is embedded with different sensor and microcontroller in the vehicles. That are fixed roadside infrastructures from an intelligent vehicle grid, this is cooperatively increase traffic flow and road safety. In connected vehicle of IoV, there is challenge how different vehicle make possible to communicate. Communication between one vehicle to another vehicle. Communication between pedestrian user or who are not present in vehicle. Vehicle and road side infrastructure or exiting infrastructure in the city.

A Road Side Unit (RSU) cloud is formed. The RSU consist of Software Defined Networking (SDN) to dynamically instable the service. Reconfiguration of RSU is costly. SDN makes it possible. RSU acts as a data center. SDN is very important Technologies which has lot of potential for use Internet of Things (IoT) for making IoT efficient. It's about transforming or restructuring exiting new infrastructure. SDN can potentially reduce management complexity and routing mechanism, which contributes to better network reliability, availability and serviceability.

In this paper, we'll try to sense some data from the proximity/ultrasonic sensors and pass this data from Raspberry Pi to Raspberry Pi / external database (MariaDB) via SDN. The RSUs are formed using Raspberry Pi's as they have the ability to communicate among themselves wirelessly, unlike Arduino. Raspberry Pi is more powerful than Arduino in terms of computation or processing power. Additionally, it has better memory capacity and it can integrate different types of sensors and actuators. It is a single board computer which is of very low cost and easy to access.

Keywords: Ultrasonic Sensor, Raspberry Pi, Raspbian OS, Wireshark and OpenvSwitch

1.Introduction:

Road accidents are the most frequent and the cause of most damage.The reasons for this are the extremely dense road traffic and the relatively great freedom of movement given to drivers. Accidents involving heavy goods vehicles occur all too frequently despite callsfor responsible behavior , for respect of the loading regulations and the highway code, as well as the obligation for drivers to adapt their speed, which affects stopping distances, to the traffic and weather conditions (rain, ice, fog, etc.). Accidents on highways are common. Vehicles move at a very high speed on highways and it gets very difficult to stop the vehicle when something comes in front or the vehicle in front stops suddenly. A proper measure should be

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Abstract

Usually the agricultural produce is purchased from the farmers at a low price and sold to the consumers at relatively very high price because of a large number of middlemen involved. direct contact between the farmer and retail seller or wholesaler can reduce the number of middlemen involved in the marketing chain. We are developing a mobile/web based app that can facilitate the direct contact between producer (farmer) and buyer may reduce this wide gap or real time interactive system for communication between farmer and mandis .

In this project we are using NFC(near field communication) device for the authorization purpose which is integrated to the mobile/web application .NFC is a set of communication protocols that enables two electronic devices, one of which is usually a portable devices such as a smartphone, to establish communication by bringing them within 4cm of each other. NFC devices are used in contactless payment systems, similar to those used in credit cards and electronic ticket smartcards and allow mobile payment to replace/supplement these systems. This is sometimes referred to as NFC/CTLS.NFC is used for social; networking, for sharing contacts, photos, videos or files. NFC enabled devices can act as electronic identity documents and keycards. NFC allows one- and two-way communication between endpoints, suitable for many applications.

1. Introduction

Information and communication technology is becoming an important aspect of Agriculture sector. Till now most of IT initiatives by government were focused on website and training. In the current scenario, the mobile application or websites are becoming effective way of delivering information. The app is designed primarily for farmers keeping their requirements in mind. The app is engineered to provide all information at a common place that a farmer or agriculture stakeholder in agriculture sector may require.

For many years, farmers in India have had little freedom in choosing markets and buyers for their produce. All states in the country, except three, mandate that marketing and selling of farm produce must be routed through state-owned **mandis,** retail markets where middlemen squeeze farmers to increase margins. In such a situation, can technology-enabled solutions help out Indian farmers to sell their produce directly to customers.

When a farmer registers on mandi Trades, it takes information of his produce, along with location details, and stores it on a scalable cloud-based database. For a buyer, it gives a map-based view of available produce with the produce info, sorted by his geographical proximity to the farmer. It's as easy as a breeze to contact farmers, as his phone number is available on the app. There are also options to help farmers plan better, such as viewing the current prices of commodities in trade, demand for listed products, weather and seasonal changes and prices of rare items.

Middlemen specialize in performing activities that are directly involved in the purchase and

Sparsh- A Modular Platform of Touch

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Abstract

Touch screens have been around for longer than you think. These days, when people think of touch screens, they tend to think of the popular consumer products, such as smartphones and personal computer, which are now widely available. However, you have been using touch screen technology since days beyond recall those devices entered the mainstream, and these types of screens have been critical to the advancement of the businesses that use them. In this project a low-cost wireless glove controller that detects finger gestures is developed using ADXL accelerometer and flex sensors. The performance of the sensor is compared to that of commercially available once. A system using Arduino and Bluetooth is developed to allow the user to specify desired finger gesture.

Keywords: sensor, accelerometer, Arduino, Bluetooth

1. Introduction

It took generations and several major technological improvement for touchscreens to achieve this kind of presence. Although the elemental technology behind touchscreens can be hunt down to the 1940s, there're piles of evidence that suggests touchscreens weren't feasible until at least 1965. Popular science fiction television shows like Star Trek didn't even refer to the technology until Star Trek: The Next Generation debuted in 1987, almost two decades after touchscreen technology was even deemed possible. But their incorporation in the series paralleled the advancements in the technology world, and by the late 1980s, touchscreens certainly appeared to be reasonable enough that end user could employ the technology into their own homes.

The sale of touch screen gadgets is improving day by day and has proven reliability. This technology is an exclusive type of visual display device that concede the user to physically interface with the computer or electronic device by touching the screen. Whether a local ATM (Automatic Teller Machine) is being used by you or making a phone call on one of the newer cell devices, in one form or another, we are all exposed to touch screen technology. This is starting to change with the advertising of multi-touch technology. Touchscreens have subsequently become familiar in everyday life. Companies use touch-screens for kiosk systems in retail and tourist settings, point of sale systems, ATM, and PDAs (Personal Digital Assistant), where a stylus is sometimes manipulated the GUI (Graphic User Interface) and to enter data.

In this project we used flex sensors. Flex sensors are sensors that change resistance when bent. This concept shows that if flex sensors are placed at the joints of fingers, they can be used to determine if fingers are bent or not.

Underground Cable Fault Distance Detector Using 8051 Micro-controller and Wi-Fi Module

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Abstract

The objective of this project is to determine the distance of underground cable fault from base station in kilometres. When a fault occurs for some reason, the repairing process related to that particular cable is difficult as the exact location of the cable fault is not known. A set of resistors is assembled to represent the cable length in km. fault occurrence at a particular distance and the respective phase is displayed on to a LCD interfaced to the micro-controller. The same information is available on web by interfacing IoT module with micro-controller. The proposed system is to find the exact location of the fault and the information has to be sent to the user mobile phone by using IOT module.

1. Introduction

Study of cable failures and development of accurate fault detection and location methods has been interesting research topics in the past and present. Though the underground cable are not affected by any adverse weather condition such as storm, snow, heavy rainfall as well as pollution, if any fault does occur in cable, then it is difficult to locate fault. Even though the cable manufacturing technology is improving steadily; there are still influences which may cause cable to fail during test and operation.

Fault detection entails determination of the presence of a fault, while fault location detection includes the determination of the physical location of the fault. However, this fault detection and fault location detection technology for underground power distribution systems is still in developing stages. There are many ways to find the cable fault location. The world is become digitalized so the project is intended to detect the location of fault in digital way.

Fault Location Methods

Fault location methods can be classified as:

1) Online method: This method utilize & process the sampled voltages& current to determine the fault points. Online method for underground cable are less than overhead lines. [9]

2) Offline method: In this method special instrument is used to test out service of cable in the field. There are two offline methods as following

1) Tracer method: In this method fault point is detected by walking on the cable lines. Fault point is indicated from audible signal or electromagnetic signal. It is used to pinpoint fault location very accurately. Example: i) Tracing current method ii) Sheath coil method

2) Terminal method: It is a technique used to detect fault location of cable from one or both ends without tracing. This method use to locate general area of fault, to expedite tracing on buried cable. Example: i) Murray loop method ii) Impulse current method

Integrating Smart Healthcare System by using Rescue Portal App

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Abstract

We are designing a health and rescue website and application to integrate into the healthcare system. This system provides Adhaar QR code-based medical identification alerts and an in-hospital patient identification system. Every member of the medical system have the Adhaar card to facilitate medical identification alerts, the QR Code of the Adhaar card can be cut and worn as a bracelet or carried as it is. Patients must always possess the QR Code Identity bracelets within hospital grounds or the Adhaar card itself. These QR code bracelets link to the QR Code Identity website, where detailed information is stored; a smartphone or standalone QR code scanner can be used to scan the code. The design of this system allows authorized personnel (e.g., Doctors) to access more detailed patient information than the average smartphone user: emergency service professionals are authorized to access patient medical histories to improve the accuracy of medical treatment.

***Keywords:** Medical identification, Patient identification, Personal health records, Medical history*

1. Introduction

We are living in the world where perilous situations can happen to anybody, requiring emergency rescue assistance and relief operations. You might be on your way home from work and suddenly confront an unpredictable disaster or accident that you never imagined before. In a time like this, communication technologies and social media tools emerge as a viable solution to respond to emergencies, connect with rescue specialists and maintain personal safety.

Nowadays, the increase in variety of road accidents there's a requirement to access a person's medical/contact data just in case of emergencies for aid and hospital for different formalities.

This is an app for doctors that use the convenience of technology (practice management software and more) to make healthcare simpler for doctors and patients alike.

So as to shorten the admitting procedures once a patient seen within the emergency department is after admitted to the hospital, we are going to be retrieving their data hold on in mysql database that is scanned with the assistance of a Adhaar card's QR code containing a link to the victim's emergency data. This may facilitate hospital authority to grant acceptable medication to the accident victim and inform his/her family.

Initially, the user has to feed his data into the mobile application. The QR code is provided to the users within the Adhaar card. This data may be accessed by the user to either read or

Crash Analytics Using IOT and Datamining

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ABSTRACT:

Road accidents are one of the main causes of death and injuries worldwide. The costs of fatalities and injuries due to accidents have a great impact on the society. To reduce the number of deaths resulted from accidents rapid treatment and transportation of victim to the hospital in the shortest time can reduce fatalities.

This paper explains device and method to monitor the motorbike's angle with respect to ground and acceleration using gyro sensor. It will trigger a SOS message to nearest hospital and police station when the vehicle experiences a crash.

When a crash has occurred, user information and spot of the accident is added into the database.

Keywords: Crash, Gyro sensor, Bluetooth, Mobile App.

1. INTRODUCTION

According to NHAI in the recent survey there is a death every 4 minutes due to road accidents. There should be more implementation of accident detection system to reduce the number of deaths resulted from road accidents. As a recent study suggests that rapid treatment and transportation of victim to the hospital in the shortest time can reduce fatalities.

The motivation of this work is to create a portable system with user friendly android application which help to communicate about the crash to nearest hospital and police station so that he/she receives the required help before it is too late. All the existing Systems (EDR and flight recorder) are only available to specific types of vehicles. The flight recorder is available for Aircraft and there is an event data recorder(EDR) only for hyper cars. The proposed system is a Complete product of hardware and mobile application [1]. This hardware will monitor the vehicle's angle (inclination angle) and acceleration and the mobile application [1] will help by sending the SOS message to nearest hospital when crash happens.

2. LITERATURE SURVEY

A number of previous studies in this area have developed injury severity models using crash related datasets. The EDR and flight recorder is a small box which will be fitted to car and aircraft respectively which will measure various aspects of how, when and where the vehicle is driven. This data will be later used to identify the reason of the crash or mishap.

Smart Garbage Management System

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Abstract

Smart cities integrate multiple ICT and IOT answers for assemble an agreeable human home. One of these arrangements is to give an ecologically agreeable, proficient and compelling refuse the executives framework. The present trash gathering framework incorporates routine waste vehicles doing rounds day by day or week after week, which doesn't cover each zone of the city yet is a totally wasteful utilization of government assets. This paper proposes a practical IOT based framework for the administration to use accessible assets to productively deal with the staggering measures of waste gathered every day, while likewise giving a superior answer for the burden of trash transfer for the natives. This is finished by a system of brilliant canisters which incorporates cloud-based methods to screen and examine information gathered to give prescient courses produced through calculations for dump trucks. An android application is created for the workforce and the residents, which essentially gives the produced courses to the workforce and finds the closest accessible shrewd receptacle for natives.

Keywords: IOT; Smart City; Wi-Fi; Predictive Analytic.

I.Introduction

One of the main concerns with our environment has been GARBAGE MANAGEMENT which effectively affects the soundness of the general public. the location, observing and the board of waste are one of the essential issues of the present period. Strong squanders might be characterized as the natural and inorganic waste materials created by different exercises of the general public. To defeat this issue, Smart trash the board framework is proposed.

As the total populace develops at a quick pace, increasingly more waste is created every day and waste administration turns into a progressively pivotal issue. Of specific significance is the gathering of strong waste from city refuse containers. Research has appeared strong waste accumulation and exchange given by a city to its inhabitants takes up over 70% of the city squander the executives spending plan in creating nations, and up to 60% in created nations. This not just drains the board of its financial plan in a solitary territory, yet in addition diminishes the assets that can be spent in different parts of waste administration, for example, reusing plants and such. Notwithstanding the assets utilized, it has likewise been appeared insufficient or wasteful gathering forms additionally lead to bothersome and at times unsanitary conditions that represent a hazard to the encompassing networks. Such dangers are introduced as stuffed waste receptacles and foul smells.

It was distinguished that the substantial number of assets utilized is commonly because of the absence of arranging, information on the gathering, and poor foundation. A definitive need of great importance for a creating country is the key for Smart City. The persuasive environmental elements that stances to be a risk to this may include: risky contamination and its ensuing consequences for soundness of mankind, disturbing an unnatural weather

Advanced Electric Voting Machine For Elderly And Blind People

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Abstract

It has always been an poweful task for the election commission to conduct free and fair ballot in our country, the largest democracy in the world. Millions of money have been spent on this to make sure that the elections are disturbance free. But, now-a-days it has become common for some forces to spoil in rigging which may eventually lead to a result contrary to the actual verdict given by the people. This paper aims to present a new electric voting system employing biometrics in order to avoid dishonesty and to enhance the precise and momemtum of the process. The system uses the persons thumb impression for voter recognization as we know that the thumb impression of every person being has a isolated pattern. Thus it would have an advantage over the present day voting systems. As a early voting procedure, a database having the thumb impressions of all the eligible voters in a constituency is created. At the timr of elections, the thumb impression of a voter is entered as input to the machine. This is then compared with the exitsting data in the database. If the particular pattern matches with anyone in the available data, access to cast a vote is granted. But in case the pattern doesn't match with the records of the database or in case of repetition, access to cast a vote is contradict or the vote gets rejected. Also it may lead to take the further step like ,the police station nearby to the election poll booth is informed about the identity of the pretender. If the person is not eligible for voting even though he has voted then automatically that vote is not consider it could rejected their it self.All the voting machines are connected in a web, through which data carry takes place to the main organize. The result is instantaneous and counting is done at the time of voting i itself. The over all cost for conducting elections gets reduced and so does the maintenance cost of the systems. Blind and visually disabled voters may cast their vote at their local polling place on Election Day by using this.

1. Introduction

Voting is the most crucial process which is carried out to reveal the opinion of the people in selecting government or in any issue that is under consideration. So the standard voting systems based on paper voting are being replaced by advanced electronic voting machines. Voting is a decision making mechanism in a society and security is indeed an essential part of voting. The term "Electronic Voting" represents the practice of electronic means in voting to safeguard the security, reliability, and transparency. Voting machines are the combination of mechanical and electronic equipments which are needed for casting votes and displaying the election results. The crucial role in determining the result of an election, electronic voting systems should be developed with the greatest responsibility and security[1][3]. Visually impaired and partially sighted persons are often not viewed as individuals with full citizenship rights though having the rights to vote and to be elected. Thus often they are just ignored in the elections and voting process in their communities. Often the ballot box is kept in dark room without adequate light which causes

Automatic Detection of Potholes and Humps Based on IoT

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Abstract-*One of the major problems in developing countries is maintenance of roads. Well maintained roads contribute a major portion to the country's economy. Identification of pavement distress such as potholes and humps not only help drivers to avoid the accidents or vehicle damages, but also helps authorities to maintain roads. This paper discusses previous pothole detection methods that have been developed and proposes a cost-effective solution to identify the potholes and humps on roads and provide timely alerts to drivers to avoid accidents or vehicle damages. Ultrasonic sensors are used to identify the potholes and humps and also to measure their depth and height, respectively. The proposed system captures the geographical location coordinates of the potholes and humps using a global positioning system receiver. The sensed-data includes pothole depth, height of hump, and geographic location, which is stored in the database (cloud). This serves as a valuable source of information to the government authorities and vehicle drivers. An android application is used to alert drivers so that precautionary measures can be taken to evade accidents. Alerts are given in the form of a flash messages with an audio beep.*

Keywords-GPS,GSM,ultrasonic sensors.

I. INTRODUCTION

INDIA, the second most populous Country in the World and a fast-growing economy, is known to have a gigantic network of roads. Roads are the dominant means of transportation in India today. They carry almost 90 percent of country's passenger traffic and 65 percent of its freight [1]. However, most of the roads in India are narrow and congested with poor surface quality and road maintenance needs are not satisfactorily met. No matter where you are in India, driving is a breath-holding, multi-mirror involving, potentially life-threatening affair.

Over the last two decades, there has been a tremendous increase in the vehicle population. This proliferation of vehicles has led to problems such as traffic congestion and increase in the number of road accidents. Pathetic condition of roads is a boosting factor for traffic congestion and accidents. Researchers are working in the area of traffic congestion.

II. RELATED WORK

Pavement distress detection is an intriguing topic of research and researchers have been working on pothole detection techniques. This section gives a brief description about the existing solutions for detecting potholes and humps on roads.

Image Rectification using Convolutional Neural Network

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Abstract

From past Decades computer has made many impossible things possible. In this paper we use the same computer for Image Rectification. The main aim of this paper is to rectify the damaged image to desired image, incomplete image to complete image (inpainting) and modify images like rainy to derainy, noisy to denoisy, simple resolution to super resolution. We use MATLAB for implementing the paper.PAN consists of two feed-forward CNN Namely, image Transformation Network (T), and Discriminative network (D).These Networks are trained alternately to solve image to image transformation tasks. After the transformation tasks the image will be in Super Resolution. So, the purpose is to achieve the desired images by choosing the required layers from the networks.

***Keywords:** Inpainting, Two Feed-forward, Convolutional Neural Network (CNN), GAN, noisy-denoisy, rainy-derainy, MATAB.*

1. Introduction

Image to Image transformation aim to transform an input image into the desired output image. Transforming a colour input image into geometric representation that includes Image-de-noising ,Image In-painting, Image Super-Resolution, Image-Segmentation. convolutional neural networks (CNNs) are trained in a good manner for various image to image transformation tasks. They encode input image into hidden representation, which is then decoded to the output image.

IMAGE-DERAINING:

In this technique, we remove the rain drops from the image that is clicked during the rainy time. It is removed using the T and D layers i.e., pixel to pixel transformation.

DERAINING

Implementing Smart Helmet System to prevent accidents using Arduino UNO with location tracker

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Abstract

The number of road-accidents is been increasing day by day; mainly in countries like India, China, Brazil etc. The main aim of this paper is to decrease the number of two-wheeler accidents by providing better safety to the riders. The accidents are due to drunk-and-drive, rash driving and not wearing helmet; using mobile phones while driving, delay in reporting about the accident to the hospital and police. So the purpose is to implement Smart Helmet to protect rider's head from fatal accidents. A safety system in a helmet is built for location tracking of motorcyclists using GPS and GSM technology. It uses Arduino ESP8266 microcontroller and is embedded with sensors which act as detectors for rider's head, senses the variations and the data is sent to the emergency contacts and is also stored in cloud database to keep the records.

***Keywords:** Arduino UNO ESP8266 microcontroller, Switch, Alcohol sensor, GPS, GSM, Wi-Fi, Cloud based services, Position sensor (Accelerometer) and Pulse sensor.*

1. Introduction

As the population is increasing day by day, the number of vehicles on the road is also been increasing. Most of the people use two-wheelers as their mode of transport because it is the most convenient and cost-effective.

Road traffic accidents are considered as a serious issue because they take lives of over more than 1.35 million each year globally, as recorded in the recent study. The frequency of traffic collisions in India is amongst the highest in the world. Failure to maintain lane or yield to oncoming traffic when turning are the prime causes of accidents on the four lane, non-access controlled National Highways. The major accidents resulted in deaths due to negligence and not wearing or appropriate gear, specifically, helmets and durable garment. The accidents are increasing due to drunk-and-drive, rash driving and not wearing helmet; using mobile phones while driving, uneven roads and delay in reporting about the accident to the hospital and police [2].

So to reduce the percentage of accident injuries and death, a proposal is made to implement Smart helmet to provide safety for the riders. The focus is on giving protection to the head region than the other parts of the body so as to avoid fatal head injury. More specifically, helmet aids the skull in protecting the brain. Here, Arduino ESP8266 microcontroller and sensors like alcohol sensor, GPS & GSM, pressure sensor and temperature sensor are embedded in the helmet [2][4]. The bike is allowed to start only when the rider wears the helmet and also a check is made on his alcohol consumption. If any of the two conditions fails, the engine is disabled. If the conditions satisfy, the engine is enabled. The rider's

ANDROID BASED FINGER PRINT VOTING SYSTEM

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Abstract

An important issue in the election is the choice of a leader who protects the rights of citizens, representing the country and threatening those elements of crimes that will affect the election results. Unfortunately, these violations occurred in many paper places as well as in many electronic systems. Although manual or paper voting is the most common voting system, integrity is compromised when votes are collected and counted manually, which reduces the likelihood of accidental or intentional voting. There is an electronic selection system that solves most problems with manual selection. Nevertheless, the crime factor is trying to exploit this problem, knowing the vulnerability in the use of technology, preventing attempts to hold fair elections.

In order to avoid errors caused by manual and electronic voting systems, we developed an M- voting system to achieve the desired goal of maintaining election integrity. M-voting is a mobile application that uses three security levels: username and password, country identifier and fingerprint, as well as robust security algorithms. These technologies prevent the removal or alteration of sound, improve integrity, and eliminate criminal activity. As a result, M-voting shows that this is a very secure mobile application that most people can choose, because they only need a phone and an Internet connection to participate in the voting process.

Keywords- Elections,voting system,mobile application,M-vote.

1. Introduction

The cellular voting system is an online voting system that allows voters to use their mobile devices wherever there is a legitimate voter. This will help eliminate the inconvenience of long queues in areas that require a lot of time. The most commonly used method for remote voting systems is the voting system[5], where voters vote on their mobile phones. Internet voting has been introduced to provide more flexibility. Typically, a mobile phone installation system provides one mobility function, like any other system.The online voting system is associated with a unique identifier, and the current voting system has many problems with long lines and all day in the booth[2]. The results are published. People in the countryside are far from where they live. One solution to all these problems is the online voting system. Voters enter it. Then a new page opens where voters have to print their fingerprints. After receiving the trace, the system opens another page with a list of possible symbols and names for their territories. Voters will vote by choosing one of them. Voting is automatically recorded in the database. This process will be completed within one minute.

The system can also provide a tool for organizing and facilitating selection. You can provide a separate portal for accessing election officials or administrators, and this portal is portable and easy to use. Administrators can override most of the entire selection process and can be monitored by a proxy when checking key system components. After the completion /

Semantic Matching Application Based On Ontology

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Abstract

As the main supplier of the work force to the industry, higher education is increasingly criticized for not being abreast with the digital revolution and being disconnected from the industry. Competency-based education was developed to address this issue and bridge the gap between what the university is producing and the requirements of the industry. Hence, tools need to be developed that assists in the analysis process. This paper focuses on proposing a system that models the competencies required by occupations in the industry and higher education curricula and assists in matching profiles from the two domains. The different concepts in the domain are model

Data semantic web ontology, and an inference engine performs the profile matching. In addition to the profile matching, the system calculates a score for the matching degree using the analytic hierarchy process (AHP) method.

Keywords: Competency-based education, Web-ontology, Inference engine, Profile matching, Analytic hierarchy process (AHP) method.

1. Introduction

The ever-increasing advances in the industry necessitate a close collaboration between the industry and universities. Higher education programs need to be kept up to date to cope with the industry's highly qualified labour needs to ensure students are better prepared for the needs of industry and increase their marketability. Hence, the traditional goals assigned to universities and academics have evolved to not only produce and transfer scientific knowledge, but also to prepare students for the workplace and more broadly for their careers. Over the years, several countries, universities and other academic institutions have incorporated competency frameworks in their curricula design activities. Competency frameworks are one of the used educational tools to 'vocationalise' academic courses. Their main objective is to describe in detail the typical activities, knowledge, attitudes and skills required by the type of job for which the students are prepared. Competency-based education was initially developed in the United States during the seventies, and despite some objections, it spread to other Western countries. This approach was the result of the growing criticisms towards traditional education which was becoming more and more disconnected from the social evolutions of that time, especially changes within workplaces[1]. It has been used to reform upper-secondary vocational curricula and more recently it appears to be more and more used in higher education to update and reform academic courses. Several local initiatives have been proposed to formalise the definition of competencies such as O_NET in the United States and 'ROME' in France. This paper presents a profile matching application that models the domain knowledge as a semantic web ontology[2]. Ontologies have been used to solve issues faced in interoperability between different domains. Because different parties usually have different concepts and needs, ontologies make reuse much easier by avoiding the wasted effort to translate terms,

Gesture Keyboard using Arduino by Machine Learning

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Abstract

Motion acknowledgment empowers people to speak with the machine and communicate normally with no mechanical gadgets. Till now human can communicate with PC through info gadgets like mouse and console or innovations like Graphical User Interface, Command Line Interface, touch user interface, motion tracking interface. The utilization of signals to pass on data is a vital piece of human correspondence. Hand motion acknowledgment is broadly utilized in numerous applications, for example, in PC amusements, apparatus control and intensive mouse substitution. Hand gestures can be ordered into two classifications: static and dynamic. Hand motion acknowledgment approach takes a shot at the three fundamental stages for example object discovery, following of object, and signal acknowledgment. In this survey paper diverse hand signal acknowledgment strategies and issues are clarified. To overcome the issues, a new approach has been explained.

Keywords: Hand Gesture Recognition, Gesture Recognition methods, SVM

1. Introduction

Non-verbal communication incorporates different signals of body parts, for the most part face and hand. In individual the most established technique for communication is signal [3]. In early ages the method for communication for men to share the data of nourishment, wellspring of water, data about their adversary, demand for help and so on. In spite of the fact that motions are utilized broadly for various applications. This incorporates human-robot collaboration, gesture based communication acknowledgment, intelligent diversions, vision-based increased reality and so on. Another significant use of motions is found for making the travellers mindful about the security includes by the airhostess [3]. For communication by the general population at a noticeable, however not capable of being heard separation and for the physically tested individuals (for the most part the tragically challenged) motion is the main technique. Another zone where hand signal acknowledgment has been effectively utilized is human robot collaboration. Console and mouse can be utilized in 2D world, however the control of a robot needs a 3D space. Hand motion is most reasonable for such purposes. Diverse calculations and highlights are utilized by various scientists for acknowledgment reason.

Non-verbal communication is an imperative method for cooperation among people, adding accentuation to voice messages or notwithstanding being finished messages without anyone else [1]. Motion is a type of non-verbal communication utilizing different body parts, for the most part hand and face. Signal acknowledgment frameworks could be utilized for improving human-machine connection. This sort of interfaces would enable human client to control remotely through hand acts a wide assortment of gadgets. Signals are utilized

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NFC- Based Smart Restaurant Ordering System

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2019

Abstract

This paper proposes the food ordering System in restaurants using "Near Field Communication"(NFC) Technology. NFC ,as suggest it enables short range communication between two compatible devices.Another form of contact-less communication is QR codes .The user can scan a QR code and can open related website or app. NFC and QR codes are similar but yet QR code has certain limitations which NFC can overcome .QR codes are generated in the form of a image which consist of certain link to perform a particular function and if the QR code generator wants to change the link for the image then they have to generate a whole new QR code image .The major advantage of NFC is it flexibility.One can store different information and can overwrite the information without creating new NFC tags .The second major advantage of NFC is that the user waves the phone near NFC tag and the information gets instantly transferred .Whereas QR codes take time to analyse the data. Restaurants have many limitations that can be resolved through automation and NFC. This food ordering system helps customers experience a new way of dining ,where no paper menu is required and the customers need not to wait for the waiter for ordering the food or paying the bill . This system motive is to eliminate the waiter and let the customer use NFC based app.

Keywords : NFC (Near Field Communication), NFC card , Encryption .

1. Introduction

With the increase of mobile devices people are also using Mobile applications also known as app, to perform actions and has made life easier. Apps are used to store data in mobile Devices[1] .The apps can be easily downloaded from Google Play store and iOS,where some apps are Free to download and some are paid. Application Provide A function such as game calculator and browsing facility who thought that one day we would sit at home and shop on line? Today we have got so Many applications for shopping .An app is smaller when compared to a mobile website and provides more interactivity and present the information in a more systematic way[1]. The Entertainment Apps which has made life joyful .And of course Going cashless bought us to different era . The apps Like Paytm , Google Pay has made us save time . These apps helps us to make Transaction faster. Nearly 40 percent of all smart phone users make use of mobile Apps[2]. Also every business firms and educational institutes have their own applications which Increases their business. Apps does not provide a single function but provide various functionality.

From the figure it shows that the mobile applications are more convenient to use. Applications are faster to use and gives better experience . Hence here we include user applications for our food ordering system , which gives the user a better experience . The traditional food ordering system consumes lot of customers time and hence we propose an

Survey Process for Privacy-Preservation Biometric Identification in Cloud Computing

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Abstract

A Biometrics system[1] is an effective pattern recognition system that utilizes different patterns similar to biological qualities like retina patterns, iris patterns and like finger prints ,voice recognition ,facial geometry and recognition etc[2]. Finger print based identification system have been extensively studied and deployed among many biometric traits. However, to adopt biometric identification[4] systems in practical applications, two main obstacles in terms of efficiency and client privacy[4] must be resolved simultaneously .That is only a client should have access to his/her biometric traits ,identification should be performed at an acceptable time , which are not revocable if leaked. In this paper, to execute a biometric identification[1] the data base owner encrypts the query data and submits it to the cloud. The cloud performs identification operations over the encrypted data base[4] and returns the result to the data base owner.

Keywords: Privacy; Biometric Identification; cloud

1. Introduction

Biometric identification is one of the most secure method for identifying individual. Biometric traits such as iris, finger print, retina, face recognition[6] have the important factors of universality, uniqueness and permanence. Biometric identification in cloud requires particular privacy measures to overcome misuse, loss and theft of any biometric data[2]. It provides promising way to replace the conventional identification approaches which are based on passwords, identification cards, etc.

In a biometric identification system, the data owner is responsible to manage the biometric data, may desire to outsource the enormous biometric data to the cloud server to get rid of expensive storage and operational cost[4]. We examine the biometric identification and show its insufficiencies and security weakness under the proposed level-3 attack[4]. Specifically, we demonstrate that the attacker can recover their secret keys by colluding with the cloud, and then decrypt the biometric traits of all users. We present a novel efficient and privacy preserving biometric identification scheme[4]. The proposed scheme can achieve a required level of privacy protection[4]. Specifically our scheme can also resist the attack proposed and secure under the biometric identification out sourcing model[5].

Comparing with the all existing schemes of biometric identifications the performance analysis clearly shows the proposed scheme provides a lower computational cost in all the procedures. According to our experimental result on an Amazon EC2 cloud[5], the proposed scheme is faster than the previous scheme and guarantees the privacy of client data by applying homomorphic encryption[3]. In our security analyses during the identification process the client finger print data[2] is not disclosed to the cloud. We allowed the server to upload most computations to our cloud to save storage and improved efficiency for the finger print

Analysis of QoS Parameters for Routing Protocols in MANETs.

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Abstract

Mobile ad-hoc network is a collection of wireless mobile hosts forming a temporary network without the aid of any standalone infrastructure or centralized administration. MANET routing algorithm is necessary to find specific routes between source and destination [1]. To meet the dynamically changing topology and to establish an efficient route between any two nodes, throughput, minimum delay and jitter shall be the goal of any Routing Protocol. Therefore, it is difficult to determine which protocol performs efficiently, taking into consideration, few parameters. The aim of this paper is to compare selected Routing Protocols qualitatively and conclude on which is more efficient.

Keywords: Mobile Ad-Hoc Network (MANET), Routing Protocols, AODV, DSR, DSDV

1. Introduction

Mobile Ad-Hoc networking research has received considerable attention in recent years. This is because this technology allows people and devices to seamlessly internetwork in areas with no pre-existing communication infrastructure.

Ad-hoc wireless network is a collection of two or more devices with wireless communication and networking capability.[1]. Individual nodes connected in a network, using wireless technology (Ad-hoc), to forward packets to and from each other are referred to as MANET's. MANET's use ad hoc routing protocols, which controls the nodes to determine the route to send the packets between computing devices. In such networks, since node mobility is very high, the network may experience frequent topology changes, making routing, a challenging task in mobile ad-hoc networks.[1]. MANETs have wide range of applications due to mobility and absence of fixed infrastructure. In the future, there is no doubt, that we will be more and more ad-hoc networks in which routing is one of the critical issues. Need of routing algorithm arises whenever a packet needs to be transmitted to node via number of different nodes.distributed systems consisting of wireless mobile nodes that can freely and dynRouting Protocols

2. Routing Protocols

Routing is the act of selecting the route that the information will follow from a source to a destination in a network. The routing concept basically involves two activities: firstly, determining optimal routing paths, and secondly, transferring the information groups (called packets) through the selected paths. [2].

In MANETs, like other wireless networks, there is no infrastructure support, and the destination node might be out of range of the source node. Hence, to find a path between the

Pothole Detection System using Drone

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Abstract—This research discusses a solution to report, record and classify potholes based on factors that influence the destructiveness of the pothole, by using a widely popular platform in the current generation. Harnessing the power of the mobile computing platform has opened up newer possibilities of gathering and classifying data by leveraging the use of crowd sourcing. In the current generation that is being dominated by the mobile computing platform namely smart phones, crowd-sourcing can be achieved in a relatively hassle-free yet effective means of collecting data from a large source-pool, viz, people. Tapping into this source-pool however has a drawback of data reliability. The approach used in this project aims to realize the most influential factors related to destructiveness of potholes that are encountered on roadways, while supplementing the data with quality estimates derived from the completeness of the data and certain factors of the input device itself that is involved in the data collection process, thereby addressing the drawback of data reliability.

KEYWORDS: Drone ,GPS ,Camera, Remote control, Detection.

I. INTRODUCTION

A Drone or Quadcopter is a Vehicles have large potential for performing tasks that are dangerous or very costly for humans. Examples are the inspection of high structures, humanitarian purposes or search-and-rescue missions. One specific type of Drone is becoming increasingly more popular lately: the quadcopter (Fig. 1.1). When visiting large events or parties, professional quadcopters can be seen that are used to capture video for promotional or surveillance purposes.

Recreational use is increasing as well: for less than 50 Euros a small remote controlled quadcopter can be bought to fly around in your living room or garden. In these situations the quadcopter is usually in free flight. There is no physical contact between the surroundings and the quad copter and no cooperation between the quadcopters If would have the capabilities to collaborate the number of possibilities grows even further. For example, a group of Drone would be able to efficiently and autonomously search a missing person in a large area by sharing data between. Or, the combined load capacity of a group of quad copters can be used to deliver medicine in remote areas. This bachelor thesis focuses on the use of a commercially available quadcopter platform, the Drone, to perform a task that requires physical collaboration and interaction: moving a mass. In this way a clear interaction between the quadcopters and their surroundings is present. As preliminary step towards the view of collaborating aerial robots the choice was made to perform this task in an indoor scenario where position feedback is present. Starting off with position control, additional controller logic can be implemented to counteract the forces imposed by a mass connected to the

IoT Based Garbage and Weather Monitoring System with Location Tracking and Alert System

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Abstract

One of the real time difficulties looked by the present reality is the developing measure of waste produced each day. That is because of urbanization, populace blast and ill-advised methods for waste gathering, garbage is being created on a huge scale. Perilous infections, decrease in the nature of style in the earth, air and water contamination are for the most part resultant issues of unattended waste for the most part because of wastefulness in garbage gathering. Consequently, there is a need for an efficient garbage monitoring. The identification, checking and the board of waste is one of the essential issues of the present time. The conventional method for observing the losses in waste canisters is unpredictable, bulky procedure which requires progressively human exertion, time and cost which is not compatible with the present day advancements in any capacity. So now daily's Automatic frameworks are being favored over manual framework to make life less complex and simpler in all perspectives. To make it an excellent achievement Internet of Things is the most recent web innovation created. So IoT has been utilized to oversee keen containers that are utilized to gather garbage and keep it from flooding. Microcontroller, sensor, Global Positioning System (GPS) and Global System for Mobile Communication (GSM) have been incorporated into a framework to actualize keen containers.

Humidity and temperature are one of the major aspects of weather monitoring which determines the moisture content and degree of heat in the atmosphere which help us to predict the chances of rain in that area and to clean up the bins before it rains by sending an alert. For this purpose, we use humidity and temperature sensor and display reading scale

Keywords: IoT, Arduino ATmega2560 Microcontroller, Wi-Fi, Ultrasonic and DHT11 Sensors, LED, Web and Mobile Android Application.

Introduction

A definitive need of great importance for a creating country is the key for "clean city". The compelling natural factors that stances to be a danger to this may include: risky contamination and its resulting impacts on wellbeing of humankind, disturbing a dangerous atmospheric deviation and consumption of ozone layer and so on. For the most part Environmental contamination might owe the Municipal Solid Left- overs (MSL).

A Proper upkeep moves toward becoming required for a productive and successful evacuation of the created Municipal Solid Leftover. It is seen that frequently the waste space gets a lot of

Smart Ranch Application

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Abstract

Cultivating in India is finished utilizing the mundane ways. The way that the greater part of our farmers need legitimate learning makes it significantly progressively flighty. A vast segment of cultivating and farming exercises depend on the expectations, which now and again fall flat. Farmers need to hold up under gigantic misfortunes and now and again they end up ending it all. Since we know the advantages of legitimate soil dampness and its quality, air quality and water system, in the development of yields, such parameters can't be overlooked.

Keywords : Mobile computing, Cloud computing, mobile connectivity, farm security, remote monitoring, smart farm improvisation.

1.Introduction

The historical backdrop of Agriculture in India goes back to Indus Valley Civilization Era and even before that in certain pieces of Southern India. India positions second worldwide in homestead yields[1]. According to 2018, Agriculture utilized half of the Indian work drive and contributed 17-18% to nation's GDP.

India sent out $38 billion worth of rural items in 2013, making it the seventh biggest agrarian exporter worldwide and the 6th biggest net exporter. Most of its agribusiness sends out serve creating and least created nations. Indian rural/green and handled sustenances are traded to in excess of 120 nations, essentially in the Middle East, Southeast Asia, SAARC nations, the European Union and the United States[9].

This methodology will adequately assist farmers with selling their item in worldwide market and gain remarkable benefit. Thus, this edge work utilizes MC, which as a result, places control into a farmer's hand. The horticulture is fundamental reason of generation of sustenance and crude materials, which in the long run is reason of major development in the populace is reliant on agribusiness[16].

In any case, there is additionally need to survey and rejuvenate the component for refreshing .In the up and coming years farming will see real changes. Dissimilar to the prior 'green insurgency' which had an establishment of cutting edge pesticides and composts, presently the agribusiness will be altered with the assistance of technology.Every creating economy has horticulture part as vital column thus does India. In India the horticulture area contributes near 20% of GDP(Gross Domestic Product). Either legitimately or in a roundabout way, 60%of complete populace of India relies upon horticulture.

By far most of Indian farmers, which incorporates little scale makers, are regularly unfit to get to the data and mechanical assets that could expand the yield and lead to better costs for

Log Based Video Investigations for Store

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Abstract

We describe a lot of methods for retail analysis depends on video investigation and log related to transactions. Methods are proposed to secure against loss prevention, customer checking and promoting results are presented on returns frauds and customer counting. Today the retail video examination has gone past the regular procedures of security and mishap neutralizing activity by giving retailers astute business learning. This paper gives an outline of various camera view in retail. By this video examination we can reduce the loss of items in the retail. The fraudster can be identified by this video analysis technique.

Keywords: Middleware for Large scale Surveillance (MILS), Smart Surveillance Engine (SSE), TLOG

I. INTRODUCTION

Closed Circuit Television (CCTV) is being used in stores for finding the action of stealing goods from a shop while pretending to be a customer. CCTV frameworks have demonstrated to have different ways to verify investment—as obstruction, record for insurance related claims, public safety, stock following and fraud related to misrepresentation location— however, they are as yet work concentrated and it is hard to remove valuable data from them. Generally, cameras have been directed by store staff to follow suspected shoplifters, accomplishing high-resolution secret observation. Such streams are recorded to give proof to fraud happen in store. In addition to that, cameras not being effectively controlled might be recorded to give a record of activities in important places, for example, passages and high-value thing display. The coming of advanced video recorders have drastically improved the access to this recorded video empowering quicker investigation of past events by direct access dependent on recording time, when the season of an occasion is known. The advancement of video analytics preparing calculations is bringing numerous new applications for video inside stores.

This paper describes a lot of technical tools for retail examination dependent on video examinations. By using transaction logs, it prevents loss in the retail and helps in finding the fraudster with a particular instrument for the examination of return process by fraud. By video tracking algorithms we can protect the store from the robbers and helps to keep items safe in the retail from these robbers.

A User Trust System for Gaming World : An Interactive Approach for Trust Presentation

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Abstract

In the realm of man-made consciousness, checking the computer games and the portable amusements people expecting trust in their interactions with others. There are a few trust partnerships may not be entitled in the information structures of the computerized reasoning, might be they rise sometimes with character and exhortation framework. In consideration, according as far as anyone is concerned the framework does not give any instrument to help the client's arranging when he/she wishes to interaction in the web based amusement world.

To beat the computational fixed introduction of the individual confidence association we must be fruitful in transfiguring the included transactions into reliable wellspring of confidence related data. In this following paper, we prosper the required conventions for gathering and speaking to the collaborations between the client and the framework which relies on the interest speculation into the trust web. This cure goes for helping the clients to accept the end according to their requirements in the realm of computerized reasoning (amusement world).

***Keywords:** Multiuser virtual environment (MUVEs), avatars, Massively multiplayer online games (MMOGs), virtual worlds, Trust network analysis (TNA), Interplays, Trust models.*

1. Introduction

While the online system starts to be all inclusive with the developing measure of clients having section to the association that enables the client to get or send parcel of information in all respects rapidly (expansive band web), in organization with a self evident increment in the capacity and graphical efficiencies customer assess apparatuses has come about to a developing mindfulness in the multi client virtual condition [MUVEs] [1] [2]. The reason is a direct result of their expanding petitions in the fields that are separated from satisfaction and amusement room [3] [4], comprehensive of e-business and exchange [5], experimentation and instruction [4] [6], armed force training [7], business training and pharmaceutical strategy.

The certainty or the confidence originates from the transactions that the symbols (utilized in the virtual world as the exemplification of customers) end up with different symbols or the areas.

An Effective Frame Work for Coin Framing, Smart and Secure Transactions Service

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Abstract

In this paper a new Coin Service Transactions(CST) framework. This frame work takes the target amount to be transacted in the form of non equal and distributed model to make funds and will be associated with respective coins. . The coin generation is random with various funds allocations with non uniform generations. OTP is framed by CST framework with 4-roll algorithm which generates alphanumeric sequence for further transactions, Once the OTP is authenticated coins will release funds and transactions will be made by CST to do transactions. The transactions amount will be non uniform again and will be framed from coin's funds and again non equally distributed. Based on transactions per transaction amount will be deducted randomly from each transaction and finally all transactions will be with 0 funds with all empty coins

Keywords: We CST(coin service transaction framework),4-roll, alphanumeric)

1. Introduction

With the quick improvement of the data advancements, electronic coins have increment lately, which gave much fittingness to individuals to exchange on the web. Besides, meanwhile, another kind of coin called virtual cash developed, which is executed as a computerized portrayal of significant worth having no physical store interestingly to electronic money yet is simply acknowledged by individuals as a methods for instalment. Blockchain based virtual money, such as Bitcoin and Litecoin, is the essential virtual money.

In Bitcoin [1], electronic payments are implemented through transactions appended to the Blockchain, which indicate that bitcoins transferred from one user to another. Input transactions denote where bitcoins come from and outputs denote who will receive bitcoins. Bitcoin wallets help users manage their addresses to receive and spend bitcoins.

Bitcoin[2] is a cryptocurrency successful beyond all expectations. As a consequence of this success and properties of Bitcoin, developers and researchers try to reuse the Bitcoin infrastructure to build new or enhance existing systems.

General transactions with respect to semantic based is the main goal of this work. If an alien has to do transactions from various banks(which he/she owns), need to make some coins(not fixed of size) and each coin has to associate with some transactions and that too not fixed. The coins creation has to be made from various bank funds with non equal distribution.

Automated Method for Detection and Grading of Diabetic Retinopathy

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Abstract

In this paper, a novel method for automatic detection of both blood vessels and exudates in color fundus images is described and validated. This proposed strategy incorporates both blood vessels and exudates for detection and grading of diabetes and also glaucoma. Blood vessels and exudates are detected using Contrast Limited Adaptive Histogram Equalization (CLAHE) which operates on small regions in the fundus image, called tiles, rather than the entire image for segmentation of DR abnormalities. Non-proliferative diabetic retinopathy deformities are discovered using Gray Level Co-occurrence Matrix1 (GLCM) feature and further *K*-means clustering algorithm is used to segment the interest area from the background so as to achieve maximum accuracy.

Keywords— Glaucoma, Diabetic retinopathy, GLCM, Fundus Image, CLAHE, Blood Vessels, Exudates, Gaussian filter, K-means cluster, Segmentation

1. INTRODUCTION

Glaucoma is a group of related eye disorders that cause damage to the optic nerve that carries information from the eye to the brain. It is associated with higher-than-normal pressure inside the eye- a condition called ocular hypertension. It is often called the "silent thief of sight", because it produces no symptoms and causes no pain until noticeable vision loss occurs. If untreated or uncontrolled, glaucoma first causes peripheral vision loss and eventually can lead to blindness [1].

Diabetic retinopathy (DR) is a complication of diabetes that can lead to impairment of vision and even blindness. It is the most common cause of blindness in the working-age population. One out of three diabetic people show signs of DR and one out of ten suffers from its most severe and vision-threatening forms. DR can be managed using available treatments, which are effective if diagnosed early. Since DR is asymptomatic until late in the disease process, regular eye fundus examination is necessary to monitor any changes in the retina.

With the increasing pervasiveness of diabetes and the aging population, it is expected that in 2025, 333 millions diabetic patients worldwide will require retinal examination each year. Considering the limited number of ophthalmologists, there is an urgent need for automation in the screening process in order to cover the large diabetic and glaucomic population while reducing the clinical burden on retina specialists. Automation can be achieved at two levels: first, in detecting cases with DR, and, second, in grading these cases. Indeed, the identification of the severity level, through DR grading, allows more appropriate and consistent referral to treatment centers. A computer-aided screening and grading system relies on the automatic detection of lesions.

Encryption and Decryption of Image by Using ECC

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Abstract

Security of the data is the principle issue in arrange commonality these days. There is no calculation which guarantees the 100% steady quality of the transmissions. there is an exceptional interest for safeguarding the safe stockpiling and transmission of image over internet and shared framework condition. This brings new difficulties to shield sensitive and basic image from unapproved get to and unlawful use. Rise innovation is additionally applied by interlopers to rupture the security of the frameworks. Thus, every time cryptosystems created in light of complex Science. ECC is one of the method in cryptosystems. Security of the elliptic curve lies in hardness of taking care of the discrete logarithms issues. The implementation of this paper will be done in MATLAB -2017a on an ECC for image encryption/decryption, primarily the Elliptic Curve Diffie-Hellman (ECDH) used for key exchange. It presents the basics of Elliptic Curve over the whole numbers module p, where p is prime integers. At that point the hypothetical base of the ECDH framework are secured, review of image which it will encrypted and decrypted in this paper, including a brief take a glance at how this framework is function by take whole pixels of image and encryption/decryption using ECC.

Keywords- Cryptography, Elliptic Curve Cryptography(ECC), Elliptic curve Diffi-Helman(ECDH),,Point addition; Point doubling.

Keywords: We would like to encourage you to list your keywords in this section

1. Introduction

Image encryption is a field that has make much attention in the most recent years because of the wide usage of image information through the web. So as to satisfy such an errand, numerous image encryption methods have been proposed. One of the methodologies as of late used ECC. Image has been globally utilized as a part of our day by day life. For example, it is important to ensure the charts of military places, the outlines of bank building progress, and the necessary information caught by military satellites. Furthermore, the quantity of PC misbehavior has expanded as of late. image security has turned into a critical point in the present PC world. Nowadays we are required to hide the arranged data in Google outline can't access by another. Encryption is used to safely image transmit or any such of information in the frameworks. Each kind of information has of bank building development, and the important information caught by military satellites. Each sort of information has its own particular high- lights, so the diverse process ought to be used to shield classified image information from unapproved access. In this paper, we will study an ECC with Diffie– Hellman for satellite image encryption, decryption and find the outcome, A strategy called ECC is turning into the decision for phone communication. ECS uses a little key size and calculation is extremely is more effective. A crypto-algorithm utilized a

Performance Analysis of Human Action Recognition System Using CNN Models

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Abstract

Action recognition is vital in terms of security. The unusual activities can be monitored using an elaborate system to help improve in detecting human actions. Recognition of human action is done using bioinformatics tools and image processing tools. This system is created based on surveillance videos of KTH datasets. These grayscale videos consist of actions done by different people in different scenarios. The camera views of this video are also different compared with each other.

The complex system has a base algorithm which is constructed keeping in mind the morphological, structural element strategies in matrix laboratory. With these strategies and well-defined models such as CNN based models are used for classification and tracking of the human action. Using the classification structure the performance and analysis are increased. According to references theoretical 90% accuracy of analysis can be obtained by KTH datasets. The current recognized performance analysis is given to be 80%. The goal of this system is using these strategies, algorithms, and models mentioned above to detect or recognize actions of different people in different camera views are clocked at 83.33% comparing to the existing (current) system.

Keywords: Action Recognition, Background Subtraction, Bio-informatics, Classification, Feature Extraction, Image Processing, Machine Learning.

1. Introduction

The KTH Royal Institute of Technology created a series of video dataset [18] that includes walking, jogging, running, hand-clapping, hand-waving, and boxing performed by twenty-five different individuals. It is the most significant human action dataset shot in four different scenarios (free actions, free actions with zoom, free actions with different clothing and indoor actions). A complete 25×6×4 = 600 video files in the dataset and every video contains one individual playing out a solitary activity has appeared in Fig. 2. The resolution and length of every video are 160×120 and ten to fifteen seconds individually caught at twenty-five FPS.

These grayscale videos undergo a series of processes using defined algorithms and models to convert 3D to 2D [18].

The video dataset acquired as an input is converted into images or frames. These frames are also known as tracklets. The frames obtained can be of formats like BMP, GIF, HDF, JPEG and more [2][4]. The goal at this instance is to convert video into an image, i.e., 3D to 2D.

A Security System to Detect Botnets in IOT

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Abstract

The substantial number of unreliable Internet of Things (IoT) gadgets with high calculation control make them a simple and alluring focus for assailants looking to bargain these gadgets and use them to make huge scale botnets. A botnet is a system of tainted machines or bots, additionally called zombies, that has a direction and-control framework and is utilized for different malignant exercises, for example, disseminated forswearing of-administration (DDoS) assaults

Keyword: Botnet, Cybersecurity, Internet of Things

1. Introduction

In the 21st century a world biggest part of individuals are especially relied upon the correspondence conventions dependent on standard correspondence, thus is the open door for the violations like unapproved get to and malware assaults to overcome these assaults the idea of secure IOT we need a progressed botnet discovery framework.

A botnet is a robot system of traded off machines, or bots, that run noxious programming under the order and control of a botmaster. Botnets have a wide scope of accursed purposes including email spam conveyance, disseminated refusal of-administration (DDoS) assaults, secret phrase breaking, key logging, and digital money mining Uncommon in its scale and speed circulation of gadgets empowered by different kinds of remote innovation, for example, Bluetooth, radio recurrence distinguishing proof (RFID), Wi-Fi and telephonic information administrations [3] brought about the IoT getting to be one of the essential patterns of high innovation. As right on time as 2010 the quantity of system associated gadgets has surpassed the world's human populace. As indicated by expectation of Cisco scientists just about 50 billion IoT gadgets will have been associated with the Internet by 2020 [4]. Be that as it may, a low dimension of data security is as yet staying one of the serious issue identified with the IOT [5].

Disappointments to reset unbound passwords, just as an absence of insurance against beast compel tackles are boundless security issues average for an extraordinary number of IoT gadgets [6]. Furthermore, a great deal of portable applications intended to control and screen gadgets through system don't bolster present day security benchmarks, for example, Secure Socket Layer (SSL) [7] to encode correspondences [8]. Additionally, a lot of IoT gadgets don't for the most part permit to reset default of fixing vulnerabilities, for example for example, an unveiled in October 2017 shortcoming in the encryption convention WPA2 [9], which is generally utilized in most of present day remote systems. long these lines, the IoT is ending up progressively mainstream as an integral asset of cybercriminals. As indicated by Gartner examiners 25 % of digital assaults will have included IoT gadgets by 2020 [10].

IoT gadgets are undermined by cybercriminals so as to introduce ransomware programs, to take individual data, just as to incorporate them into a botnet. Botnets are utilized in an

Android-Based Application for Real Time Vehicle Seat Tracking System

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Abstract

Today when time has become an important factor, Steady fast quality in public transport is of higher importance. A huge number of people using public transports waste a lot of time waiting at transport stops with no knowledge of the timings. On the other hand, if people have a greater information of the vehicle's precise location and its exact arrival time, it will encourage the use of public transports. To conquer this trouble, a simple framework is proposed in this paper that helps following constant transport area. This system takes advantage of GPS enabled devices to track vehicle location and help ease travel. The framework comprises of two sides, server side and client side. The server's gadget primary obligation is to give the precise area of the vehicle to the server. Then again, customer's gadget can discover the vehicle location through data stored in database.

Keywords: ***Android, Global Positioning System, Smart Phone, Public Transport, Google Map, Vehicle Locator System***

1. INTRODUCTION

In today's world, GPS (Global positioning system) is the most widely used technology in vehicle monitoring and routing system. Security of public and private vehicles like school buses is of prime importance. There are various cases encountered in recent times where the children don't reach home in time or the vehicles loaded with goods are hijacked. Because of which the parents or the vehicle owners get worried. GPS technology can be used to solve this problem. Using GPS we can find the exact location of the vehicle.

Time is an important factor considered while travelling. Reaching on destination as soon as possible is always admirable. Google Maps provides all the routes from a source to destination. The routes provided by Google Maps may not be the shortest/fastest route available. There needs to be a system devised which can help a person to reach from source to destination in minimal amount of time.

Dependability in public transport will be encouraged when the client precisely knows when a vehicle will reach the stop or then again when will the vehicle reach the destination. The arrangement proposed in this paper tackles the constant area of the transports to figure the assessed time for achieving a specific position. By sparing area information on the server alongside relating timestamps, we can appraise the ideal opportunity for the transport to be in contact as a transport stop, or time to achieve a goal, utilizing features like Google maps.

Automatic Medication Pill Dispenser

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Abstract— Everyone forgets to take their medication at one time or another. But for those on a complex pill regime, not taking prescribed drugs at the right dose and at the right time can have major consequences, particularly if they are elderly or vulnerable. Today in society there is a growing need to assist patients. One very important task is taking prescribed medication. The proposed model is an Internet of Things (IOT) based model. It is a model of smart medical box is a single board computer based assistive device for people who suffer with short term memory loss. It is an alarm based device that helps in reminding patients about their medication Makes diagnosis easier and convenient for the doctors as well as the patients. By using android application, we can create a user interface and by using Arduino ESP8266 we have given voice message through Wi-Fi module.

Keywords— Smart Medicine; Android Application; Bluetooth model; Wi-Fi module; Arduino ESP8266

I. INTRODUCTION

Common problem in current time is that older people fail to take medications on time, they generally require assistance from caretakers [1]. Manually giving medicines to an ill person is a time consuming process. sometimes it might even go wrong and follow the wrong prescription [2].

This is an unmistakable evidence that it is a broad issue and plainly related to unfavorable patient results and higher human services costs. According to the University of Washington, around one third of the pill takers are under caretakers but rest are under no followers and 30% of them takes more than 4 pills a day [3].

The Internet of Things (IOT) based model. Many of the people around us forget to take medication on time. The proposed model of smart medical box is a single board computer based assistive device for people who suffer with short term memory loss. It is an alarm based device that helps in reminding patients about their medication Makes diagnosis easier and convenient for the doctors as well as the patients

Cloud Computing For Mobile Users With Secure Data Sharing Scheme

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ABSTRACT

Cloud computing is a new paradigm in which computing resources such a s processing, memory, and storage are not physically present at the user's location. Rather, a specialist organization possesses and deals with these assets, and clients get to them by means of the Internet. Reports propose that there are a few advantages in moving figuring from the work area to the cloud. The essential requirements for versatile processing are restricted vitality and remote transmission capacity. Cloud computing can provide energy savings as a service to mobile users, though it also poses some unique challenges.

It receives cipher text policy attribute based encryption (CP-ABE), an entrance control innovation utilized in typical cloud condition, yet changes the structure of access control tree to make it appropriate for portable cloud situations. Secure data sharing moves an expansive segment of the computational concentrated access control tree change in cipher text policy attribute based encryption from cell phones to outside intermediary servers. The trial results demonstrate that safe information sharing can adequately decrease the overhead on the cell phone side when clients are sharing information in portable cloud situations. The experimental results show that secure data sharing can effectively reduce the overhead on the mobile device side when users are sharing data in mobile cloud environments.

Keywords—Access Control, Cloud computing, Computation offloading, Data Encryption and Decryption, Mobile computing

1. INTRODUCTION

An exceptional increment in the portable information traffic volume has been as of late announced because of the broad utilization of PDAs, tablets and workstations. This is a noteworthy worry for portable system administrators, who are compelled to frequently work near (or even past) their ability limits. As of late, extraordinary arrangements have been proposed to conquer this issue [1]. Out of these, Wi-Fi displays some key favorable circumstances, for example, its officially across the board organization and minimal effort. Also, the inexorably heterogeneous arrangement of cell systems (incomplete 4G inclusion, little cells, and so on.) further convolutes the image in regards to both administrator and client related execution of information offloading.

To this end, in this paper we propose a queuing analytic model that can be used to understand the performance improvements achievable by Wi-Fi-based data offloading, as a function of Wi-Fi availability and performance, user mobility and traffic load, and the coverage ratio and respective rates of different cellular technologies available. With the

COLLECTIVE SIFTING BASED SUGGESTION OF ONLINE SOCIAL VOTING

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Abstract

Sharing data through social casting a ballot is jump up new component in online social systems. The expanding fame of social casting a ballot that delivers the "data over-burden" issue. In this paper, we lead an extensive investigation of a lot of grid factorization (MF) and closest neighbor – based recommender framework (RSs), which investigate client informal organization alongside gathering association data for social casting a ballot suggestion. The MF and NN models see that social what's more, gather data is significantly more profitable to cold client than to substantial clients. Finding fitting thing from accessible set of choices for nonhot casting a ballot's can be better mined by MF models. Alongside MF and NN based proposal we consider cross breed RS to accomplish the best top k hit rate.

Introduction

Exceptional development inside the nature of online social networks (OSNs) lately. The vast majority of existing on the web informal communities like Face book and Twitter territory unit intended towards information discourse act to an outsized group of onlookers and also raises assortment of protection and security issues. Despite the fact that OSNs licenses one client to restrict access to her/his insight, by and by they are doing not give any system to authorize security contemplations over learning identified with different clients. Recommender methods are an essential a piece of the data just as online business framework. They speak to a Powerful approach for empowering clients to channel by proposes that of substantial measure of data and stock territories.

Online Social Networks (OSN), like Facebook and Twitter, encourage simple data sharing among companions. A client not exclusively can share his/her updates, in types of content, picture, and video, with her immediate companions, yet additionally can rapidly disperse those updates to a lot bigger crowd of roundabout companions, handle on the rich availability and worldwide reach of well-known OSNs. Numerous OSNs presently offer the social casting a ballot work, through which a client can impart with companions her insights, e.g., like or abhorrence, on different subjects, extending from client statuses, profile pictures, to recreations played, items bought, sites visited, etc.

The expanding prominence of social casting a ballot quickly delivers the "data over-burden" issue: a client can be effectively overpowered by different voting's that were started, taken an interest, or re tweeted by her immediate and roundabout companions. It is basic and testing to present the "right voting's" to the "right clients" in order to improve client experience and augment client commitment in social voting's. Recommender frameworks (RSs) see data overburden by proposing to clients the things that are conceivably of their interests.

Data Analytics Fraud Detection

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Abstract : Extortion examination includes investigative instruments and strategies with human control and activities to help recognize unique and pseudo exchanges.

The universally useful of the risk and misrepresentation examination is the administration offered to screen exchanges in the earth, distinguish suspicious and odd conduct, and control results by conveying the most prescribed and viable reaction .Misrepresentation investigation is critical since these methodology distinguish potential dangers regions, recognize extortion and furthermore in this way gives data that encourages them make progressively educated administration just as vital choices.

Since the organizations as a rule work with vast volumes of information, it is totally important to execute such procedures of persistent observing, so as to recognize abnormalities in the information stream or standards of conduct, possibly fake. Such new and noteworthy data will be later utilized in coordinating examinations, just as to make proposals to improve the control exercises. We endeavor to give an outline of the manner by which innovation can be actualized to improve extortion counteractive action and discovery, within an open or private monetary substance.

In these conditions, in which advancement of the IT frameworks assumes a focal job in the formation of focused organizations, the measure of handled information has developed exponentially. Inward control colleagues should need to take a gander at each exchange that happens, at the same time, tragically this issue can never again be physically performed, requiring the utilization of information examination apparatuses and programs.

Keywords—fraud detection, big data , data analytics

I. INTRODUCTION

IT professionals have started considering shifting their career path towards Data Science or Data Analytics.

While the innovation enablement of procedures has implied that the information is currently accessible in a organized structure for further examination, the EY misrepresentation hazard the board study found that numerous associations are not gaining by this advancement and are not performing proactive.[1]The job of information examination in extortion counteractive action "With expanded openness of business information from interior what's more, outer sources, associations now have the chance like never before to advantage from utilizing investigation in their extortion counteractive action programs." Julie Fenton, Partner observing of business information for potential extortion pointers. Associations normally limit their misrepresentation information examination to evaluation of the money related effect when misrepresentation is recognized by a few different methods.
As of the fact that misrepresentation is definitely not another issue, the current money related emergency has illuminated that extortion happens for the most part amid a retreat, as contrasted and ordinary times of financial development. [6]In balance to the moderate financial recuperation, directors need to begin a progression of antifraud measures, as an influence of cost control, while decreasing accessible assets. Extortion includes comprehensively huge budgetary dangers which may compromise productivity, and the picture of a financial element.[4] By implication by a solid recessionary marvels, lopsided characteristics and disturbance in genuine and ostensible economy. This has influenced the

Detection Of Brain Tumor Type Using MRI Adaboost

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Abstract

Diagnosis is analyzing the cause or nature of a problem or situation. In other words, it is identification of a condition, disease, disorder by systematic analysis of the background or history, examinations of the signs or symptoms, evaluation of the research or test results and investigations of the assumed or probable causes. Hence early fault detection is extremely important job as it provides analytical vision into diagnosis in the medical diagnostic operation. Global forum for discussion of imaging and all aspects of clinical medicine is thoughtfully improving in the field of engineering. Magnetic resonance imaging is one of the imaging techniques amongst them. Human research is an endless work since the number of documents and precise details are tough to perceive by him. Therefore, robotizing those approaches is so decisive. In this paper, we have come up with a mode which could be appropriate to make Tumor revelation effortlessly. The MRI act with sophisticated dilemma of brain Tumor disclosure. Because of this complication and difference of opinion obtaining exceptional veracity is a challenge. We could improve our skill through adaptive boosting machine learning algorithm as it is conceptually easy to understand. The proposed system consists of three parts such as pre-processing, Feature extraction and classification. Pre-processing has removed noise in the raw data, for feature extraction we used Gray Level Co-occurrence Matrix and for classification boosting techniques used is Adaboost.

Keywords: ***Machine learning, Texture Features, Adaboost, Segmentation, Feature Extraction, Magnetic Resonance Imaging.***

1. Introduction

Human body is comprised of organic matter, smallest structures and functional unit of a life known as cells. We know that these cells will develop and spilt to shape another cell. With the help of these cells only the human body is healthy. If these cells develop with no control in their developing it will result into tumor formation. These tumors are been divided into two types one is Benign tumors which is also called as non-cancerous tumor and it does not cause any harm. Another type is Malignant tumors which is Cancerous and harmful.

To diagnosis this tumor using image data in medical uses the techniques like X-ray, CT scan and MRI. But the most used technique is the MRI as it uses the magnetic field vectors measurement and generates a strong magnetic fields and radio frequency pulses in the nuclei. When compared to other techniques MRI is a radiation free technique. The radiologist will evaluate the brain using MRI as it is a powerful technique to detect tumor in brain. [10]

As human inspection to detect tumors in MR images was very time consuming and it was overcome with the help of modern AI system and ML techniques without the involvement

Diagnosis and Prediction of Heart Disease using Machine Learning

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Abstract-Medical care is an inevitable aspect of human life. Heart disease is a general class for a scope of infections that are influencing heart veins. The human services industry contains heaps of therapeutic information along these lines AI calculations are required to settle on choices adequately in the expectation of heart illnesses. One of the essential difficulties of medicinal services conveyance is accumulating unique, offbeat information sources into significant pointers of individual wellbeing. We join common language word inserting and arrange displaying strategies to learn significant portrayals of therapeutic ideas by utilizing the weighted system nearness framework in the GloVe calculation, which we call Code2Vec. We show that utilizing our scholarly embedding improve neural system execution for sickness expectation. Be that as it may, we likewise show that prevalent profound learning models for sickness expectation are not genuinely better than less difficult, increasingly interpretable classifiers, for example, Random forest. Furthermore, our work adds to the present writing by giving a far reaching study of different AI calculations on ailment forecast undertakings.

Keywords- Artificial Intelligence, Machine Learning Methods, Artificial Neural Networks.

I. INTRODUCTION

These days medicinal service is expanding step by step because of way of life, innate. It makes a great deal of information with time. The expanding volume of human services information contained in Electronic Health Records (EHRs) has made many consider the plausibility of structuring computerized clinical help and infection location frameworks dependent on patient history and hazard factors [1]. Various past examinations have endeavored to utilize understanding research facility tests [2], [3], analyze [2], [5], [6] and drugs [5] as methods for anticipating illness beginning. Such models have additionally been utilized to distinguish possibly obscure hazard factors [9], regularly while at the same time improving affectability and explicitness of identification.

Various late examinations have been effective in anticipating malady by means of different techniques, including bolster vector machines [7], [10], calculated relapse [9], irregular timberlands [13], neural systems [4], [8], and time arrangement demonstrating systems [11]. Many have noticed that profound learning strategies have been especially effective for offering new knowledge into the two information portrayal and determination in drug. We note that the accompanying have been especially notable in late writing:

- **Embeddings of Medical Concepts:** Many papers have connected word implanting systems from common language preparing to acquire installed portrayals of drugs, findings, and methods utilizing adjustments of word2vec [14] and GloVe [19]. Despite the fact that systems are shifted, they incorporate enhancing medicinal corpora with protection claims [16], together learning analysis and therapeutic visit portrayals by means of changes of the word2vec misfortune work [17], and utilizing the vectors acquired from the implanting layer

Enhanced File Security using Version Control System

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Abstract

Cloud computing is extensively used in recent days as it supports the most trending and advanced technologies such as the Internet of Things, Bigdata and many others. Cloud computing is known for storage and is hugely accomplished as it has a dependable cloud framework which takes in a colossal volume of information. In a real-time environment, the contents of individual files are either added or deleted.

Due to every individual file have its own sequential versions. During the process of such data operations, there are chances of data getting corrupted and infected with viruses which would later result in fatal errors. It will be less demanding and quicker for the users to recognize the errors in the contents of a file that they could analyze and process from prior versions of the file being referred to. In such situations, cloud computing comes into action which has storage of all the prior versions of a file and would enable the users to take care of issues all the more quickly when an error occurs.

With the help of HDFS which is a default platform in Hadoop, we have planned and actualized a well-organized schema which helps in storing all the prior versions of a file and spontaneously creates sequential versions of the file whenever data operations are performed on the contents of the file. Subsequently, our design helps in accessing the prior versions of file and help in showing the disparity between versions to enhance the information the executive in cloud focuses.

Index words- Hadoop Distributed File System(HDFS);Big Data ;Cloud Computing; Hadoop;

1. Introduction

Cloud computing has emerged as an encouraging future to save and use a colossal amount of information from Bigdata, Internet of Things and many others. Generally, cloud framework ought to be capable of flexibly maintaining the data stored within. The way towards gathering information from Bigdata orInternet of things regularly goes on for a significant amount of time, and at times the procedure could be continuous. As a result, every individual data file has information included over a period of time in the cloud environment. This results in sequential versions of the data file after the creation. Due to faulty data and viruses, the quality of the data files is consequently undermined. Therefore, the following information processing will almost certainly produce off base outcomes. At times like this, the user will have more opportunities to locate the cause of errors if the cloud system gives them ways to assess prior versions of the data file or to demonstrate the

Implementation of Smart and Secure Automated Home using IoT

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Abstract

This paper presents Home Interactive technology (HIT). The emergence of IoT has been playing a vital and pivot role in each and every sector of our daily lives. Home Automation Technology (HAT) is more popular now a days due to its technological improvements. This home automation provides interactive interface to the user. Our solution also provides information about the temperature, humidity, water level, gas level..etc. Home automation has one main advantage of no interaction of humans with the devices. The smart phone plays an important role in this home automation, where it is helpful for users to operate home appliances or to receive alert messages in emergency cases. Blynk server is responsible for controlling the hardware devices such as NodeMCU, sensors, and other devices. Where blynk is an IoT platform which connects the devices, design apps to control them and to manage devices. A smart home is that incorporates advanced sensing and automation system to provide in habitance with monitoring and control regardless whether they are inside or outside the home. Automatic system is being preferred now a days than the manual system. Home automation systems not only reduces the efforts of the human but energy efficient and time saving also.

Keywords : Home interactive technology (HIT), Home automation technology (HAT), blynk server, sensors, NodeMCU.

1. Introduction

The Internet of Things (IoT) relates to the idea of interfacing objects (things) through Internet [10]. Gadgets like Computers, Laptops, Smart phones can be associated effectively to Internet, however the traditional gadgets which can be named as "Internet disabled gadgets" can't be connected . With the assistance of IoT and Sensors this issue can be solved. So IoT can be utilized to interface the unconnected things to the Internet and empower them to communicate with one another. IoT has been developed because of union of numerous advancements like Artificial Intelligence, Machine Learning, Image Processing, Embedded systems, and so forth., Home Automation is building a computerization framework for a home, called a smart home or smart house. A shrewd home is where in the entirety of man's comfort, amusement, entertainment are governed by innovative technologies [7]. For instance, general parameters like lighting and temperature needs are made intelligent to sense the need and provide solution to it. This is conceivable on account of the wide variety of sensors and high processor technologies.

Job Search Chatbot Using Slack

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Abstract— *Looking for a well-suited job is crucial for any fresh graduate or finding a job to climb up the ladder of success, a job search chatbot does just that for you. It follows the instructions programmed by a human to analyse the queries asked by the user and provide them with the most appropriate answer. The Chatbot retrieves the answers from the database which is stored in the cloud. The Chatbot uses a specific keyword to retrieve the answers from the database. The user can converse with the chatbot in any format, and it takes the specific keywords and forms a query that the bot understands. The user can ask any job-related queries and the bot will give relevant answers. The bot is programmed in python. The system helps the user not only to get their queries answered but also to be updated with the information related to jobs. The employer can find the candidates best suited for a job by the help of the chatbot. The employer can also make entries in the data base when a new job vacancy arises.*

Keywords— ***natural language, job search, chatbot***

I. INTRODUCTION

As the number of graduates increase each year, the need for finding a job also increases. Searching for a job in today's world has become hassle free and high-tech. The old ways of scanning a newspaper to find jobs have been pushed aside by technologies like chatbot. A chatbot is a computer system, which can interact with users by using natural language. Normally, it is designed to serve in a certain domain such as frequently asked questions (FAQ) and also assistant system [1]. This application work is very simpler because the knowledge already programmed in advance [2].

Chatbots are usually implemented in web-browsers, applications or in slack. There are also chatbots that deliver information about the different positions available in an organisation. The leading hotel and resort chain, Marriott makes use of a chatbot referred to as MC. Advertised as a Career Concierge, the chatbot assists job seekers in figuring out suitable profession paths. It also helps one explore the positions one needs the most and if they are presently available in your vicinity.

The chatbot communicates with the users using natural language processing. It is widely used in online-shopping and customer care, it can work without a database as well. A chatbot provides services to a plethora of people at a time, it is not necessary for the users to have background knowledge about the bot or any experience with it before they use it. As sophisticated as these chatbots are there are some limitations to the technology. Sometimes the chatbot may give answers which are inaccurate or flat according to the user. This can be solved by reviewing the questions asked by the user regularly and updating the answers. The

Medical Data Classification and Storage Minimization Technique Using Big Data

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Abstract

In the examination of information clustering innovation have been broadly received from multiple points of view, for example, client conduct investigation, directed showcasing, advanced crime scene investigation and so forth in the present huge information time a noteworthy job is to deal with a clustering over expansive scale informational collections that outsource into open cloud stages. since distributed computing offers the solid administrations with execution ensures, yet in addition investment funds on in-house IT framework.as informational indexes are utilized for clustering may contain toucky data, for example, quiet wellbeing data, business information and conduct information which straightforwardly redistribute to the open cloud servers which thus raise the security issues. In this paper, the practical privacy protecting K implies clustering plan is been proposed which is proposed proficiently and redistributed to cloud servers. Essentially this plan permits cloud servers to perform clustering specifically over encoded informational collections. By accomplishing practically identical computational multifaceted nature and precision contrasted and clustering over a decoded one's. Here, we likewise investigate secure mix of guide decrease into our plan, the plan which makes incredibly reasonable for distributed computing condition. inside and out security examination and numerical investigation do the execution of our plan which is productive and secure.

Index words- Big Data ;Cloud Computing; Hadoop ,k means clustering

1. Introduction

The imperative assignment of exploratory information mining and factual information investigation is clustering , which has been embraced in numerous spaces which incorporates medicinal services, informal community, picture examination, patter acknowledgment. In today's information mining and investigation there is a speedy development of enormous information which includes and presents different difficulties for grouping as far as volume, assortment and speed. Consequently to oversee proficient expansive scale informational indexes and grouping over them. Open cloud foundation acts the significant job for both execution and financial thought from this time forward utilizing open cloud benefits definitely presents security concerns. This circumstance is on the grounds that information engaged with information mining application are delicate naturally, for example, individual wellbeing data, restriction information, monetary information and some more.yet additionally the public cloud is an open situation worked by external outsiders [1]. For instance, a promising pattern for anticipating a person's sickness chance is grouping over existing patients' wellbeing records [2], which contain sensitive patient data as indicated by the Health Insurance Portability and Accountability Act

REAL-TIME CLASSIFICATION OF WORLD WIDE TWEETS BASED ON PROFILER AND LOCATION

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Abstract—*Social media are step by step being hired inside the scientific network as key supply of expertise to assist understand numerous natural and social phenomena, and this has precipitated the occasion of an excellent range of manner statistics processing equipment that may extract information from social media for each publish-hoc and real time analysis. The rise of interest in mistreatment social media as a supply for evaluation has actuated braving the challenge of robotically geo-locating tweets, given the dearth of particular area records inside most of the people of tweets. In difference to abundant preceding work that has centred on area classification of tweets constrained to a selected country, here we tend to undertake the assignment at some point of a broader context through classifying global tweets at the USA . level that is up to now undiscovered for the duration of a term scenario. We have a tendency to investigate the quantity to that a tweet's country of foundation perhaps decided by means of growing use of 8 tweet-inherent alternatives for type.*

Key phrases: ***twitter, microblogging, geo-place, real-time, classification, real time API, recommendation***

1. INTRODUCTION

The increase of interest in using social media as a source for research has motivated tackling the challenge of automatically geo-locating tweets, given the lack of explicit location information in the majority of tweets. In distinction to abundant previous work that has centred on location classification of tweets restricted to a particular country, here we have a tendency to undertake the task during a broader context by classifying international tweets at the country level, which is so far unexplored in a real-time scenario. social media are an increasing number of getting used inside the scientific networks as a key supply of statistics to help apprehend various natural and social phenomena, and this has brought about the improvement of a huge variety of computational data mining equipment that could extract know-how from social media for both submit-hoc and real time analysis. Way to the availability of a public API that enables the cost-free series of a sizeable quantity of information, Twitter has grow to be leading data supply for such studies[8] .

Having twitter as a brand new type of statistics source, researchers have looked into the development of gear for real-time fashion analytics[9,10] or early detection of new worthy events[11], as properly as into analytical tactics for know-how the sentiment expressed by customer towards a goal[12] or public opinion on a particular subject matter. But, Twitter statistics lack reliable demographic information that would permit a representative pattern of users to be gathered and recognition on a particular person

Sentiment Analysis of Twitter Corpus Based on AI Assistants

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Abstract

Giving an improved experience is the most significant current issues in the user's research. A process that enhances user's experience must be needed to assess the usability and emotion. To understand user's behaviour, sentiment analysis is used considering users opinion. The main aim of this paper is to make a benchmark what artificial intelligence assistant is graphically better. User's opinions about three AI assistants from Twitter are collected and differentiated into positive, negative, neutral opinions by a lexicon called VADER. Also tweets are examined through T-test, Kruskal-Wallis test, and Mann-Whitney test to display the statistical importance among groups. Statistical analysis is used to find the highest rank among three artificial intelligence assistants.

Keywords-sentiment analysis, use, artificial intelligence(AI) assistant, twitter corpus, lexicon

1. INTRODUCTION

Products and services should provide a better experience for users. To improvise the quality of experience, user research that consists of understanding, observation, and response to the user has gained the attention of researchers.

[1]. The evaluation of the experience of usability and emotion are mainly targeted by many recent studies. Among them, users opinion are required to analyse the emotions[2], [3].

Sentiment analysis also known as opinion mining that is a type of big data mining. Researchers use the data from social media like Twitter, Facebook, and Instagram, that appeared as user's individual opinions. The user is understood more accurately by this. The values conditions and interests have different sentiments depending on users opinion. This is the main indication to investigate user's tendency. Thus, the best experience is gained using sentiment analysis.

Here, the user's opinions about the artificial intelligence assistants: Siri by Apple, Google Assistant by Google, and Cortana by Microsoft are surveyed. These comments are collected from Twitter, a text-based social media service. Tweets are differentiated into positive, negative, and neutral opinions using Valence Aware Dictionary and sEntiment Reasoner , which converts the user opinion into sentiment scores. Every opinion is converted to document matrix, and it demonstrates the graphical importance between groups.

The paper contains five sections. In section 2, literature review is provided for sentiment analysis from earlier studies to the current study. Section 3 explains about the research process as how to fetch the data and make use of the lexicon with hypotheses. Further , section 4 gives the sentiment score of every tweet that includes artificial intelligence

Taxi Proposal: Recommending Raid Bunches to Cab Drivers Utilizing Positioning-Based Machine Learning

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Abstract

Global positioning system creates a problem in the area of data mining intelligent transportation. Here we are introducing the flexible ELM model. This paper recommends the both taxi drivers and the passengers expecting for taxis using the following ELM model used in classification and regression. We also introduce a sequence learning model that estimates the taxi requests in particular area of a city depending on the recent demand and related information. In taxi recommendations, the underlying road networks are being partitioned into many numbers of clusters of road. A particular road cluster is being taken from the real life data sets and ranking based extreme learning machine (ELM). This process motivates the developers to improve effective and efficient data analysis in data mining and pattern recognition. It predicts the feed forward neural network. ELM model used here can also be simplified because of its symmetry and centering matrix nature.

Index Terms—Extreme learning machine, passenger-finding potential, recommence system, taxi trajectory data analysis.

1.Introduction

Most of the people are using taxis for there daily life as a part of transportation. TRANSPORTATION management has been a worldwide challenge in modern urbanization. Particularly, in medium-to- large sized china cities, taxi cabs are the most dynamic and challenging means of transportation for city authorities to manage. Recently, in many big cities like New York, Singapore, taxicabs are equipped with GPS sensors for dispatching and safety typically, these taxi will report on their present locations to a data centre in a certain frequency for example, 2 minutes. Besides a Geo position and time-stamp, the occupancy information of a taxi is also recorded (using some weights sensors or by connecting a taxi meter with the embedded GPS devices).Therefore, a large number of GPS trajectories with occupancy information are being generated every day. Almost all latest commercial vehicles are equipped with global positioning system (GPS) devices for geographical location tracking. GPS systems generate location dependent data over time and these data are used for fare calculation, peak hour fare variation etc. to customers. Predicting taxi demand and challenging because it is correlated with many pieces of underlying information.one of the most relevant sources of information and historical taxi trips. thanks to the global positioning system (GPS)technology, taxi trip information can be collected from GPS enables taxis. Have you ever suffered from waiting a long time For taxi cabs. Actually taxi drivers are also upset when cruising on road surfaces for finding passengers. The vacant taxis cruising on roads do not only waste gas and time of taxi drivers but also

EduIN Android Application

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Abstract

Google discharged Android which is an open-source telephone working structure with Linux-based stage. It incorporates the working framework, middleware, and UI and application programming. Determinedly, Android is going to cutting edge toward transforming into the most generally utilized OS on advantageous phones. Almost each industry is concentrating on versatile application movement for its business so as to feature their things and associations in a superior manner than make more pay. This particular android application which is been developed is mainly based on educational domain.

It's been believed that Education is one among the important backbone for the growth of the society and nation. Hence, choosing this domain to build an Android Application gives us immense pleasure. "EduIN" application is an integration of Schools, Co-curricular Institutions, Job Seekers (Teaching profession) as well as Parents mutually to each other.

Keywords : Android Platform, Android Studio, Application Programming Interface, Parallax View, View Pager, Json, Sqlitedb, Firebase.

1. Introduction

The Historical backdrop of Education in India takes us to pre-independence. The year 1937 was every time of hugeness in the historical backdrop of training in India. In that year, a choice of presenting Basic instruction dependent on the instructive thoughts of Mahatma Gandhi was taken following the distribution of the Wood Abbott report. Mahatma Gandhi, through his articles in Harijan distributed amid March to Oct. 1937 demanded that manual and beneficial work ought to not exclusively be an extremity to the on-going profitable program of instruction yet the last ought to be woven around the previous. By instruction Mahatma Gandhi implied an inside and out illustration out of the best in the kid. He recognized proficiency and instruction. The extent of proficiency is constrained to perusing, composing and calculation of numbers, though instruction is gone for improvement of the inside and out identity. As per his theory of instruction, it's anything but a procedure of filling a vacant pot with data. This would take care of the issue of financing training too, on the grounds that the pay from the specialty would bolster the running expense of the schools.

India holds a significant spot in the worldwide training industry. India has one of the biggest systems of advanced education organizations on the planet. In any case, there is still a ton of potential for further advancement in the training framework. India has the world's biggest populace of around 500 million in the age section of 5-24 years and this gives an extraordinary chance to the instruction division. The instruction area in India is evaluated at US$ 91.7 billion in FY18 and is relied upon to reach US$ 101.1 billion in FY19.

In order to modernize the Education System in India it is a good go to opt for the digitalizing the educational system for its development. We are running into the 21st century where innovation knows no limits. This is the period of radical improvement where

Online Distance Metric Learning With Image Retrieval

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Abstract

It is wanted (particularly for youngsters) to look for the equivalent or comparable items appeared in the mixed media substance, (for example, online TV programs). This demonstrates a interest for improving the experience of TV-to-Online). In this paper, an exchange learning approach just as a model framework for easy TV to online experience is created. In the framework, a key part is high-exactness item seek, which is to fulfill accurate coordinating between a question thing and the database ones. The coordinating execution principally depends on separation estimation, however the information attributes can't be very much displayed and misused by a basic Euclidean separation. This spurs us to present separation metric learning (DML) for improving the separation estimation. Be that as it may, in conventional DML techniques, the side data, (for example, the comparable/divergent limitations or importance/immateriality decisions) in the objective area is leveraged. These methods may fail due to limited side information. Fortunately, this issue can be alleviated by utilizing transfer metric learning (TML) to exploit information from other related domains. In this paper, a novel manifold regularized heterogeneous multitask metric learning structure is proposed, in which every area is treated equally. The proposed approach allows us to simultaneously abuse the data from different areas and the unlabelled. Moreover, the positioning based misfortune is received to make our model more appropriate for search. Experiments on two testing genuine world datasets show the viability of the proposed technique. This TML approach is required to affect the change of the developing T2O pattern in both TV and online video areas. File Terms—TV-to-Online, remove metric learning, exchange learning, heterogeneous areas, complex regularization and positioning based misfortune.

Keywords—TV-to-Online, remove metric learning, exchange learning, heterogeneous areas, complex regularization, positioning based misfortune.

1.Introduction

The way that sight and sound substance, (for example, photos and TV videos) are expended has been changed by the present period of Mobile Internet because of the developing ubiquity of the shrewd cell phones (e.g., cell phone and PC). In particular, the experience of expending video substance in the principle screen (e.g., TV) and approaching the sidekick substance in a second gadget (e.g., cell phone and tablet) has turned out to be broadly refreshing for watchers. Such a multi-screen video experience [1] has thusly prompted a rising plan of action, TV-to-Online (T2O). It conquers any hindrance between video substance and online traders. With the assistance of T2O frameworks, the video watchers can rapidly find the ideal items, which is same or comparable with the thing showed on video program. This drive buy should be possible online during that time screen. For instance, numerous things from the Korea dramatization "My Love from the Star" are

Energy-aware VM migration using dragonfly–crow Optimization and support vector regression model in Cloud.

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ABSTRACT

Nowadays, virtual machine migration (VMM) is a trending research since it helps in balancing the load of the Cloud effectively. Several VMM-based strategies defined in the literature review have considered various metrics, such as load, energy, and migration cost for balancing the load of the model. This paper introduces a novel VMM strategy by considering the load of the Cloud network. Two important aspects of the proposed scheme are the load prediction through the support vector regression (SVR) and the optimal VM placement through the proposed dragonfly-based crow (D-Crow) optimization algorithm. The proposed D-Crow optimization algorithm is developed by incorporating crow search algorithm (CSA) into dragonfly algorithm (DA). Also, the proposed VMM strategy defines a load balancing model based on the energy consumption, load, and the migration cost to achieve the energy-aware VMM. The simulation of the proposed VMM strategy is done based on the metrics such as load, energy consumption, and the migration cost. From the results, it can be shown that the proposed VMM strategy surpassed other comparative models by achieving the minimum values of 7.3719%, 10.0368%, and11.0639% for the load, energy consumption, and migration cost, respectively.

Keywords: virtual machines, physical machine, virtual machine migration, multi-agent firefly optimization, ant colony system

INTRODUCTION

The emergence of Cloud computing services in the digital era has been increasing steadily throughout the year. The Cloud computing services provide various services, such as Platform as a Service (PaaS), Software as a Service (SaaS), and Infrastructure as a Service (IaaS), for the end users based on demand and pay.The Cloud data centers are established for each end user based on their demand, and the data center makes use of several storage elements, processors, and the network switch/routers for providing the service. In the recent years, the increase in the service demand from various users has given rise to the virtualization concept.

The virtualization concept gives rise to a large number of data centers. The data centers of the Cloud network established in the US has consumed nearly 3 billion kWh of power. Also, the power consumption by the data centers has increased tremendously at the rate of 56% between the years 2005 and 2010. Also, the increased power consumption by the Cloud network has contributed to 2% global warming, which is similar to the pollution done by the aviation industry. The power consumed by the average-sized Cloud environment equals the power consumed by the 25,000 households. The user demand for the Cloud services is

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Security Framework for SWS Using IoT

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Abstract- *The Internet of Things (IoT) will associate not just PCs and cell phones, however it will likewise interconnect keen structures, homes, and urban communities. The IoT exploit the most recent correspondence innovations with a specific end goal to give ideal and solid administrations to Smart Cities (SC). The foundation of SC is the Critical Infrastructures, for example, the city's water framework. In SC, the water framework profits by the improvement of mechanization and correspondence advancements to make keen situations which are more proficient in the utilization of the accessible assets; we call it Smart Water System (SWS). In this paper we exhibit a multilayer engineering to coordinate the SWS to the IoT, making it accessible from wherever whenever. Nonetheless, with the presentation of IoT we will encounter stupendous difficulties to secure and ensure its propelled data benefits because of the huge increment of the assault surface, unpredictability, heterogeneity, and number of interconnected assets. We additionally present an IoT Framework for SWSs to construct dependable and secure applications and administrations. The structure empowers designers to consider security issues by any stretch of the imagination IoT layers and coordinate security calculations with the capacities what's more, administrations offered in each layer as opposed to thinking about security in a specially appointed and after idea way. Indicating how this structure can be utilized to grow profoundly secure and dependable SWS administrations and how to apply our Anomaly Behavior Analysis approach to secure and ensure these administrations against any kind of assaults.*

Keywords- Internet of things, Smart City, Smart Water, Anomaly Behavior Analysis.

I. INTRODUCTION

EVOLUTION in versatile and unavoidable figuring, social arrange advances, and the exponential development in Web applications and administrations will prompt the advancement of the up and coming age of (Internet of Things, IoT) that are inescapable, omnipresent, and touch all parts of our life [1]. It is normal that the quantity of IoT gadgets will achieve more than 50 billion gadgets by 2020 [2]. Be that as it may, the reconciliation of physical and digital frameworks and in addition the human practices what's more, co-operations (e.g., makers, purchasers, and aggressors) will drastically build the helplessness and the assault surface of associated framework biological systems [3].

In this paper, we center around one developing IoT benefit related with Smart Water Systems (SWS) that will have real security issues. For instance, present day brilliant foundations, (for example, the SWS) are controlled by complex disseminated frameworks involving huge measure of heterogeneous hubs with rich availability gave by inside systems furthermore, Internet. With the exponential increment in frameworks insight and network, security and protection have turn into the primary worries for brilliant frameworks [3]. Scientists have demonstrated that Smart Infrastructures (SI) can be assaulted from an assortment of interfaces including physical access for example, USB, and remote channels. Besides, by trading off a solitary control unit, a skilled assailant may access different units by means of inside interchanges, for example, the supervisory control and information procurement (SCADA) framework also, assault basic subsystems [3]. As SCADA gets interconnected with IoT assets and administrations, it moves toward becoming simple focuses to digital enemies, particularly since it was never intended to deal with digital dangers. This makes SI information defenseless against distortion assaults that prompt off base data conveyance to clients, and therefore making them take wrong and risky activities or to be unconscious of a continuous assault similar to the case in Stuxnet assault [4]. It likewise permits foes to conceivably execute pernicious charges on SI's control frameworks, causing unsafe activities (e.g. open security valves) [4][5].

In this work, we center in digital assaults focusing on savvy urban communities' water conveyance framework that is incorporated to the IoT; we call it Smart Water System. We initially present our IoT various leveled engineering that can be utilized to convey IoT applications. We at that point stretch out that design to our IoT System. The principle goal of presenting our structure is to empower engineers to address security issues in a efficient way while outlining and building up each IoT layer. In our approach, IoT pecking order comprises of four layers: Application, Service, Communications, and End-Devices layers. By protecting for each layer that all current vulnerabilities and dangers can be distinguished and moderation arrangements will be connected, our system will give the compositional help to convey reliable

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Forecasting Volatility with LSTM Techniques

Hemanth Kumar P | S. Basavaraj Patil

Abstract: Volatility forecasting is most searched topic in recent times, from past fears there has been tremendous research in this field of finance. This paper aims at forecasting volatility of stock index with high accuracy. The historical volatility was calculated from daily prices using Yang-Zhang method. Deep learning techniques have evolved over the years and have been successfully applied in time series forecasting problems. In this paper LSTM techniques are applied to forecasting volatility 10 days ahead. The performance of the techniques were measured with mean square error and mean absolute error. The performance of LSTM techniques has outperformed Arima, Arfima and Neural network based techniques.

Keywords: Volatility, Forecasting, LSTM, Time series

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An Automatic Localization of Optic Disc in Low Resolution Retinal Images by Modified Directional Matched Filter 193

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Abstract: *An automatic optic disc localization in retinal images used to screen eye related diseases like diabetic retinopathy. Many techniques are available to detect Optic Disc (OD) in high-resolution retinal images. Unfortunately, there are no efficient methods available to detect OD in low-resolution retinal images. The objective of this research paper is to develop an automated method for localization of Optic Disc in low resolution retinal images. This paper proposes a modified directional matched filter parameters of the retinal blood vessels to localize the center of optic disc. The proposed method was implemented in MATLAB and evaluated both normal and abnormal low resolution retinal images using the subset of Optic Nerve Head Segmentation Dataset (ONHSD) and the success percentage was found to be an average of 96.96% with 23seconds.*

Keywords: *Retinal image processing, dabetic retinopathy, optic disc, bood vessels, modified directional matched filter.*

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1. Introduction

Automatic localization of retinal fundus images provides an efficient solution of screening for eye disease such as glaucoma, Diabetic Retinopathy (DR) [1, 3]. Optic Disc (OD) localization is an integral part of the screening system for glaucoma [8, 11]. OD detection is the first step to determine the retinal abnormalities, such as drusen, exudates, microaneurysms, and hemorrhage, and imaging artifacts, such as haze, lashes, and uneven illumination in the human eye [10, 16, 20]. The past OD detection methods are based on image characteristics, bright regions, regions with the highest image variation, anatomical structure and relative position between OD and macula. Jun Cheng *et al.* [4] employed super pixel classification and histogram based center surround statistics method for detection of OD. Principal Component Analysis (PCA) techniques are used by Mudassar and Butt [17] to segment OD and fovia. Suero *et al.* [22] proposed a method consisting of intensity of images that is resized and a shade-correction method for homogenizing the background and set of morphological opening and closing operations are used for optic disc localization in high resolution images.

Based on the above review most of the researchers considered the OD as the brightest region within retinal image. However, this criterion may not be applicable for dark diseased images like diabetic retinopathy. Papers [2, 12, 21, 22] considered the OD as the area with highest variation in intensity of adjacent pixels. Both the criteria's are considered for normal, healthy high resolution retinal images. However, we found that all the OD detection algorithms often failed to prove dark, diseased low resolution retinal images. In our previous work [19] developed an approach to detect OD in digital color Images of the human retina using directional matched filter. This method is tested and is successful for high resolution retinal images and is failure for low resolution retinal images because of breaking of blood vessels (Figure 1-b). So we need to improve the performance of the matched filter and optimize better parameters for low resolution retinal images. Hence, this paper proposes to find better parameters and segments in non-breaking of Blood Vessels. (Figure1-c) for low resolution retinal images.

a) Low resolution retinal image source: ONHSD dataset.

b) Blood vessels low resolution images by our previous method (Breaking of blood vessels).

c) Blood vessels low resolution Images by proposed method (Non-breaking of Blood Vessels).

Figure 1. Performance of directional matched filter.

The aim of this paper is to develop an automatic detection of OD center in low resolution retinal

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Heterogeneous network optimization using robust power-and-resource based algorithm

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ABSTRACT

In order to meet the increasing mobile data-traffic, spatial densification of network with several low-power nodes, the high-power macro BS and HetNet are the major key enabling solution. However, the HetNet is unplanned in nature, causes irregularities and interferences that without any user association rules. The appropriate deployment of the femto-cell in HetNet can provide effective traffic offloading, where the alleviate mobbing in the macro-cells can decrease the power consumption therefore it optimizes the user experience. Moreover, the protection is also important for the macro and femto cell users in a network through maintaining the min-max level of interferences. In this paper, we proposed RPRA that comprises two robust approach such as robust power-controller and the robust channel-allocation approach, which can improve the spectral efficiency and user experiences at lower network coverage areas via eliminating the week coverage zones. Also provide high user rate connection by effective interference in an efficient spectrum, lowering in transmission power and cost-effectiveness via less time delay. To show the effectiveness of our proposed model we have compared with several existing techniques and we got significant improvement in throughput, also reduction in time delay and transmission power.

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1. INTRODUCTION

The present cellular network faces the problem of huge increment of data traffic, in that the spectral efficiency allocation and design is very important. In general, the concept of frequency reuse is the major key for 4-Generation and the future cellular networks; however, the HetNets have attracted lot of attention of the researchers in LTE (Long-Term-Evolution) wireless network [1]. Moreover, the potential of HetNets has used to optimize the spectral efficiency and user experiences at very dense environment ‘or’ lower network coverage areas, though the deployment of HetNets to small-coverage area (femto ‘or’ Pico) and low power cell with in the macro-cell environment is generally eliminate the week coverage zones, also provide the higher “spectral-efficiency” [2]. The appropriate deployment of the “femto-cell” in HetNet can provide effective traffic offloading, where the alleviate mobbing in the macro-cells can decrease the power consumption therefore it optimizes the user experience. In order to develop macro-femto based HetNets, the main concern is to manage the co-channel interferences that occurs because of spectrum sharing, the interferences of co-channel may become worse due to femto BSs that installed through end-users without any of centralized planning procedure. Generally, femto BSs are deployed under macro-cell areas without any warning due to special requirement of client, therefore the lack centralized-cell planning the effect of interferences in two-tier “macro-femto HetNets” vary considerably in a conventional cell networks.

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An efficient computational approach to balance the trade-off between image forensics and perceptual image quality

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ABSTRACT

The increasing trends of image processing applications play a very crucial role in the modern-day information propagation with the ease of cost effectiveness. As image transmission or broadcasting is the simplest form communication which determines easy, fastest and effective way of network resource utilization, thereby since past one decade it has gained significant attention among various research communities. As most of the image attributes often contains visual entities corresponding to any individual, hence, exploration and forging of such attributes with malicious intention often leads to social and personal life violation and also causes intellectual property right violation when social media, matrimonial and business applications are concerned. Although an extensive research effort endeavored pertaining to image forensics in the past, but existing techniques lack effectiveness towards maintaining equilibrium in between both image forensics and image quality assessment performances from computational viewpoint. Addressing this limitation associated with the existing system, this proposed study has come up with a novel solution which achieves higher degree of image forensics without compromising the visual perception of an image. The study formulates an intelligent empirical framework which determines cost-effective authentication of an image object from both complexity and quality viewpoint. Finally, the study also presented a numerical simulation outcome to ensure the performance efficiency of the system.

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1. INTRODUCTION

In this era of various social media applications such as Facebook, Twitter etc. along with different cloud based matrimonial and business applications, there is an increasing demand for image attribute exchange. It basically results in a higher degree of vulnerability where image can be maliciously tampered using an editing tool [1-3]. These types of tools are mostly use to manipulate the image content in a way where visual interpretation of subjects pertaining to that particular image become challenging for a viewer. It can be seen that this area of research is more than one decade old, where digital image content privacy preservation problems are at top most concern from authentication viewpoint [4, 5]. Although a large set of archives emphasized towards identification of image forgery or tampering detection with different forms of research but majority of them do not impose any full-proof solutions that reported as benchmark till date. Moreover, applying image forensics to reveal the underlying fact often leads of collateral loss of image information which is still a gap need to be address. Thereby, in this literature a computational mechanism is

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Performance Analysis of Multi-level HAAR in Background Removal for Object Detection

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Abstract

Objective: This study proposes performance improvement in speed of multi-level HAAR processed images for object detection. Method: Background subtraction algorithm is implemented using phase as a feature to reduce illumination variation. The algorithm is implemented on level 2 and level 3 HAAR compressed images. Simulation results are obtained on kit ware database. Findings: Simulation results show that object detection is faster in level 3 HAAR compressed images as compared to level 2 and level 1 HAAR compressed images. Average time required for processing single frame is in range of 6.53 to 29.22 ms in level 3 while that in level 2 is 6.65 to 36.46 ms. Improvement: Using this approach saving of 5% to 22% of processing time is observed at level 2 of HAAR while a saving of 9% to 48% of time is observed at level 3 of HAAR.

Keywords: Background Subtraction, Illumination Variation, Multi-Level HAAR, Phase as a Feature

1. Introduction

Over past, numerous approaches have been used to detect the object using compressed videos due to increasing demand of various video processing algorithms implemented on FPGA hardware[1]. This study proposes the object detection on HAAR compressed videos taking in to consideration the memory and the power requirements for implementation. Many features are used for object detection like histogram, edge and corner. Statistical features include intensity, SVM, texture, etc.

One of the intricate task in moving object detection is detection of objects in presence of changing illumination conditions[2,3]. Different approaches of object detection proposed include feature based object detection, template based object detection, etc. Recently many feature extraction methods are developed to overcome the challenges like changing illumination, occlusion, camouflage image etc. faced by background subtraction methods[4]. Proposed approach uses phase as a feature as it is invariant to illumination changes. To extract phase, Gabor filter is used as it is related to invariance to illumination. Feature extraction is performed on multi-level HAAR compressed images, since it is very effective in detecting the exact instants when a signal changes. HAAR wavelets are easy to implement and fast in computation. Results are generated for level1, level 2 and level 3 HAAR compressed images. Speed of operation is compared for three sample files for 45 frames processing showing the enhanced speed in higher levels of HAAR usage in pre-processing.

Organization of the paper is as follows: Related work is surveyed in Section 2, Section 3 briefs the methodology used. Experimental findings and observations are discussed in Section 4. Work is concluded in 5 and Section 6 discusses future work.

2. Literature Survey

In the study, "Background subtraction based on phase feature and distance transform" suggested detection of moving objects in changing illumination conditions. In[5,6] proposes an algorithm for moving object detection in

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Pilot Based Channel-Estimation 4G LTE OFDM Utilizing Time Space Procedure in Video Transmission

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Abstract: ***Current system for communications utilize wireless for data transmission to exchange the information between associated mobile devices. The researchers are exploring novel methods to use the devices efficiently, faster and accurate. The ever increasing demand for new features by the user is making the industry standards to grow at a faster pace. The parameter like Bit Error Rate (BER) and Signal to Noise Ratio (SNR) are considered to understand the network performance. In this research paper, the transmission of different formats of video over the 4G LTE is carried amongst two systems using Wi-Fi. Different frames having various colour, size, black and white and video of different formats like .avi, mov, mpeg4 videos are transmitted. The frames are transmitted with and without channel. The transmission time and end delay parameters are observed. The performance of LSE algorithm in the OFDM channel is estimated. BER is estimated for low SNR using M-PSK modulation and LS algorithm. The M-PSK& BPSK are compared with each other and M-PSK found to give better result for low SNR with low BER. Rayleigh, Rician& AWGN noise is compared with each other and it is observed that Ricon gives better result. The channel length of 4, 16, 64 is taken to compare the SNR with BER. For low SNR, BER is low with less number of channels.***

Keywords: SNR, BER, Pilot Channel

I. INTRODUCTION

In video transmission over the wireless network, the low Bit Error Rate(BER) with good signal to noise ratio (SNR) is needed so that all the transmitted frames will be received without any loss. Additionally, when sending and receiving through WSN the transmission and delay time is to be analysed.

For the large data rates the Orthogonal Division Frequency Multiplexing (OFDM) is used as the developing technology. In Wireless Sensor Network(WSN) the OFDM grounded systems are WiMAX, Wi-Fi, WiBro etc., as well as the developing fourth-generation mobile systems. The OFDM is basically a multi carrier modulation combined, and makes use of innumerable spaced orthogonal sub carriers which are practical for the frequency selective channels along with more information rates [1, 2].

The OFDM transfers different fast signals concurrently on the rarely identified orthogonal carrier frequencies. The OFDM majorly improves the best use of bandwidth along with robust communications in the middle of disorder and several other interferences.

OFDM has the capacity to direct the data in multiple paths. The rapid data stream gets separated into narrowband data streams, with sub channels. At receiver, information about the channel above which the signal gets transferred is needed. In an OFDM framework like 3.9/4G, WiMAX, Wi-Fi, and WiBro for boosting the estimation of the direct, the identified signals could be inserted within the transferred OFDM image. Later the unique approaches may be associated for assessing the channel using these identified pilots [3].

Performance of BER of AWGN, Rayleigh, Ricon is compared for the video transceiving. The channels are discussed in the following section.

- **Rayleigh Fading**

Basically it's a rational model in the presence of several objects. The transmitted signal is scattered before received by the receiver. In case of adequate scattering the impulse response of the channel has to undergo Gaussian process [4]. For a larger number of paths, by the application of central limit theorem, we can model every path as a circularly symmetric complex Gaussian random variable along with time.[5].

In absence of leading component to the scatter, mean is zero and the phase regularly distributed amongst 360degrees which is Rayleigh distributed.

- **Ricianchannel Fading**

It is a non-deterministic model for the irregularity which follows whenever a signal after transmission gets cancelled on its own.

The signal comes to the receiver by various paths in which any one path is varying. It happens when any one path is stronger than the rest of the path. The Rician distribution describes the gain of amplitude. In the event of non-existence of any path between the OFDM transmitter also with receiver the Rayleigh fading can applied for categorising the Rician fading [6].

By using the two parameter K and Ω Rician fading [7] channel is defined. The K, or the Rice factor, can be defined to be the ratio between the straight path powers with the scattered power paths. The overall power is Ω which is a distribution scaling factor. Without considering the power R at receiver side, then Rice scattered with parameters:

$$V^2 = K/1+K^2 \ \Omega \quad \text{----------(1)}$$

and

$$\sigma^2 = \Omega/2(1+K) \quad \text{----------(2)}$$

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Advanced Surveillance System Using OpenCV

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Abstract: Surveillance is the monitoring of behavior, activities or other change information for the purpose of influencing, managing, directing, or protecting people. Surveillance is used by governments for intelligence gathering, prevention of crime, the protection of a process, person, group or object, or the investigation of crime. In this project we design an embedded surveillance system which consists of small PIR (Pyroelectric Infrared) sensor built around a microcontroller. The system senses the signal generated by PIR sensor detecting the presence of individuals. Detecting the presence of any unauthorized person in any specific time interval, it triggers an alarm & sends a short video of the unauthorized person to the admin, asking what action to be taken. The system is also trained to recognize the admin for easy access to the admin. In case of a person wearing mask, the system would detect motion and send the picture since it can't find a face in the frame. In this way system avoids any type of security breaches. Such a system and the algorithm is prepared with the help of raspberry pi and software's such as python, OpenCV and smtp protocol. After the real time response from the trained system, the admin is provided with mobile app for immediate reactions for any situation. This concept can be used in many applications in our society, thus creating a secure and safe society.

***Index Terms* - Pyroelectric Infrared, Python, OpenCV, Raspberry PI, SMTP protocol.**

I. INTRODUCTION

Usage of security video cameras is considered as best way of preventing the intruders from causing damage to you or your home (even when you are thousands of miles away from your place), keeping away trespassers and even for inspecting activities of your kids. Most of the security cameras are linked to computers (electronic camera network security software). A cost-efficient and breach proof security video camera network can be produced with the help of PC, security and cam electronic camera software application.

The concept of usage of CCTV security electronic cameras is in existence since several years. With the development of innovation, the equipment utilized in the latest security camera CCTV system have changed significantly. Nowadays, the security cameras have become much more advanced, reasonable, smaller and straight forward. And we can notice CC televisions almost at any place you visit, from a small store to homes and holy places. As a result, they guarantee greater public security at a fraction of the cost. In our busy life we don't have much time to monitor and to keep a watch on everything. From every family most of the members are working, or even in malls and hospital to monitor each and every space is not possible.

There is continuous growth in network surveillance because of the instability incidents that are happening all around the world. Therefore, there is a need of a smart surveillance system for intelligent monitoring that captures data in real time, transmits, processes and understands the information related to those monitored. The video data can be used as a forensic tool for after-crime inspection. Hence, these systems ensure high level of security at public places which is usually an extremely complex challenge.

In the past times, the events captured on video were used to expose important information and work as proof after the event happened. But we need a system that let users to check and reply to alarms immediately. Using a number of video cameras, a large amount of visual data is captured that is to be monitored and screened for intrusion detection. Presently, the surveillance systems used requires constant human vigilance. However, the humans have limited abilities to perform in real-time which reduce the actual usability of such surveillance systems.

A. Hardware design:

- Raspberry Pi:

The Raspberry Pi is a series of small single-board computers. Processor speed ranges from 700 MHz to 1.4 GHz for the Pi 3 Model B+, on-board memory ranges from 256 MB to 1 GB RAM. Secure Digital (SD) cards in MicroSDHC form factor (SDHC on early models) are used to store the operating system and program memory.The boards have one to four USB ports. For video output, HDMI and composite video are supported, with a standard 3.5 mm tip-ring-sleeve jack for audio output. Lower-level output is provided by a number of GPIO pins, which support common protocols like I²C.t, confirm that you have the correct template for your paper size.

- Node MCU:

Node MCU is an open source IoT platform. It includes firmware which runs on the ESP8266 Wi-Fi SoC, and hardware which is based on the ESP-12 module. There are a total of 8pins, which include a TXD pin, RXD pin, VCC, and GND.Technical specifications includes, 32-bit RISC CPU: Ten silica Xtensa LX106 running at 80 MHz , 64 KiB of instruction RAM, 96 KiB of data RAM, External QSPI flash – 512 KB to 4 MB,IEEE 802.11 b/g/n Wi-Fi,Integrated TR switch, balun, LNA, power amplifier and matching network,WEP or WPA/WPA2 authentication, or open networks,16 GPIO pins,SPI, I²C,1 10-bit ADC.

Grid Connected, Transformer less Single phase Inverter Topologies for Photovoltaic systems

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Abstract*: In order to provide safety to users, the design of a majority of the photovoltaic (PV) systems is made with galvanic isolation and with transformer. During conversion stage's overall frequency is decreased because the transformer is expensive, heavy and bulky. The general efficiency of PV inverters with transformers ranges approximately from 92% to 94%. Therefore, a more effective, inexpensive, lighter and smaller PV system without transformer is introduced for managing such issues. For inverters without transformer, several kinds of configurations, such as dual parallel buck inverter, oH5, HERIC, H5, H6, etc., are available. However, several disadvantages, such as MOSFET reverse recovery issues, dead time necessities at the grid voltage's zero crossing instances (for the avoidance of grid shoot-through by faults), shoot-through by switch issues, and high conduction losses, are associated with such configurations. Two problems are associated with the proposed inverter without transformer. The first problem is that in order to attain a higher efficiency, super junction MOSFETs (CoolMOS) have to be utilized for all switching devices. The second problem is that no shoot-through problems must be experienced by the inverter's configuration for attaining a higher reliability. A detailed analysis of the entire above transformerless inverter with simulation results obtained from Simulink is presented in this paper.

Index Terms*: Grid Connected System, Phovoltaics, Reverse Recovery , Shoot-Through, Transformerless Inverter (TLI).

I. INTRODUCTION

Solar photovoltaic (PV) systems are considered as one of the most promising distributed energy resources (DERs) and the grid integration of such PV systems is performed through inverters. Over last few years, there have been significant development on inverter technologies and the main reasons behind all these development are the improvements in the efficiency and the reductions in costs. The grid integration of PV units becomes more expensive when transformers are used as the costs associated with transformers are high. For this reason, it is important to consider transformerless inverters (TLIs) for the PV based systems synchronized with grid. The existing literature about TLIs include different configurations such as dual-parallel back inverters, H5 inverters, optimized H5 (oH5) inverters, H6 inverters, high efficient and reliable inverter Concept (HERIC) [A1]. The IGBTs' fixed voltage conduction losses are utilized in the H5 inverter to enhance the efficiency, these fixed voltage conduction losses are not utilized in the topology of the H6 inverter [1–2]. Nevertheless, the three switches are serially connected in the present path cause greater losses of conduction during the active stages. The H6 topology still contains the shoot-through problems due to the three DC-bus connected switches in a serial connection [3–4]. The diodes of the MOSFET body may be activated when there is change in phase of inverter current and output, eventually proving to be H6 inverter's yet another disadvantage. This may lead to a reduction in the system's reliability and the reversal of recovery issues by body diode. Therefore, a highly efficient and reliable topology is proposed for inverter without transformer for solving these issues.[5–6]. The presence of full bridge inverter topology with Common Mode (CM) currents and varying Pulse Width Modulation (PWM) methods are observed from the review of literature. The new topology, function with any power factor, is highly efficient, and does not produce mode voltage[8–9]. Ground current and a difference in the ground currents of the full bridge's unipolar and bipolar modulation strategies were examined and it was proposed that, the full bridge inverter be substituted with a neutral point clamped topology[10–12].
Several factors like, leakage current, CM voltage, output current, and output voltage are considered in the discussion of single phase TLI topologies tied to grid, such as H5, and H6 and HERIC topologies. The oH5 topology is proposed due to the combined advantages of both unipolar modulation and bipolar modulation in the topology. The input voltage is improved to the voltage of the freewheeling path for avoiding the oH5 topologies CM voltage [13–15]. To attain a high efficiency, MOSFET and IGBT devices are utilized and the ground leakage current issue is solved by a commercialized unipolar inverter H5 topology. High conduction losses are possessed by the H5 topology, because the current is conducted through three serially connected switches during the active stage. The MOSFET devices cannot be utilized by the line frequency switches S1 and S2, due to its slow reverse recovery diode, which constitutes another disadvantage of the H5 topology. Large losses can be induced by the EMI problems, they are potentially caused by a higher probability of damage to devices, due to the slow reverse recovery diode.

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Accurate Neighborhood Resolving Sets of a Graph

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Abstract

Let G be a simple connected graph. A subset S of $V(G)$ is called a neighborhood set (n-set) of G if $G = \cup_{v\in S}\langle N[v]\rangle$, where $N[v]$ denotes the closed neighborhood of the vertex v in G. Further for an ordered subset $S = \{v_1, v_2, \ldots, v_k\}$ of $V(G)$ and a vertex u of G, we associate a vector $\Gamma(u) = (d(u, s_1), d(u, s_2), \ldots, d(u, v_k))$ with respect to S, where $d(u, v)$ denotes the distance between u and v in G. A subset S of $V(G)$ is said to be a resolving set (r-set) of G if $\Gamma(u) \neq \Gamma(v)$, for all $u, v \in V(G) - S$, $u \neq v$. A neighborhood set of G which is also a resolving set is called a neighborhood resolving set (nr-set) of G. An nr-set S of G is called an accurate neighborhood resolving set (anr-set) of G if $\bar{S}$ has no nr-set of G of cardinality of S. The purpose of this paper is to compute minimum cardinality of nr-sets and anr-sets of certain graphs and their certain derived graphs.

Key words: neighborhood set, resolving set, neighborhood resolving set, accurate neighborhood resolving set.

AMS Subject Classification number: 05C20

1. Introduction

All the graphs considered here are non trivial, undirected, finite, connected and simple. We use the standard terminology, the terms not defined here may be found in [3, 1]. Let $G(V, E)$ be a graph. For a vertex $v \in V$, $N(v)$ denotes the set of all vertices of G which are adjacent to v and $N[v] = N(v) \cup \{v\}$. A subset S of V is called a neighborhood set or n-set of G if $G = \cup_{v\in S}\langle N[v]\rangle$, where for a subset S of V, $\langle S\rangle$ denotes the subgraph of G induced by the set S. An nr-set S is called minimal if no proper subset of S is an nr-set. The minimum cardinality of a minimal n-set is called the neighborhood number of G and is denoted by $ln(G)$. The concept of neighborhood number for a graph was first introduced by E. Sampathkumar et al. [6].

A subset S of V is called a resolving set or an r-*set* of G if for each pair $u, v \in V - S, u \neq v$, there is a vertex w in S such that $d(u, w) \neq d(v, w)$. The minimum cardinality of a minimal n-set is called the resolving number of G and is denoted by $lr(G)$. The concept of resolving number for a graph was first introduced by F. Harary and R.A. Melter [4] and independently by P.J. Slater [9].

A subset S of V is called a neighborhood resolving set or nr-*set* of G if S is both neighborhood and resolving set of G. The minimum cardinality of a minimal nr-*set* is called the neighborhood resolving number of G and is denoted by $lnr(G)$. An nr set S of G is called an accurate neighborhood resolving set or anr-set of G if $\bar{S}$ has no nr-set of G of cardinality of S. The minimum cardinality of a minimal anr-*set* is called the accurate neighborhood resolving number of G and is denoted by $lnr_a(G)$.

For a graph $G(V, E)$ with $V = \{v_1, v_2, \ldots, v_n\}$, consider the corresponding set $V' = \{u_1, u_2, \ldots, u_n\}$, then the Mycielski graph $M(G)$ of G is the with $V(M(G)) = V \bigcup V' \bigcup \{w\}$ and $E(M(G)) = E(G) \bigcup \{v_iu_j, : v_iv_j \in E(G), 1 \leq i, j \leq n\} \bigcup \{u_iw : 1 \leq i \leq n\}$

While finding an n-set S for a graph G, we say that a vertex $v \in V$ covers an edge $e = xy$, $x, y \in V$ if $e \in \langle N[v]\rangle$ and we see that S is an n-set of G if each edge of G is covered by some vertex of S.

Throughout this paper P_n denotes a path on n vertices with vertex set $V = \{v_1, v_2, \ldots, v_n\}$, where for $1 \leq i \leq n - 1, v_i \sim v_{i+1}$. C_n denotes a cycle on n vertices with vertex set $V = \{v_1, v_2, \ldots, v_n\}$, where for $1 \leq i \leq n - 1, v_i \sim v_{i+1}$ and $v_1 \sim v_n$. $W_{1,n}$ denotes the wheel graph with $V = \{v, v_1, v_2, \ldots, v_n\}$, where v is the central vertex and $v_1, v_2, \ldots, v_n$ are the rim vertices of the wheel.

Remark 1.1. *For any graph G, as every anr-set is also an nr-set, we have $lnr_a(G) \geq lnr(G)$.*

Remark 1.2. *For $P_n, n \geq 3$, any 2-element subset of vertices is a resolving set.*

Remark 1.3. *For any graph G with n vertices and satisfying a property p, if p-number $p(G) = m$ where $m \geq \lceil \frac{n+1}{2} \rceil$ then the accurate p-number $p_a(G) = m$.*

Proof. Clearly $p_a(G) \geq m$. Conversely, let S be a p-set of G with $|S| = m$ where $m \geq \lceil \frac{n+1}{2} \rceil$. Then $|\bar{S}| = n - m = n - \lceil \frac{n+1}{2} \rceil = \lceil \frac{n-1}{2} \rceil < \lceil \frac{n+1}{2} \rceil \leq m$. Thus $\bar{S}$ can not contain a subset of cardinality m. Hence S is an $accurate$ p-set of G so that $p_a(G) \leq m$, proving $p_a(G) = m$. □

Theorem 1.4 ((E. Sampathkumar, Prabha S, Neeralagi [6]). *A set S of vertices of a graph G is an n-set if and only if every line of $\langle V(G) - S\rangle$ belongs to a triangle one of whose vertices belong to S.*

Remark 1.5. *If G is a triangle free graph, then by Theorem 1.4 a set S is an n-set of G if and only if for each edge $e = v_iv_j$ of G either $v_i \in S$ or $v_j \in S$.*

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Synthesis, Characterization and DC Conductivity Studies of $CoCl_2$-PEO Doped Polyaniline Complexes 201

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Abstract: ***The polymer electrolyte based on polyethylene oxide (PEO) complexes with conducting Polyaniline (PANI) and Cobalt Chloride ($CoCl_2$)has been prepared indifferent weight percentage(wt%) by insitu polymerization method. The complexation is characterized by X-ray diffractometry (XRD) and scanning electron microscopy (SEM), which confirmed the presence of polyethylene oxide complexes with conducting Polyaniline and Cobalt Chloride salt. DC conductivity studies show thermally activated behavior of all the composites. The conductivity was found to increase with the increase in temperature indicating the semiconducting behavior of all the complexes. Maximum conductivity was observed in 30 wt% of Cobalt Chloride salt complexes with conducting Polyaniline and polyethylene oxide.***

Keywords: Polyaniline, Cobalt Chloride salt, Polyethylene oxide, complexes, DC conductivity

1. Introduction

Conducting polymers have been extensively studied in the last 20 years and used for technological applications in electrochromics, batteries, biosensors, gas separation membranes, enzyme immobilization matrices and metal projection against corrosion[1-4]. Polyaniline (PANI) has received much attention as a popular kind of conducting polymer with various exceptional [5]. Since the discovery of high electrical conductivity from blending poly(ethylene oxide) PEO with potassium salts by Fenton et al [6]. Polymer electrolytes have attracted a lot of interest, especially because of their potential use in thin film batteries. Polymer electrolytes consist of polar polymer and ionizable salts. PEO is the most popular polymer used, due to its high solvating power with metal ions, good processability, and outstanding mechanical properties [7-12].Many works based on nano-composite polymer electrolyte systems have been carried out till now. Some of these systems are {(PEO+SiO_2): NH_4SCN} [13], PVC-ZnO-$LiClO_4$ [14], PMMA-EC- $LiCF_3SO_3$-Al_2O_3/SiO_2 [15], PVA:NH_4SCN: DMSO:Al_2O_3 [16] and PMMA-PEO-$LiClO_4$- EC/PC-Al_2O_3/TiO_2/SBT(CIT) [17], etc. wherein the effect of filler in polymer electrolyte on conductivity has been studied. The researchers have discussed different explanations for the improvement in conductivity with the incorporation of filler such as higher dissociation of salt and increment in the level of amorphous phase, space charge induced enhancement effect and increment in the dipole moment of the polymer chains, etc. depending on the filler added in the electrolyte system[18-21].In this paper, the authors have reported the Synthesis, characterization and studies on DC conductivity of PANI:$CoCl_2$:PEO complexes.

2. Materials and Method

All Chemicals used were analytical reagent (AR) grade. The monomer aniline was doubly distilled prior to use. Ammonium persulphate (APS) ($(NH_4)_2S_2O_8$), Hydrochloric acid (HCl), and Cobalt Chloride salt($CoCl_2$), PEO were procured from sigma and were used as received.

a) Synthesis of Polyaniline:
The synthesis was based on mixing aqueous solutions of aniline hydrochloride and ammonium persulphate at room temperature, followed by the separation of polyaniline hydrochloride precipitate by filtration and drying. Aniline hydrochloride (equi molar volumes of aniline and hydrochloric acid) was dissolved in distilled water in a volumetric flask to 100 mL of solution. Ammonium persulphate (0.25M) was dissolved in water also to 100 mL of solution. Both solutions were kept for 1 hour at room temperature (25°C), then mixed in a beaker, stirred with a mechanical stirrer, and left at rest to polymerize. Next day, the PANI precipitate was collected on a filter, washed with 300-mL portions of 0.2 M HCl, and similarly with acetone. Polyaniline (emeraldine) hydrochloride powder was dried in air and then in vacuum at 60°C to achieve the constant weight [22].

b) Synthesis of PANI: $CoCl_2$: PEO Complexes
The 0.1 mole aniline monomer is dissolved in 1 mole HCl to form aniline hydrochlride. Fine graded pre-sintered $CoCl_2$+PEO (AR grade, SD-Fine Chem.) powder in the weight percentages (wt %) of 10,20,30,40 and 50 wt% is added to the polymerization mixture with vigorous stirring in order to keep the $CoCl_2$:PEO powder suspended in the solution. To this reaction mixture, APS as an oxidant is added slowly with continuous stirring for the period of 4 hrs at temperature 50C. Polymerization of aniline takes place over fine grade $CoCl_2$: PEO particles. The resulting

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Joining of tubular steel–steel by unconventional magnetic pulse force: environmentally friendly technology

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Abstract

Electromagnetic welding uses environment-friendly, unconventional non-contacting magnetic pulse force for joining of two metals. The present paper focuses on the welding of tubular mild steel to two different steel bars, ferrite-pearlite 1018 carbon steel and austenite 304 stainless steel using a 40 kJ electromagnetic instrument. A qualitative metallurgical bonding was obtained for a selected set of optimum process parameters. The bonded region did not show localized melting for a mild steel–carbon steel joint and was found to be homogeneous liquid state bonding for a mild steel–stainless steel joint within a restricted distance of 3 μm from the interface. Both the joints indicated good peel strength and leak tightness. Simulation studies were validated using experimental parameters such as voltage,

3.3.2 Number of research papers published in the Journals notified on UGC website during 2020

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
208.	Single-phase transformer-less inverter circuit configurations for photovoltaic applications	Dr. Selvamathi R	Electrical & Electronics Engineering	International Journal on Emerging Technologies	2249-3255	UGC Care
209.	Investigation on adsorption properties of HCN and ClCN blood agents on θ-phosphorene nanosheets – A first-principles insight	Dr. Jyothi M S	Chemistry	Chemical Physics	0301-0104	UGC Care list/Scopus/Web of Science
210.	Review on recent advances of core-shell structured lead halide perovskites quantum dots	Dr. Jyothi M S	Chemistry	Journal of Alloys and Compounds	0925-8388	UGC Care list/Scopus/Web of Science
211.	4-aminophenyl sulfone (APS) as novel monomer in fabricating paper based TFC composite for forward osmosis: Selective layer optimization	Dr. Jyothi M S	Chemistry	Journal of Environmental Chemical Engineering	2213-3437	UGC Care list/Scopus/Web of Science
212.	Benzyl alcohol and 2-methyldecalin vapor adsorption studies on β-bismuthene sheets – A DFT outlook	Dr. Jyothi M S	Chemistry	Chemical Physics Letters	0009-2614	UGC Care list/Scopus/Web of Science
213.	Predicting dwell fatigue life in titanium alloys using modelling and experiment	Sudha Joseph,	Mechanical Engineering	Nature Communications	ISSN 2041-1723	UGC Care
214.	The role of dwell hold on the dislocation mechanisms of fatigue in a near alpha titanium alloy	Sudha Joseph,	Mechanical Engineering	International Journal of Plasticity	ISSN 0749-6419	UGC Care
215.	Roughening improves hydrogen embrittlement resistance of Ti-6Al-4V	Sudha Joseph,	Mechanical Engineering	Acta Materialia	ISSN 1359-6454	UGC Care
216.	Fuzzy Reliability Assessments of Distribution system with Wind Farms and Plug-in Electric Vehicles	M K Kiran,Hemakumar Reddy Galiveeti, Sunil Kumar Pulimithi,	Electrical & Electronics Engineering	Electrical power Components & Syatems	ISSN: 1532-5016	UGC Care
217.	Studies on Flexural Strength of Concrete with Demolished Concrete as Coarse Aggregate(Partial Replacement) and Manufactured Sand as Fine Aggregate(Total	Dr Shashishankar A.Mohiyuddin C S	Civil Engineering	International Research Journal of Engineering and Technology (IRJET)	e-ISSN: 2395-0056	UGC Care
218.	Experimental Studies on Controlled Low Strength Materials Using Black Cotton Soils and Comparison of Results with Taguchi Model	Dr .Shashishankar, A.	Civil Engineering	Lecture Notes in Civil Engineering	ISSN: 09743154	UGC Care
219	Investigations of Common Effluent Treatment Plant Sludge based Controlled Low-Strength Material	Dr .Shashishankar, A.	Civil Engineering	Journal of Scientific & Industrial Research 79	453-456	UGC Care

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SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
220	Identification of language in a cross linguistic environment	Dr .Latha C A	Computer Science and Engineering	Indonesian Journal of Electrical Engineering and Computer Science	2502-4752	UGC Care
221.	Data Management of Internet of things: Architecture, Challenges and Technologies	Dr .Latha C A	Computer Science and Engineering	International Journal of Innovative Technology and Exploring Engineering	2278-3075	UGC Care
222.	Sentimental analysis of transliterated text in Malayalam using recurrent neural networks	Dr .Latha C A	Computer Science and Engineering	Springer-Journal of Ambient Intelligence and Humanized Computing	ISSN 1868-5137	UGC Care
223.	Segmentation of Knee Cartilages in Osteoarthritis using U-Net: Convolutional Neural Network and Age assessment of Patients	Dr.Ganga Holi	Information Science & Engineering	International Journal of Engineering Research in Computer Science and Engineering	ISSN:2394-2320	UGC Care
224.	Enhanced Power Added Efficiency for RF Power Amplifiers in Mobile Communication	Prof. Ambily Babu	Electronics & Communication Engineering	International Journal of Grid and Distributed Computing	ISSN: 2005-4262	UGC Care
225.	Effect of Asymmetrical wall Heat Flux and Wall Temperature Ratio on Mixed Convection in a Vertical Microporous Channel with Internal Heat Generation	R Gangadhara Reddy	Mathematics	Propulsion and PowerResearch	2212-540X	UGC Care
226.	Hydrothermal synthesis and characterization of Zinc Oxide nanoparticles of various shapes under different reaction conditions	Dr.Mini V	PHYSICS	Nano Express 1 (2020) 030028	ISSN: 2632-959X	UGC Care
227.	Ceramic Protective based Coatings for low carbon steel substrate – A Review	Umashanker. L, T. P. Bharathesh, Saravanan. R,	Mechanical Engineering	IJESC	ISSN 2321 3361	UGC Care
228.	Machinability study of Aluminium Metal Matrix Composite (Al6061 - SiC)"	Shivaprasad D (Ashok Kumar DSATM)	Mechanical Engineering	Journal of Fluid Mechanics and Mechanical Design,.	ISBN 978-92-79-96552-4	UGC Care
229.	Measurement of cutting forces during machining of A356-SiC MMCs	Shivaprasad D (Ashok Kumar DSATM)	Mechanical Engineering	Journal of Recent Trends in Mechanics	e-ISSN:2582-3213	UGC Care
230.	Framework for Cross Layer Energy Optimization in Wireless Sensor Networks	R Amutha,Sivasankari G.G,	Computer Science and Engineering	EAI Endorsed Transactions on Energy Web Research Article	ISSN 2410-0218	UGC Care
231.	Cloud-Based Smart Water Quality Monitoring System using Based Smart Water Quality Monitoring System using IoT Sensors and Machine Learning	Sivasankari G.G,	Computer Science and Engineering	International Journal of Advanced Trends in Computer Science and Engineering	2278-3091	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2016

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
232.	Energy Efficient Routing Protocol for Wireless Sensor Networks using the A-star Algorithm	Srividhya Ganesan,	Computer Science and Engineering	Psychology and Education Journal	0033-3077	UGC Care
233.	Airport Analyzer: A Machine Learning Approach to Predict Flight Performance	Ms.Vineeta	Computer Science and Engineering	International Research Journal of Engineering and Technology (IRJET)	2005-4238	UGC Care
234.	Data Dissemination Techniques using DBSCAN and DD-Rtree for Spatial Data Mining	Arun Biradar	Computer Science and Engineering	International Journal of Recent Technology and Engineering (IJRTE)	ISSN: 2277-3878	UGC Care
235.	Sustainable Development of Green Healthcare Communities for Prediction of Autism Spectrum Disorder using Machine Learning Approach	Srividhya Ganesan	Computer Science and Engineering	Journal of Green Engineering	1904-4720	UGC Care
236.	A Study on Spectral and Morphological Analysis on Unidirectional Neodymium Doped KDP Single Crystal	Dr Roopa V	PHYSICS	International Journal of ChemTech Research	ISSN: 0974-4290	UGC Care
237.	Nonwoven fabric supported, chitosan membrane anchored with curcumin/TiO2 complex: Scaffolds for MRSA infected wound skin reconstruction	Dr. Jyothi M S	Chemistry	International Journal of Biological Macromolecules	0141-8130	UGC Care
238.	Facile Synthesis and Characterization of rGO Decorated NiFe2O4 Nanocomposite Obtained from Waste Ni-Cd/Ni-MH Batteries	Venkata lakshmi V	Chemistry	International Journal of Waste Resources	ISSN: 2252-5211	UGC Care
239.	Analysis of Intelligent Power Management Controller with Cost Optimization for Solar/Wind Hybrid Power System	C Kothaiandal,	Electrical & Electronics Engineering	Journal of Green Engineering	ISSN: 2245-4586	UGC Care
240.	Parametric Continuously Programmable Infinite Impulse Response Filter for Non-Linear Real-Time DSP Applications	Dr. MANJUNATH RAMACHANDRA	Electronics & Communication Engineering	International Journal of Emerging Technology and Advanced Engineering	ISSN 2250 – 2459	UGC Care
241.	Host control interface and registers aided continuously programmable fir filter design for non-linear DSP applications	Dr. MANJUNATH RAMACHANDRA	Electronics & Communication Engineering	Impact Journals	ISSN(E): 2321–8843	UGC Care
242.	Improved Caching and Trust based Reliable Mobile Communication in Distributed Environment	Dr. MANJUNATH RAMACHANDRA	Electronics & Communication Engineering	International Journal of Engineering and Advanced Technology (IJEAT)	ISSN: 2249-8958	UGC Care
243.	Energy Efficient Target Tracking Method for Multi-Sensory scheduling in Wireless Sensor Networks	Deepika ukesh, N V Uma Reddy	Electronics & Communication Engineering	International Journal of Innovative Technology and Exploring Engineering (IJITEE)	ISSN: 2278-3075	UGC Care

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SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
244.	DEVELOPMENT AND TESTING OF BIO-COMPOSITE STEERING WHEEL FOR AUTOMOTIVE APPLICATION	Madhu Mohan R,Dr. C. Girisha	Mechanical Engineering	International Journal of Mechanical and Production Engineering Research and	ISSN:2249–8001	UGC Care
245.	EXPERIMENTAL STUDIES ON MECHANICAL PROPERTIES OF HYBRID POLYMER MATRIX COMPOSITES (JUTE / BASALT / GLASS FIBERS) WITH AL2O3 AS NANO FILLERS	Dr. C. Girisha	Mechanical Engineering	International Journal of Mechanical and Production Engineering Research and Development	ISSN:2249–8001	UGC Care
246.	Behavioral Studies of Myoware Sensor During Automated Prosthetic Implementation	Madhu Mohan R,Dr. C. Girisha	Mechanical Engineering	Research & Reviews: A Journal of Life Sciences (RRJoLS)	ISSN: 2249-8656	UGC Care
247.	DESIGN & DEVELOPMENT OF VASCULAR INTERVENTION ROBOT FOR DIAGONISTICS OF SUPERIOR AND INFERIOR VENA CAVA	Madhu Mohan R,Dr. C. Girisha	Mechanical Engineering	International Journal of Mechanical and Production Engineering Research and Development	ISSN:2249–8001	UGC Care
248.	Efficient resource scheduling algoritm for SDN enabled Vehicular Adhoc network	Shalini.S	Computer Science and Engineering	Solid State Technology	ISSN 0038-111X	Scopus
249.	Cloud Computing: Security challenges and issues	Supriya Srivastava	Computer Science and Engineering	Journal of Natural Remedies	ISSN: 2320-3358	Scopus
250.	Feature Selection and Instance Selection using Cuttlefish Optimization Algorithm through Tabu Search	V. Rajsekar	Computer Science and Engineering	International Journal Of Enterprise Network Management	1748-1260	Scopus

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Single-Phase Transformer-less Inverter Circuit Configurations for Photovoltaic Applications

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ABSTRACT: Grid-connected inverters are the critical components of distributed generation system because of their function as an efficient interface between renewable energy sources and utility. Recently, there has been an increasing interest in the use of Transformerless Inverter (TI) for low voltage single phase grid-connected Photovoltaic (PV) system due to high efficiency, low cost, small size, and weight compared to those with a transformer. This research review emphases on the TI topologies, which are categorized into four primary groups based on the structure, leakage current, and device characteristics. Various configurations like H5, H6, Highly Efficient and Reliable Inverter Concept (HERIC) and Neutral-Point Clamped (NPC) are offered, associated and analyzed based on leakage current in the topology, component count and ratings, benefits and difficulties.

Keywords: Device Characteristics, HERIC, Leakage current, Photovoltaic systems, Transformer-less Inverter.

Abbreviations: TI, transformerless inverter; HERIC, highly efficient and reliable inverter concept; PV, photo voltaic; NPC, neutral point clamped.

I. INTRODUCTION

An inverter can be either non-isolated or isolated which depends on the decoupling between the utility grid and PV panels. The galvanic isolation is often identified with the transformer. It has a major influence on the grid-connected PV system based on DC to AC conversion efficiency. For such systems, isolation entirely depends on the regulations of the country. Galvanic isolation is a requirement for different countries such as Italy, United Kingdom, etc. and is done in two ways. First, as the high-frequency transformer on the converter's DC side or as by the low-frequency step-up transformer on the grid side. It can be seen in Fig. 1 and 2 respectively.

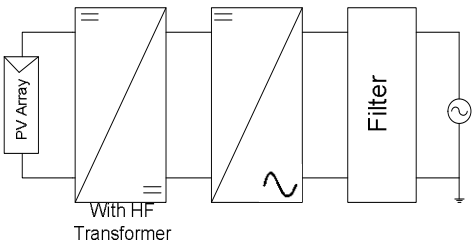

Fig. 1. High-Frequency Transformer.

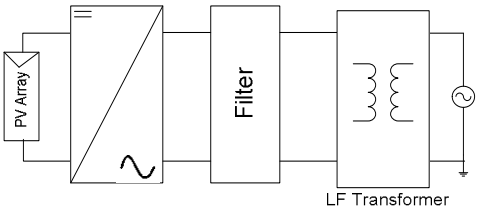

Fig. 2. Low-Frequency Transformer.

On the contrary, galvanic isolation can be excluded in some countries like Spain and Germany. If it is left out, to separate the electrical grid and PV array, another technological solution is used. Fig. 3 shows the details of the PV system without transformer, which reduces the size, cost, and weight of the whole PV system. In transformer less systems, the main problem is that sometimes it causes DC to be injected into AC by the inverter [1-3]. So, in the distribution transformer, it can saturate the magnetic core which results in overheating of the system and may lead to potential failure. One of the main advantages of these types of systems is that they can increase the system's overall efficiency [4-6].

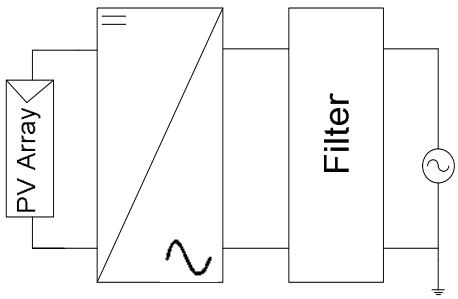

Fig. 3. Transformer less Inverter.

By using the database having the information about more than 400 commercially presented PV system provided by a magazine of PV business, Fig. 4 has been used to explain the maximum efficiency of these systems. Dots (o) has been used to represent the TIs, (*) represent the

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Investigation on adsorption properties of HCN and ClCN blood agents on θ–phosphorene nanosheets – A first–principles insight

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Band gap

ABSTRACT

We investigated the electronic features and structural firmness of θ–phosphorene nanosheet (TPNS) based on density functional theory. The formation energy endorses the structural firmness of TPNS. The semiconducting nature of TPNS with an energy band gap of 1.326 eV supports its use as a base substrate to adsorb toxic blood agents, such as HCN and ClCN. The adsorption characteristics of HCN and ClCN were established using adsorption energy, charge transfer, and deviation in band gap of TPNS. Also, the change in the electronic properties of TPNS upon adsorption of HCN and ClCN has conversed with regard to band structure, density of states spectrum, and electron density. The overall findings suggest the use of θ–phosphorene nanosheets as a sensing medium for toxic HCN and ClCN molecules.

1. Introduction

The factual viability of human existence is under threat due to uplift in the needs of every human's customary life. The race of fulfilling the needs is leading to various industrial sectors like metallurgy, plastics manufacturing, mining, pharmaceutical materials production, and many. These industries are known to either use or release toxic chemicals contributing to a polluted environment, which directly affects the living mass. Hydrogen cyanide (HCN) and cyanogen chloride (ClCN) are such chemicals, which are considered to be the primary blood agents as well as Chemical Warfare Agents (CWAs). These two chemicals are highly volatile and accomplish fatal atmospheric aggregation in the confined zone [1]. HCN and ClCN are considered to be systemic poisons affecting the whole human body. The symptoms of exposure to these blood agents include rhinorrhea, nausea, sore throat, coughing convulsions, edema, falling unconscious paralysis, vomiting, and death [2,3]. The exposure of them roots neuropathological consequences, which include necrotic lesions in the cerebellar gray matter [4]. The lower boiling points of HCN (25.6 °C) and ClCN (12.7 °C), aid difficulty in removing them via adsorption and for which presence of reactive sites within the adsorbent is of higher significance [5]. With an account, sufficient tools and techniques are in demand for the detection as well as the removal of these blood agents.

Transition metals like nickel, manganese, copper, and chromium steeped activated carbons are examined as filters for hydrogen cyanide [6,7]. K. Murugesan et al. [8] reported a strong affinity of an electron-deficient amide and sulfanimide based tripodal receptors for cyanides along with azides. Along with this activated carbon and allotropes of carbon, advancement in nanotechnology is bringing the range of materials for the removal of water and air contaminants. Among them, from the past decade, 2D materials owning solitary mechanical as well as chemical properties are providing ample opportunities in energy generation & its storage and sensing materials. W. Tang group [9] g-GaN and $Mg(OH)_2$ heterostructure, graphene-like gallium nitride, and boron selenide heterostructure [10] and van der Waals heterostructure of MoSSe/XN (X = Ga, Al) [11] for water splitting. Atomic–thin layer materials derived from dichalcogenides, carbons, boron nitrides and MXenes such as phosphorene and metal carbides are known for their tunable band gaps, luminescent electroluminescent devices [12–18]. With the analogy of graphene, phosphorene presents a remarkable tunable band gap varying from 0.3 to 1.5 eV with promising optical and electronic properties [19,20]. Like graphene, phosphorene fails to form atomic flat sheets but forms puckered honeycomb structures because of sp^3 hybridization [21] that leads to open the band gap in phosphorene. The difference in *d* values, distance amid two nearest atoms in the atomic layers and between the top and bottom atoms, is less due to covalent bonding among *3p* orbitals of phosphorous. The hole mobility of phosphorene is 1000 $cm^2\ V^{-1}\ s^{-1}$ [22], whereas for 2D electron gas of phosphorene is extraordinary with Hall mobility around 6000 $cm^2\ V^{-1}\ s^{-1}$ along with quantum Hall effect offered in

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Review

Review on recent advances of core-shell structured lead halide perovskites quantum dots

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ABSTRACT

Lead halide perovskites have shown great potential in photovoltaic and optoelectronic devices due to their high brightness, defect tolerance, tunable emission wavelength, high color purity and near-unity luminescence quantum yield. Conversely, lead halide perovskites (LHP) show poor stability, which received strong criticism despite other promising characteristics. The poor stability attracted much research resulting in various modifications to enhance the stability and photoluminescence quantum yield (PLQY). The review outlines the basic structural and optical properties along with the conventional method of LHP synthesis and its drawbacks. Simultaneously discusses about factors responsible for instability like crystal structure, moisture, solvent, light and temperature. The review exclusively focuses on the recent research on core-shell LHP modification strategy to improve the stability and PLQY and its application in LED devices.

Contents

1. Introduction

Growth of organic-inorganic lead halide perovskite (LHP) photovoltaics (PV) have fascinated researchers and has been emerging

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4-aminophenyl sulfone (APS) as novel monomer in fabricating paper based TFC composite for forward osmosis: Selective layer optimization

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ABSTRACT

The potential of filter paper as a substrate material and 4-aminophenyl sulfone (APS) as a novel monomer for TFC fabrication is explored for the first time. A novel polyamide selective layer was developed using APS and trimesoyl chloride by interfacial polymerization, whereas the control TFC was prepared by replacing APS with m-phenylenediamine. Formation of the interfacial selective layer was verified by ATR-IR spectra and the stability of the selective surface coatings was discussed by investigating the monomer interaction. Surprisingly, after polymerization, interconnected, cross-linked structure of two monomers was observed. Desalination studies were carried out in FO mode and PRO mode using NH_4HCO_3 as a draw solution. Maximum of 90% and 95% rejection was obtained for NaCl and Na_2SO_4 salts with a flux of 2.51 and 2.17 LMH respectively. The separation efficiency of the prepared TFC membrane was compared against the likes of a commercial TFC membrane under the same conditions.

1. Introduction

In the present era, fast industrialization and the escalating population have led freshwater scarcity and is faced all over the world. Due to the biological waste and salt contents, the water needs to undergo treatment processes before usage. With this regard tremendous work on activated sludge and bacterial treatment has been demonstrated by M−H Sarrafzadeh et al. [1–3]. On the other hand removal of salts is undertaken by desalination. Which is one of the best alternative to desalt the salty water which is present in copious amounts [4,5]. This idea gave way to the advancement in membrane technology which is the most successful technology currently used to meet the water demands. However, the most widely used technology today for desalination, namely reverse osmosis is expensive, energy intensive and suffers low water recovery of 35–50% [6]. Thus, the need to search for alternative sources [7,8], which are more environment friendly is gaining momentum. This is where forward osmosis (FO) is receiving tremendous importance in membrane technology for various water treatment applications; owed to its distinctive features of low hydraulic pressure, less energy consumption, minimum brine discharge and superior water recovery [9]. By now, FO process is successfully employed in various fields such as juice concentration [10], pharmaceutical product enrichments [11], power generation [12] and desalination [13]. FO process works on the osmotic pressure difference between the draw solution (DS) and feed solution (FS) creating a driving force for water molecules to pass through the membrane via osmosis. The DS of very high concentration with respect to the feed plays a vital role to create this osmotic pressure difference and achieve good flux [14]. Hence, selection of optimal DS becomes very important having characteristics such as high water flux, minimal reverse draw solute, less toxicity, low cost and easy recovery [15]. In this regard several reports are available on the effect and the use of different DS on FO processes [16–20].

In addition, another important factor necessary for effective functioning of FO process is the availability of excellent membranes with reasonable flux and rejection. An ideal FO membrane should have high flux, good rejection and low fouling effects [15]. Thin film composite membranes (TFC) are particularly preferred by membrane scientists because of the high FO water flux obtained and are not restricted by bacteria attack [21,22]. TFC membrane consists of a selective layer developed on a porous support [23]. The selective layer is formed by the polymerization of two reactive monomers consisting of amine and acid chloride groups on the porous support layer [24].

At present, cellulose triacetate (CTA) flat sheet FO membranes are

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Research paper

Benzyl alcohol and 2-methyldecalin vapor adsorption studies on β-bismuthene sheets – A DFT outlook

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HIGHLIGHTS

- The structural stableness of β-bismuthene nanosheet (β-BiNS) is confirmed with formation energy.
- The band structure analysis of β-BiNS showed that it has band gap of 0.387 eV.
- β-BiNS is used as base substrate to adsorb benzyl alcohol and 2-methyldecalin evolved from sewer.
- The outcome suggest that β-BiNS can be used to probe toxic molecules evolved from sewer headspace.

ARTICLE INFO

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Benzyl alcohol
Methyldecalin
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ABSTRACT

In the present research, β-bismuthene nanosheet (β-BiNS) is used as a base substrate to adsorb two volatile organic vapors evolved from sewer headspace, namely, benzyl alcohol (BA), and 2-methyldecalin (MD). Initially, the structural firmness of β-BiNS is established using cohesive formation energy and observed to be stable. The surface adsorption of BA and MD molecules on β-BiNS are explored with regard to the density of states, energy gap variation, adsorption energy, and charge transfer. Besides, β-BiNS exhibits chemi-resistive behavior upon adsorption and desorption of BA and MD vapors, which indicates its use as chemosensor towards toxic vapors evolved from sewer headspace.

1. Introduction

Volatile organic compounds (VOC) in the contaminated water are evolved through the sewer headspace and cause severe threat to humans and animals. Nevertheless, regulatory measures have been focused on such hazardous air pollutants emission by government sectors [1,2], for which estimation as well as the removal of VOCs from the pollutant air is in need. Besides, the prominent VOCs evolved from sewer are decane, hexane, benzyl alcohol, few derivatives of toluene, methyl benzenes, halogenated hydrocarbons, terpinene, and esters. Removal of these VOCs involves oxidation, condensation, adsorption, biofiltration, and membrane separation [3–5]. Sivret et al. [6] reported the poisonous odorants leaked from sewer headspace. Based on this reported work, we identified the toxic vapors, benzyl alcohol (BA), and 2-methyldecalin (MD) evolved from sewer headspace to adsorb on 2D monolayer materials.

Besides, several research findings with density functional theory (DFT) are lighting up the possible materials to adsorb/remove VOCs. Kunaseth et al. explored the possibility of adsorption of VOCs on graphene anchored with transition metal [7]. Work concluded that π-elections of aromatic VOCs favors π-interactions, pyridine, and thiophene favored X-interaction with the donation of lone pair of elections. Al-doped C_2N with formation energy −2.754 eV shows five times greater VOC adsorption, towards formaldehyde rather than pristine C_2N [8]. Among many VOCs, in the present work, we have taken two prominent VOCs benzyl alcohol (BA) and 2-methyldecalin (MD) as target VOCs. Benzyl alcohol is an intermediate of toluene, which forms CO_2 at a rate of 20–30 times greater than toluene [9]. National Atmospheric Emissions Inventory (NAEI) has reported the toxic nature of 2-methyldecalin and its contribution to impurity in the air [10]. Though numerous works has been done on the removal of BA and MD and their derivatives [11–14] still there preserves efficiency issues.

Recently, 2D nanosheets, such as graphene, phosphorene, arsenene, antimonene, and bismuthene are emerging as lifesavers in almost all applications of science and technology [15–20]. This new family of –enes offers a wide range of band gap from 0 to 2.62 eV, high charge

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Predicting dwell fatigue life in titanium alloys using modelling and experiment

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Fatigue is a difficult multi-scale modelling problem nucleating from localised plasticity at the scale of dislocations and microstructure with significant engineering safety implications. Cold dwell fatigue is a phenomenon in titanium where stress holds at moderate temperatures lead to substantial reductions in cyclic life, and has been implicated in service failures. Using discrete dislocation plasticity modelling complemented by transmission electron microscopy, we successfully predict lifetimes for 'worst case' microstructures representative of jet engine spin tests. Fatigue loading above a threshold stress is found to produce slip in soft grains, leading to strong dislocation pile-ups at boundaries with hard grains. Pile-up stresses generated are high enough to nucleate hard grain basal dislocations, as observed experimentally. Reduction of applied cyclic load alongside a temperature excursion during the cycle lead to much lower densities of prism dislocations in soft grains and, sometimes, the elimination of basal dislocations in hard grains altogether.

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The role of dwell hold on the dislocation mechanisms of fatigue in a near alpha titanium alloy

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ABSTRACT

The dislocation structures appearing in highly mis-oriented soft/hard grain pairs in near-alpha titanium alloy Ti6242Si were examined with and without the application of load holds (dwell) during fatigue. Dislocation pile-up in a soft grain resulted in internal stresses in an adjacent hard grain which could be relaxed by dislocation multiplication at localised Frank–Read sources, a process assisted by the provision of a relaxation time during a load hold. The rate of this process is suggested to be controlled by $\langle c+a \rangle$ pyramidal cross-slip and $\langle a \rangle$ basal junction formation. A high density of $\langle a \rangle$ prism pile-ups was observed with dual slip on two prism planes, together with edge dislocations on the third prism plane in the soft grain of a highly mis-oriented grain pair, increasing the pile-up stress. The stress concentration developed by such pile-ups is found to be higher in dwell fatigue (single-ended pile-ups) than in LCF (double ended). Analytical modelling shows that the maximum normal stress produced on the hard grain in dwell fatigue by this pile-up would be near-basal, $\approx 2.5°$ to (0002). This provides support for the dominant hypothesis for the rationalisation of dwell fatigue crack nucleation in Ti alloys, which derives from the Stroh pile-up model, and elaboration of the underlying dislocation phenomena that result from load shedding and lead to basal faceting.

1. Introduction

Sustained holds in load, so-called dwell fatigue, can lead to reductions in the cyclic life of titanium alloys and are therefore of concern to the jet engine industry (Bache, 2003; Whittaker, 2011). The issue first arose as far back as the 1970s and its avoidance almost certainly leads to the over-design of components with a consequent increase in fuel consumption. It is a complex problem as it involves the understanding of plasticity, creep and fracture, and their interaction with microstructure, stress state and stressed volume. Extensive research has been carried out in the past and the metallurgical factors affecting cold dwell fatigue are understood in some detail (Chan et al., 1981; Luquiau et al., 1997; Singh et al., 2002; Xiao and Umakoshi, 2002; Singh et al., 2007; Li et al., 2007; Huang et al., 2011; Wu et al., 2013) .

Fractographic observations have shown that the failure occurs by facet nucleation (Evans and Bache, 1994; Bache et al., 1997; Dunne et al., 2007b,a; Dunne and Rugg, 2008), believed to initiate from a strongly misoriented grain pair. These are grain pairs with a particular crystallographic orientation where a 'soft' grain well oriented for pri$\langle a \rangle$ slip lies adjacent to a 'hard' grain poorly oriented for pri$\langle a \rangle$ slip. This is termed a soft/hard grain pair due to the combined elastic and plastic anisotropy between grains with their c-axes near-perpendicular and parallel to the principal applied stress. A facet forms by crack opening on a crystallographic plane generally found to be on or near the basal planes of the hard grain (Hasija et al., 2003; Sinha et al., 2006b; Bache et al.,

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Full length article

Roughening improves hydrogen embrittlement resistance of Ti-6Al-4V

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ABSTRACT

Polished surfaces of Ti-6Al-4V, the most commonly used titanium alloy, were observed to suffer from hydride growth and associated embrittlement during hydrogen charging, whereas rough surfaces suffered no such susceptibility. Direct microscopic analyses of recombined hydrogen bubbles and thermal desorption spectroscopy (TDS) revealed that the surface roughening promotes recombination of atomic hydrogen to molecular hydrogen, in turn, reducing the relative amount of atomic hydrogen uptake. Subsurface time-of-flight secondary-ion mass spectrometry (ToF-SIMS) further revealed that the high defect density underneath the roughened surface impedes hydrogen diffusion into the bulk. These combined effects mean that, unexpectedly, roughening significantly reduces hydrogen uptake into Ti-6Al-4V and enhances its resistance against hydrogen embrittlement – all resulting from a simple surface treatment.

1. Introduction

Titanium alloys are widely used in demanding engineering applications due to their high specific strength, corrosion resistance and excellent fatigue limit strength-to-weight ratio [1]. They have been central to the development of jet engines and airframes for the aerospace industry, emerging as the chosen materials for safety-critical components such as blades and disks, as well as airframe components subject to complex loads such as wing boxes and landing gear [1–3]. Hydrogen embrittlement (HE) has been an important concern especially in the power generation, pipeline and aerospace industries, causing catastrophic failures of high-strength components [4,5]. Due to their extensive use in engineering applications involving hydrogen, steels have received by far the most research attention of any material in this field. In contrast, prior to the 1950s, titanium was widely considered to be insusceptible to HE in aqueous environments due to its protective oxide film [2]. However, from the 1960s onward evidence accumulated that hydrogen leads to a range of degradation phenomena in titanium, which continues to cause engineering concerns for industry [2,6–10]. The majority of research in the hydrogen embrittlement (HE) of titanium focuses on the behavior of hydrogen once it is absorbed into the metal [2,8,11]. In this work we focus on the initial adsorption/absorption processes at the surface [12,13].

The surface state is a critical engineering variable controlling the absorption of H into a metal. For example, the effectiveness of surface oxide layers in limiting H-absorption led to the exploration of H-permeation barrier coatings for the prevention against HE in steels [14,15]. The presence of surface deformation or roughness can also influence H-uptake. For example, the effect of plastic deformation on electrochemical activity has been investigated for various metals in the context of corrosion [16–21] or in the field of electrochemical catalysts [22–25]. Electrons around a peak escape easier than those in a valley, thus, surface roughness increases local fluctuation of the electron work function, which leads to accelerated corrosion on a rough surface [16]. Plastic deformation, which generates an increase in surface roughness, residual stress as well as dislocation density, generally promotes the corrosion of metals, as reported for the cases of copper [16,21], pipeline steel [20] and Ti-6Al-4V [17,19]. In plastically-deformed Ti-6Al-4V, both surface roughness and near-surface dislocation density influence the corrosion behavior. The development of surface roughness plays a predominant role in the higher corrosion current density [19]. The rise in dislocation density, on the other hand, can also increase the passivation current density by multiplying the number of active dissolution sites in the passivation film [17]. These effects create significant engineering concerns, yet, decoupling their role can be challenging since they can be introduced (at varying levels) even by the application of a single surface treatment. Moreover, there are interesting opportunities that arise. For example, as will be shown in Fig. 1, intriguing HE-resistance behavior can be realized even by simply cutting Ti-6Al-4V specimens. This is especially

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Original Articles

Fuzzy Reliability Assessment of Distribution System with Wind Farms and Plug-in Electric Vehicles

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Galiveeti Hemakumar Reddy, Malepati Krishnmurthy Kiran, Pulumithi Sunil Kumar, Arup Kumar Goswami & Nalin B. Dev Choudhury

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Abstract

The equipment failures are highly uncertain in nature and simple average failure rate will not reflect this uncertainty. The uncertainty level further increases in reliability evaluation due to the integration of wind farm (WF) because of the intermittent nature of wind speed and random charging patterns of plug-in electric vehicles (PEVs). In this work, the uncertain variables in the distribution system (failure rate, repair time, WF output, PEVs charging and system load factor) are represented as fuzzy numbers to

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Studies on Flexural Strength of Concrete with Demolished Concrete as Coarse Aggregate(Partial Replacement) and Manufactured Sand as Fine Aggregate(Total Replacement) using Admixtures

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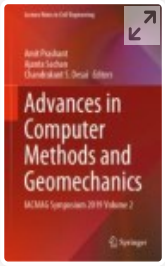
Abstract -*Flexural Strength is one of the important Engineering Properties of Concrete to be used as a Structural Member in any building. In the research work done demolished concrete is used as a partial replacement(50%) of natural coarse aggregate, and manufactured sand is used as a total replacement(100%) of natural fine aggregate. M40 Grade Concrete was prepared as per IS 10262-2019. Flexural Tests were carried out for Concrete prism beams for Concrete with demolished concrete used as Coarse and fine aggregates(CA & FA) respectively, and for Concrete prism*

Buildings. Also if the Construction and Demolition waste is dumped in open spaces within in layouts it spoils the health of the Citizens and also punishable in some of the states in India.

(1) Divyasrinath et.al,[1], (2019), observed an increase of around 25% increase in the Compressive Strength and 33% increase in the Flexural Strength of Concrete with RCA, using the Additives.(Nano Silica +Wollastonite powder+Basalt fibres).

(2) Fathima Irena JA [2], (2014), has mentioned 14%



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Experimental Studies on Controlled Low Strength Materials Using Black Cotton Soils and Comparison of Results with Taguchi Model

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B. N. Skanda Kumar, M. P. Naveena, Anil Kumar, A. Shashishankar & S. K. Darshan

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Abstract

In developing countries like India, due to fast urbanization and rapid development of infrastructure resulted in the use of soft and weak soils around for various Civil Engineering applications. The mechanical behavior of such nature of the soil has to be improved by employing stabilization and reinforcement techniques to make it reliable for construction activities. The black cotton soil is one of the major issues in India. BC soils when exposed to

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Investigations of Common Effluent Treatment Plant Sludge based Controlled Low-Strength Material

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The management of industrial waste is a difficult task in the developing country like India. In the study, fresh and in-service properties of controlled low-strength material (CLSM) consisting of cement, class-F flyash, CETP sludge, M-sand and water were determined by laboratory scale tests. The CETP considered when combined with cement and flyash, exhibit self-hardening characteristics similar to cement. The developed CLSM constitute for five classes of mix design (A, B, C, D and E). The results show that the proposed CLSM satisfy for the pavement backfilling for sub-base and sub-grade of flexible pavement requirements.

Keywords: Controlled low-strength material, Unconfined compressive strength, Permeability, Compressibility, California bearing ratio

Introduction

Industrial revolution has increased the requirement of the natural resources and in parallel contributed for large volume of waste generation. The CLSM (controlled low-strength material) is a self-leveling and self-compacting material (compressive strength (having specific surface area 3851 cm^2/g and specific gravity 3.15) and the cement content through the mixes varied between 30 kg/m^3 to 120 kg/m^3, at equal intervals of 20 kg/m^3 as shown in Tables 1 and 2. A study on use of flyash and silica fume blended concrete for marine environment has showed promising results

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Identification of language in a cross linguistic environment

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ABSTRACT

World has become very small due to software internationationalism. Applications of machine translations are increasing day by day. Using multiple languages in the social media text is a developing trend. Availability of fonts in the native language enhanced the usage of native text in internet communications. Usage of transliterations of language has become quite common. In Indian scenario current generations are familiar to talk in native language but not to read and write in the native language, hence they started using English representation of native language in textual messages. This paper describes the identification of the transliterated text in cross lingual environment. In this paper a Neural network model identifies the prominent language in the text and hence the same can be used to identify the meaning of the text in the concerned language. The model is based upon Recurrent Neural Networks that found to be the most efficient in machine translations. Language identification can serve as a base for many applications in multi linguistic environment. Currently the South Indian Languages Malayalam, Tamil are identified from given text. An algorithmic approach of Stop words-based model is depicted in this paper. Model can be also enhanced to address all the Indian Languages that are in use.

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1. INTRODUCTION

Natural language processing has been an interesting area of research in machine learning. Artificial intelligence provided to the machines enables them to cope up with the native languages used by the humans. Complexity of the native languages is one of the most challenging problems to deal with the Natural Language processing. To design intelligent machines machine learning technique neural network can be used [1]. Unlike computer language keywords, meaning of the keyword changes with sentences in native languages where ambiguity is at the peak. Semantic analysis can be done with the help of corpus associated with the language.

India is a multilinguistic Country where in each state speaks different language. Language boundary and cultural differences make its beauty in diversity. With 22 major languages, written in 13 different scripts, with over 720 dialects, India stands to be one of the largest multilinguistic countries in Asia. Malayalam, Tamil and Telugu are the prominent languages in South India. Malayalam is native language of the state Kerala spoken by 38 million people, Kannada, the native language of Karnataka and Tamil, native language of Tamil Nadu and also official language of two other countries Singapore and Sri Lanka. Tamil is spoken by a total 70 million people. Apart from these languages, English has become the common language spoken in India.

In the earlier stages of computers only English language were widely used in the documents, emails and messages. To make computer adaptable to all sectors of people, even somebody who does not know English, only way out was to make computer enabled with native languages. Introduction of fonts in native

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Data Management for the Internet of Things: Architecture, Challenges and Technologies

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Abstract*:. *A perception that is being enacted by numerous in the world is an ample range of day to day things associated and interfacing with one another across world network economically- "the Internet of Things." The gadgets around us trigger extensive amounts of data and an endless interaction between these electronic appliances and the Internet produces useful data for analysis and future prediction. These gadgets are often classified as data sources like sensors, end-user devices like displays, databases and even a knowledge source and sink such as Actuator and Smartphone. Internet of Things (IoT) has promised to facilitate ease and enhanced standard of living for users. Data management for IoT takes part during essential function in its efficient activities and has become a key research theme of IOT. This paper brings the representations of IOT architecture, various techniques for data acquisition, collection, pre-processing and visualization

Keywords* : *Internet of things, Data supervision, RFID, Sensors

I. INTRODUCTION

Million of devices like PCs, tablets, smart phones, televisions, automobiles and wearable devices are going to be connected to the web every day. Each day, new machines, sensors and gadgets come on the web and feed data into different systems. As associations set out on new IOT activities and work to remove more knowledge from growing information volumes, information the executives approach is named for [1].Traditional databases and analytics architecture will always be vital, but the IOT involves for specific capabilities to handle diverse data which are constantly streaming from untold number of sources. IoT data is complex, vast, and fast-moving data is complex, vast, and fast-moving. Sensors are more moderate than any other time in recent era and costs on associated gadgets keep on dropping. New gadgets and machines that transmit information come online consistently and full-scale information age from the IoT is presently financially plausible. Information supervision is the concept of a particular idea that alludes to models; Data the executives is the idea of a particular idea that alludes to designs, techniques, and procedures for the correct administration of a specific framework's information life cycle.

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With regards to IoT, information the board should go about as the layer between information delivering merchandise and gear and applications that entrance information for investigation purposes and administrations [3]. Segment I incorporates a prologue to the present work, Section II incorporates information the board related errands for the Internet of Things, Section III contains a few answers for the IoT engineering, Section IV manages IoT reference model, Section Five highlights genuine information, Section VI clarifies the qualities of huge information. Segment VII depicts the primary difficulties, Section VII has applications for the present work, and Section VIII Explores various IoT technologies with future bearings. Section IX depicts IoT applications. Section X gives results and Section XI Presents the conclusion.

II. LITERATURE SURVEY

[4] "Large data management in IoT application" focuses that IOT applications can face the challenge of real time managing or displaying or extracting client useful information from the whole data stored on servers. Especially in critical situations, client's database query can take too long. A distinct layer of data processing is used to "cache" fields based on selected or most frequent database queries.

[5] In "Data management for Internet of things: Green direction", the life cycle of data within the Internet of Things and survey the current research in the data management field for the Internet of Things has discussed. The discussion will focus on the research which is related to the optimization of communication overhead and storage mechanisms as they have the most significant impact on energy consumption.

[6] "Data management for internet of things: design primitives and solutions" focuses on the survey of the data management solutions that are proposed for IoT or subsystems of the IoT has been done. The distinctive design primitives are highlighted. Finally, a data management framework for IoT is proposed that takes into consideration the discussed design elements and acts as a seed to a comprehensive IoT data management solution.

[7] "Enabling Query of Frequently Updated Data from Mobile Sensing Sources", Wei Wang[4] focuses on two problems: (i) how to design a common, structured sensing layer for the heterogeneous, mobile data sources and, (ii)how to query FUTS (Frequently Updated, Time stamped and Structured) data from these sources.

[8] "Efficient Storage of Multi-Sensor Object-Tracking Data" proposed the first read/write-optimized solution for storing multi-sensor object-tracking data on HDFS. The results suggest the efficiency of the proposal with respect to diskwrite throughput,

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ORIGINAL RESEARCH

Sentimental analysis of transliterated text in Malayalam using recurrent neural networks

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Abstract
Usage of mobile phones, access to internet in the fingertips and increasing number of mobile applications has accelerated the generation of online content. Freedom of expression has waived the barriers of online interaction. Curiosity in knowing others viewpoint through their reviews in each and everything starting from a purchase of product to watching a movie has become a common scenario. Decision on success and failure of one's business is in the hands of public now. Humans are always comfortable, sticking to their native Language, when it comes to expressions whether it is interest, emotions, feeling or opinion. Usage of Natural Language and the trend to analyze the subjective sentiments is increasing day by day. Transliterated text of a language is the English version of spoken native language. For example, Malayalam in English we call as Manglish. Transliterated text has become the language of social media websites like WhatsApp, Facebook, Twitter. It's a kind of boon to the young generation who know to speak their native language but not to read or write in its own nominal scripts. In this paper we consider the Sentimental Analysis of Transliterated text. RNN-LSTM technique is used to derive the sentiments of transliterated text.

Keywords Neural network · RNN-LSTM technique · Natural language processing (NLP) · Waikato environment for knowledge analysis (Weka)

1 Introduction

Computers as machine has entered the life of humans in the sense of assistance. Ever since it is improvised to mimic the human nature to become better assistants. Imparting human calculations into computers gave birth a new era of artificial Intelligence. This era saw computers thinking even faster than human and doing processing with much accuracy and perfection than humans. Usage of language and ability to speak, distinguishes human beings from other creatures on earth. To become super assistant, it has now become necessary for the computers to understand the language that human speaks and process accordingly.

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2 Natural language processing

Natural language processing (NLP) is recent technology than imparts intelligence to computers to understand the natural languages spoken by humans. Teaching computers to understand the way of human communication is a herculean task. Natural language processing is that branch of artificial intelligence that deals with the communication between humans and machines in the natural language. Nature of human language makes NLP a much complex problem in Computer Science. Human beings are capable of handling and learning any language. But the ambiguity that persist in the usage of words to convey information is complex in its nature. Natural language used by humans cannot be dictated by any rules or cannot be bounded by any logic that computer can easily understand. Figure 1 shows the natural language processing in the domain of artificial intelligence.

NLP employs algorithms to recognize and mine meaningful sentences or data from unstructured formats and convert them to a structured one that is understood by the computers. Natural language processing include two major functionalities namely syntax analysis and semantic analysis.

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Segmentation of Knee Cartilages in Osteoarthritis using U-Net: Convolutional Neural Network and Age assessment of Patients

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Abstract-Osteoarthritis (OA) is common chronic disease over the world with knee being the most affected joint. This paper focuses on cartilages of Knee OA. Magnetic Resonance Imaging(MRI) is used for studies, as this provide information related to joint tissue and the occurrence and development of OA. The most crucial step in the processing pipeline of musculoskeletal tissues is to obtain quantifiable methods of Knee joint deterioration from MR Images. Here we use CNN based approach, U-Net which has revealed favorable results for segmenting the cartilages. The aim of this study is to illustrate and authenticate the technique for segmenting cartilages of Knee MRI and also assessment of patient's age.

Keywords-- Knee OA, Segmentation, U-Net.

I. INTRODUCTION

Osteoarthritis can be defined as degenerative joint disease and osteoarthritis (inflammation osteoarthritis). It is a disease of the whole joint, articular structures are affected[1]. Based on the population samples the knee pain symptoms are more related to patella volume than other cartilage volumes[2]. Association between femoral cartilage volume changes and tibial cartilage volume changes in the medial and lateral tibiofemoral joints of patients with radiographically[3]. Using Multivariate Analysis Approach, the amount of cartilage volume damage and fluctuations in pain are associated[4]. Hence, OA is considered to be a disease associated with cartilage structure of knee.

Magnetic Resonance Imaging (MRI) allow accurate idea of joint structure such as cartilage, bone, ligaments as well as their pathological variances. Latest technology has led to major developments in spatial resolution and contrast, allowing researchers to estimate anatomical changes of all the joint structures over sagittal, coronal and axial planes[5]. The cartilage volume and thickness dimensions from MRI interpretation allow us to study the anatomy and biomechanics of articular joints. With the help of radiographic method which allows to rate the changing cartilage loss and also measured joint-space width (JSW)[6]specially.

Joint degeneration are quantitative measures used in the research of OA. Compared to semi quantitative grading scales quantitative measures are advantageous of being purpose and extremely reproducible with a better variety for assessment of tissue deterioration dynamically.

Musculoskeletal Tissue segmentation is key step to gain measures of joint degeneration from MR Images quantitatively. Manual segmentation of tissue is extremely time consuming as the user has to delineate the borders of each joint structure on each MR Image slice, which is repeatedly isolated by the user level expertise[7]. Active shape modelling[8] extracts the Bone Cartilage Interface(BCI) from which local appearance and edge information is used for segmentation, hence resulting in less average error. Usage of Laplacian thickness measurement was found to be precise.

Multi Atlas segmentation process[9] is a promising tool for segmenting bone and articular cartilage from knee MR image, combined into one segmentation via fuzzy membership and voxel class relaxation. Limitation is introduction of potential measurement bias for courses of knee MRI atlases.

Convolutional Neural Networks are applied for image classification, scene understanding, object tracking and other fields for better results. They surpass human experts in most of the cases related to computer vision problems. The main idea of U-Net neural network is to merge the high-level layers and low-level layers via skip networks, for exact pixel level localization. It comprises of up-sampling and down-sampling, up-sampling propagates good quantity of context information to the higher resolution layer[10].

II. DATASET

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Enhanced Power Added Efficiency for RF Power Amplifiers in Mobile Communication

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Abstract

Modern mobile communication systems are using complex modulation schemes that results in RF signals with a high Peak to Average Power Ratio (PAPR). Such a signal can be effectively tracked by a linear RF power amplifier, working in back-off region. Nearly 50% of the power dissipation in a mobile transmitter happens in the power amplifier block. Developing an RF power amplifier with maximum efficiency helps to improve the battery life of the mobile. This paper proposes an envelope tracking supply modulator for the RF power amplifier, using behavioral model components to enhance power added efficiency(PAE). A Class A RF power amplifier operating at 2.5GHz using GaAs FET technology is made use of. Keysight ADS simulation tool is used for designing and simulation purpose. A 5MHz LTE, 16 QAM signal with a PAPR of 6.0 dB is used as input signal. The amplifier is capable of delivering a peak output power of 26dBm. The results show an improvement of 12 % in PAE at 6dB back-off.

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ORIGINAL ARTICLE

Effect of asymmetrical wall heat flux and wall temperature ratio on mixed convection in a vertical micro-porous-channel with internal heat generation

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KEYWORDS

Wall heat flux ratio;
Wall temperature ratio;
Internal heat generation;
Mixed convection;
Viscous dissipation;
Local thermal non-equilibrium

Abstract Mixed convective heat transfer in a vertical parallel plate micro-porous channel with internal heat generation and viscous dissipation, varying wall heat flux ratio and wall temperature ratio at the boundaries is investigated using the Darcy-Brinkman model under local thermal non-equilibrium assumption. Numerical solution for both fluid and solid temperature distributions are obtained by applying the finite element method. The effect of pertinent parameters such as Brinkman number, Rayleigh number, Darcy number, inter-phase heat transfer coefficient, porosity scaled thermal conductivity ratio and solid internal heat generation are discussed. The results indicate that the Nusselt number increases with the increase in the solid internal heat generation as well as Rayleigh number in both wall heat flux ratio and wall temperature ratio boundary conditions. It is observed that with the quantitative increase in viscous dissipation parameter *Br*, Nusselt number *Nu* increases in the presence of internal heat generation and it decreases in the absence of internal heat generation, for a specific range of values of

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PAPER

Hydrothermal synthesis and characterization of Zinc Oxide nanoparticles of various shapes under different reaction conditions

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Keywords: ZnO, nanoflower, nanorods, optical property

Abstract

Zinc Oxide (ZnO) nanoparticles were synthesized by hydrothermal method under different conditions and studied various properties. FTIR studies proved the presence of ZnO bonding and purity of the samples. Grain size was found to be decreased with the increase of reaction temperature and increased with reaction time. TEM images show formation of nanorods under same reaction temperature, also nanoflowers and nanospheres for different temperatures. Intensity of luminescence peaks is found to be changed with variation in interplanar spacing. UV–vis spectra helped to identify the increased photon absorption in particles of bigger size. Change in bandgap value is also observed due to the difference in size of nanoparticles.

1. Introduction

Nanoparticles of transition metal oxide semiconductors exhibit unique electrical, optical and mechanical properties. These nanostructures have wide applications in different fields based on their size and shape [1–3]. Nanoparticles of various morphology like- nanorods, nanosheets, nanobelts etc can be utilized for solar cells, light emitting diodes, gas sensors, and biological probes. Size, shape, lattice constant and crystallinity of nanoparticles have very important role in choosing these materials for different applications [4]. Research work in the field of renewable energy sources has already been started since energy crisis is one of the most important issues which is expected to happen in near future [5, 6]. Nanoparticles of ZnO, NiO, TiO_2 etc exhibit excellent optical and electronic properties which are the main requirements for the functioning of optoelectronic devices [7–9] Structural and optical characterization help us in suggesting materials for fabrication units.

Zinc Oxide is a transition metal oxide semiconductor with wide bandgap and high exciton binding energy. Hence ZnO is one of the most preferable materials in optoelectronic research field [10–18]. It is a low-cost material and easily available in nature [19]. ZnO nanoparticles are transparent to visible part of light and absorbing UV radiations. It is less toxic, high resistant and durable material [20, 21]. Morphology of ZnO nanoparticles can be modified easily [22]. Electron mobility is high for ZnO nanostructures [23].

Many techniques like chemical vapour deposition, spray pyrolysis, sol-gel method, hydrothermal method etc are already available for the synthesis of nanomaterials. Preparation techniques play a very important role in determining the size and shape of nanoparticles [18, 24]. Hydrothermal method has been attracted many researchers because of its distinct advantages like simple equipment, low cost and mild preparation conditions [25]. It is an environment friendly technique. Size and shape of nanomaterials can be modified by hydrothermal method. Morphology of nanoparticles mainly depends on reaction time, temperature and concentration of reacting solutions. This in turn affects the physical and chemical properties of nanoparticles. Particles are choosing for various applications according to their morphology. In this work we mainly emphasize the effect of reaction parameters on structural and optical properties of nanoparticles. Here hydrothermal reaction time is varied from 1 h to 5 h and temperature from 100 °C to 150 °C. Ph of solution mixture is kept as 12 to understand

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Research Article Volume 10 Issue No.5

Ceramic Protective Based Coatings for Low Carbon Steel Substrate – A Review

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Abstract:
Ever since the Second World War many Researcher have significantly contributed to the research in ceramics. The aesthetics of components, durability and wear resistance properties of components are increased by ceramic coatings. Surface coatings of ceramics to metals and to certain non-metals are the hot cake of research in ceramics now. Ceramic coatings are robust in structure and possess a higher level of lubricity the property of oxidation limit their use to temperatures under 1200ºC making it much favorable for hot forging dies. Ceramic coatings on metals have proved to enhance the metal functional properties; they make the material free from corrosion, enable it to behave as a non-conductor under certain circumstances, give a better level of abrasion resistance and expose the capability of maintaining their integrity even at elevated temperatures of about 4500 Fahrenheit. This property of ceramics has increased its popularity in the field of automotive industries and forging industries. Ceramic coating increases the working lifespan of the dies enabling them to produce many components before they are worn out. In the current investigation various research works conducted by different researchers across the world in the field of ceramic coatings on metal surface is being investigated. The gap in the research findings is used for further experimental investigations.

Keywords: Ceramic Coatings, Low Carbon Steel, Thermal Barrier Coatings.

I. INTRODUCTION

Ceramic coating on metals has emerged as one of the most adoptable methods of preparing metals to get prevented from rusting become wear resistant and to make it harder. However, the word surface coating on metals sounds very simple but in actual practice the process is not that simpler. The process of applying ceramic coating onto a substrate is a multi-stage process.It involves processes like surface preparation, abrasive blasting, cleaning, painting, curing and final equipment cleaning. Metal corrosion is a basic destructive process that brings down the life of components that are exposed to corrosive atmosphere resulting in greater economic losses. Thus, it does not lead one to any surprises, that the research on corrosion and protection of materials from corrosion is being concentrated [1]. The starting point of corrosion of any material is the material surface. Ceramic coatings help us to produce a material surface that is free from corrosion. The success of coating largely depends on mechanical, chemical, and physical bonds that are responsible for the coating adherence and ultimate strength of ceramic layer.

II. CERAMIC SURFACE COATING: ITS EFFECTS - LOW CARBON STEEL'S RESISTANCE TOWARDS CORROSION

Greater is the carbon content in steel, greater will be its corrosion rate this is an imperative factor that determines the corrosion resistance of steel [7]. Providing a protective coating on the surface is one of the most suitable ways to improve the anti-oxidation ability of carbon steels. A large number of experimental investigations have been made on the process of coating different materials on the base metal and the results were different from each other several such investigations include zinc composite coating, where in zinc metal along with ceramic, metal oxides and polymers is coated. Composite coatings provide different properties such as resistance to corrosion and sometimes superior electrochemical properties. Ghaziof Soroor [8] investigated to study the coating properties; he made a comparative analysis using cyclic voltammetry, Tafel test, XRD and SEM. He arrived at the conclusion that corrosion resistance property of Zn-Ni coatings saw an impressive improvement due to the addition of alumina nano particles as compared to Zn-Ni-Al_2O_3. While coatings of Zn-Ni-Al_2O_3, displayed a uniform and compact deposits as compared against Zn-Ni. Popoola A. P. I [9] found that with Zn-ZnO- Yttria coatings on mild steel, an increase in the corrosion resistance, hardness and the wear resistance saw a significant improvement. He claims that Yttria can be added to increase the wear resistance surface hardness and corrosion resistance of mild steel. Also, by adding Yttria, finer microstructure can be obtained, and this is the root cause for increasing the hardness value, corrosion resistance value and wear resistance value of Mild steel. The ideal emerging materials that find suitability for wider engineering applications are the advanced ceramics. These materials because of their superior properties are being widely used in some biomedical applications, cutting tools, IC engines, gas turbine blades and spacecraft. Advanced ceramics differ from that of ceramics in their composition, processing techniques and its microstructure. To make them fit to be used in other engineering applications; extensive research must be carried out in terms of mechanical, optical biomedical and electrical properties [10].

III. CERAMICS IN NUCLEAR APPLICATIONS

Advanced Ceramics have found its application related to nuclear fission and fusion reactors. These are used in fission reaction in nuclear fuel cycles and in confinements of nuclear wastes. In case of fusion reaction these are used to sustain the fusion nuclear fuel cycle. In the nuclear reactors the material

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Machinability Study of Aluminium Metal Matrix Composite (Al6061 - SiC)

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ABSTRACT

MMC's are the materials that are playing a vital role in today's automobile and aeronautical applications. The present materials are almost getting replaced by these MMC's, specially by aluminium MMC's. These materials provide the advantage of light weight to higher strength which is of most important for the aerospace components. The most common aluminium MMCs are Aluminium 6061 material reinforced with SiC. Machining of these materials is a challenging task due to its improved mechanical properties like hardness and strength. So an appropriate machining technique should be suitable selected depending upon the application of the material. In machining, turning operation is selected to study the influence of the cutting parameters in machining the processed MMC's. The results of the present study indicate that the cutting parameters like speed and feed rate affects the performance of the tool and the depth of the parameter is the one which has lesser impact.

Keywords-- Metal Matrix Composite (MMC), Machining, Cutting Speed, Depth of Cut, Feed Rate, Cutting Forces Fx, Fy and Fz

NOMENCLATURE

S - Cutting speed in m/min, F - Feed rate in mm/rev, D - Depth of cut in mm, Fx - Axial/feed force, Fy - Tangential force, Fz -Radial/ Thrust force

INTRODUCTION

Machinability refers to the ease with which a given material can be machined under a given set of cutting conditions. Materials with good machinability require little power to cut, can be cut quickly, easily obtain a good finish, Machinability is not merely the property of the work piece material. It is the overall behavior of the work piece material when it is machined under certain cutting condition. Even then, there is no clear-cut unambiguous meaning to this term. The reason behind this is that so many practitioners carry out such a variety of operations with different criteria of machinability. The work material may have good machinability by one criterion, but poor machinability by another or when a different type of operation is being carried out or when conditions of cutting or tool material are changed. It is of considerable economic importance, the production engineer to know in advance the machinability of a work material so that it's processing can be efficiently planned. The behavior of work piece material during machining is studied with respect to the machinability factors. The factors influencing the cutting force, are very important: Cutting method (constant or varying cross-sectional area of cut), Cutting conditions (cutting speed, feed, and depth of cut), The material of workpiece (chemical composition, heat treatment), The cutting tool (tool material, cutting edge geometry, chip breaker, coating, tool wear), Cutting fluid. This paper gives an explanation on the influence of the cutting condition on cutting force in turning operation performed on an Aluminium metal matrix composite.

The major machining parameters like speed, feed, and depth of cut are of considerable importance since they control the metal removal rate. Speed is simply the product of the rotating speed times the circumference of the work piece before the cut is started. It is expressed in meter per minute (m/min), Feed always refers to the cutting tool, and it is the rate at which the tool advances along its cutting path and is expressed in mm (of tool advance) per revolution (of the spindle), or mm/rev and Depth of cut is the thickness of the layer being removed (in a single pass) from the work piece or the distance from the uncut surface of the work to the cut surface, expressed in mm.

Researchers have studied force variations and their effects in metal-deforming technological processes. They suggest that interaction of the energy waves propagating in the medium might affect the cutting force. They experimented and studied on the interaction between the deformation and the heat waves. The conclusions drawn from this paper reveals that the study of cutting force and the interaction between the deformation and heat waves can be very helpful in adopting the process which involves the least energy consumption. Having realized the importance of the choice of

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Measurement of Cutting Forces During Machining of A356-Sic MMCs

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ABSTRACT

Composite materials are very difficult to machine specially when reinforced with harder reinforcement particles. In this study, homogenized 20% SiC-p aluminum MMCs material is selected for the experimental investigation of tool wear with two types of tool, High speed steel and Carbide tool operated at different cutting speeds (53, 81,120 m/min), feed rates (0.15, 0.36, 0.45 mm/rev) and at a constant depth of cut (0.5mm).

Keywords-- MMCs, SiC, Machinability

INTRODUCTION

Machinability refers to the ease with which a given material can be machined under a given set of cutting conditions. Machinability is not merely the property of the work piece material. It is the overall behavior of the work piece material when it is machined under certain condition. Machinability plays vital role in the selection of a material for its commercial exploitation. Machining is usually employed to produce shapes with high dimensional accuracy, good surface finish and often with complex geometry. Machining is a secondary processing operation since it is usually conducted on a work piece that was produced by primary process such as casting, forging, rolling, etc. In general, more than 80% of the manufacturing parts must be machined before they are completed. Thus, the machinability of a material profoundly controls its economy in various applications. For the present study machinability study is being carried out by subjecting the cast composite material to turning operation with varying speed and feed conditions for two different tool materials of HSS and Carbide. The influence of various machining parameters on the cutting forces is being evaluated.

Tool wear was mainly affected by cutting speed and feed rate under dry turning conditions. Wear rate increases with increase in cutting speed and feed rate. Tool wear was lower when carbide cutting tool was used in comparison to HSS tool. Surface roughness is influenced with cutting speed and feed rate, higher cutting speeds and lower feed rates produces better surface quality.

LITERATURE REVIEW

The percentage of reinforcement enhances the hardness of the processed composite materials which leads to higher amount of tool wear which intern enhances the surface roughness. However, these properties are mainly influenced by the cutting parameters [1].

Composite material reinforced with Silicon carbide particles by volume percentage of 5% is being subjected to machining operation to measure the cutting parameters with varying speed and feed conditions with constant depth of cut. The influence of these parameters has been studied and found that the wear rate of the tool was lesser for the coated tools. Surface roughness was found to be influenced by cutting speed and feed rate. Higher cutting speeds and lower feed rates produced better surface finish [2].

Experiments conducted at high speed with PCD tools (cutting speeds 300 to 700 m/min) indicated higher tool wear with increasing cutting speed and feed. Within the cutting conditions of the experiments, the surface finish was observed to be independent of cutting speed and a slightly worn tool was observed to give better surface finish [3].

Investigations have been carried out to study the effect of cutting conditions in machining Al-SiC MMCs with PCD and coated tungsten carbide tools on the various aspects of machinability like tool wear, cutting forces and surface finish. Results of the investigations indicate that PCD tools have over 30 times higher tool life than carbides under similar cutting conditions. Tool flank wear has been found to increase with increasing cutting speed and feed [4].

Experimental investigation carried out on the machinability of MMCs using medium grade polycrystalline diamond (PCD 1500) inserts have shown that MMC's are very difficult to machine and PCD tools are considered by far, the best choice for the machining of these materials. Trials are made to measure roughness of the machined surface with power consumption during the tool wear attained a measurement of 0.4mm. These results reaffirm the

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Framework for Cross Layer Energy Optimization in Wireless Sensor Networks

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Abstract

Cross-layer routing technique interacts among the various layers of the OSI model and exchanges information among them. It enhances the usage of network resources and achieves significant performance improvements in Quality of Service (QoS) parameters. The Low Energy Adaptive Clustering Hierarchy Protocol (LEACH) routing algorithm consumes higher energy due to communication overhead and thus, a hierarchical model-based routing protocol named Cross-Layer Energy Efficient Scalable-Low Energy Adaptive Clustering Hierarchy Protocol (CLEES-LEACH) is proposed. This increases scalability using the Carrier Sense Multiple Access/Collision Avoidance (CSMA/CA) protocol between the intermediary node and cluster head, with the overhead of latency. A Linear Programming model is used, which further makes use of scheduling to overcome latency. Energy efficiency and latency are addressed with the proposed cross-layer routing algorithm CLEES-LEACH. The cross-layer design establishes Physical, Media Access Control (MAC), and Network layer interactions in the proposed algorithm. The present LEACH algorithm also increases the network overhead as there is no mechanism for communication among the network layer and consumes high energy. In the proposed algorithm CLEES-LEACH, latency is reduced to 25% and throughput is maximized to 20% compared to existing Energy-Efficient Distributed Schedule Based protocol (EEDS) and Integer Linear Programming (ILP) protocols. The energy consumption is also reduced to 20 % and the scalability is increased to 10 % compared to the existing LEACH and CL-LEACH protocols. These results are shown by using NS3 simulation.

Keywords: Cross Layer Design, Energy Efficiency, Latency, Quality of Service (QoS), Scalability, Throughput, Wireless Sensor Networks.

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1. Introduction

Wireless sensor network (WSN) has become a more privileged wireless system and various sensor-based applications are carried out by this system. Sensors can be fixed anywhere in the global environment; intended to promote various activities like monitoring of parking lots, the tracking of soil circumstances in the garden and industrial automation. Moreover, dwelling place sensors are used for safety purposes, to regulate lighting, provide ventilation etc. All these are collectively said as a smart home. The WSN consists of a few hundreds to a thousand sensor nodes and a wireless means of communication is made among them [1]. In WSN, data is passed by each sensor node through the network to a prime node often said as a sink node. Here, the data is distributed among themselves i.e. they arrange themselves either in clusters or tree structures. Depending upon the battery power of each sensor node, the consumption of energy varies. Thus, while communicating, the transmission power of each sensor node must be reduced to enhance the communication duration of a node. Furthermore, apart from energy consumption, various other challenges are, throughput, scalability, and routing.

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Cloud-Based Smart Water Quality Monitoring System using IoT Sensors and Machine Learning

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ABSTRACT

Low water quality is a major concern in urban as well as rural areas. Consumption of contaminated water leads to several health hazards. Early water quality detection can prevent most of such health-related issues. Parameters such as conductivity, pH, nitrate, biochemical oxygen demand, fecal coliform are significant parameters in deciding the quality of water. These parameters which are collected from groundwater samples at different places are highly correlated to each other. Therefore, machine learning algorithms are used for classification. The data collected from sensors are further analyzed using a cloud-based environment Ubidots to support distributed computing. The cloud environment is connected to display units and mobile devices. To predict the quality of water it is necessary to check the values associated with the quality attributes and for that reason, a decision tree classification model is used. The dataset is broken into subsets that have decision nodes and leaf nodes to decide classifications. The IoT based sensors are deployed in the water tank to measure the quality parameters which are further sent to the cloud. The proposed framework predicts the water quality and assesses the performance of the decision tree classifier. Decision Tree is used to infer decision rules based on various parameters read through sensors.

Key words: Artificial Neural Networks, Cloud, Decision Tree, IoT, Linear Regression, Machine Learning

1. INTRODUCTION

Water is essential for everyone and without it, we cannot imagine life on the earth. The fresh groundwater is used for drinking, production of food and other purposes. As per the World Health Organization (WHO) [10], safe water can keep 1.4 million kids dying from diarrhea, right around 500,000 dying from Malaria, 860,000 youngsters dying from malnutrition. Improving water management, sanitation and hygiene can significantly reduce the health-related issues in human beings and other living bodies. Water contamination and groundwater depletion have been the major problem for urban civilization. This problem is man-made and it is the consequence of overutilization of natural resources and rapid urbanization and industrialization. The use of fertilizers, industry discharges, sewage leakage, non-uniform rainfall

and human practices led to water pollution at alarming levels. According to the Central Groundwater Board (CGWB) the depth of soils and subsurface geological formation determines the quality of groundwater. The CGWB checks the chemical content of groundwater every year through the network of wells and underground water in various parts of the country. The water salinity problem in different states of the country is found where water level contains high concentrations of fluoride, iron, arsenic and other heavy metal. This led to the severe health issues in people consuming it such as pain in muscle or joints, mental disorder, vision problems, chronic fatigue and gastrointestinal. Sometimes the water is also mixed with foreign objects such as dead snake, bird or animal which also contaminates water in community tanks in villages.

According to the Water Resource Information System of India-2017, around 5 million people die because of drinking contaminated water worldwide. This problem is more in underdeveloped and developing nations. The quality monitoring system depends on the collection of data collected from different water sources. The monitoring system offers the data analyzing interface for the data collected in real-time and provides solutions or suggestions to resolve the issues.

Our proposed work is to be carried out in two phases wherein the first phase we are going to conduct a survey on the recent water monitoring system and in the second phase for the development of the cloud-based water quality monitoring framework which checks the water nature of the groundwater which is put in overhead or community tanks. The parameters used in this research work to measure water quality- turbidity, TDS, conductivity, B.O.D, nitrate, fecal coliform and pH value. To check the water level and pressure in tanks, a water level sensor is used. The flow sensor is used to detect the leakage in the pipe. Early water quality detection can save people from the adverse effects of drinking contaminated water. People will get an alert message if the water is not safe to drink.

In IoT, the animals, humans or objects can be connected to other physical devices using sensors and actuators explained

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Energy Efficient Routing Protocol for Wireless Sensor Networks Using the A-Star Algorithm

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ABSTRACT

Sensors are considered as very important electronic equipment modules. Most wireless sensor network presentations should contain critical and sensitive information in the form of a multi-hop and energy-efficient way. Because sensor nodes are limited in. For extending network life to WSNs, energy is a very sensitive problem. Researchers should look at energy consumption in WSN routing protocols to improve network life. This paper proposed the use of the A-star algorithm to build the latest energy-efficient routing protocol WSN process. The suggested routing system enhances the life of the network via data packets transfer through the optimal short route. The correct path for the residual energy of the next-hop sensor node is the great efficiency of the relation between buffer capacity and low hop count minimum. In contrast to the A-star and fuzzy logic protocol, the simulation findings show that the proposed system boost network existence.

Keywords

A-star, Energy efficiency, network lifetime, Wireless sensor networks.

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Introduction

Recent developments have underlined the importance of WSN as the main devices of reporting micro-electro-mechanical systems (MEMS) and in the field of Wireless Communications. True, The WSN's sensor nodes are intended to restrict resources in power, range of communication, processing, and storage capacity. WSN provides features and utilizations like objective tracking, environmental control, and battlefield. WSNs' primary goal is to spread the information in a multi-hop format from source to sink.

Generally, energy sources are forwarded to constrained energy, and low-performance batteries are expected to be a crucial obstacle for WSN applications. As shown by sensor nodes, the fire sensor information is sent effectively in real-time to the sink node. Therefore, it is arguable that power consumption should be handled in this way that WSN 's network life is manageable. However, most algorithms for routing in WSNs involve secure and real-time data transfer in a multifaceted plan to the sink node [2, 3]. Data routing based on QoS and energy efficiency is therefore regarded as an important task for WSN and the energy-efficiency and QoS parameters can be compared to [1, 3-5]. On the opposite, non-uniform consumption of energy and load imbalance are important issues in a variety of WSN protocols for routing that trigger network partitioning. As a result, network partitions affect the efficient distribution of packages and thus prevent the efficiency and optimal functioning of WSNs. Because of the importance of WSN applications, reduced packet transmission may harm the power consumption and consequently the life of the WSNS network.

Data packets are regarded as major energy consumption sources during WSN transmission and reception. Therefore, we need to effectively monitor and manage energy consumption to establish energy-aware routing protocols for WSN. An energy hole issue is the lack of energy consumption controls in a multi-to-one transport system. The periodic selection of the right way and energy hole problem jointly affects the durability of WSNs in most routing algorithms. The network is fragmented due to these two issues and the WSN cannot carry out its intended critical role. The main issue with these routing protocols is the reduction in overall energy usage at the cost of reliable network drainage.

To the above-mentioned challenges in WSN, enhancing network existence is regarded as a key challenge and should be strictly considered in the Routing Protocol. The following criteria should be considered according to the specified aim of growing network life: i) balance of energy consumption, ii) Balance of load, iii) Choice of the shortest path, and iv) Reduction of the reception rate packet retransmission. A new energy-efficient protocol (EERP) is introduced in the present paper. with an optimum aggregate cost and A* algorithm, to increase the network life of WSN.

The proposed algorithm includes node parameters like enhance residual energy, linking efficiency, free buffer, and minimum hop count to prevent network segmentation and to achieve this advantage. The WSN lifetime thanks to the use of energy consumption and moderate consideration of parameters. In terms of high waste energy, choosing nodes at the maximum level of energy will increase traffic load and then prolong the WSN 's life. Besides, these nodes should be picked with the open buffer to prevent loading and thus unnecessary energy consumption, in line with the free buffer parameter. We have done a lot of simulations on the proposed EERP algorithm at MATLAB. The results of the simulation showed a better performance of the EERP algorithm than A&F over the life of the network. The remaining paper is structured accordingly: section 2 covers work related to network life enhancement. Section 3 describes the new proposal and addresses it. Section 4

Airport Analyzer: A Machine Learning Approach to Predict Flight Performance

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Abstract

Flight delay is a critical operational problem around the world. Flight delay is concerned with numerous features such as weather, excessive traffic, runway construction and other factors. The proposed machine learning model is developed to provide predictton of flight departures and arrival delays based on weather information of about 10 days by collecting real time datasets. The model Airport Analyzer achieves high predictton accuracy of 78.61% by using Support Vector Machine classifier. Experimental results showed that the proposed model performed well compared to other classifiers.

Keywords: *Classifier, Logistic regression, Machine Learning, Preprocessing, Support Vector Machine*

1. Introduction

Delay is a key factor indicating the quality of service in any transportation system. When an airline flight takes off and /or landing time differs than its scheduled time is called as flight delay. Flight Delay plays important role in the decision making process in the commercial aviation industry for measuring performance. The person who handles flight delays at the airport can understand the inconvenience and provocation. There are many causes of flight delay. Flight delays impact airlines, airports and passengers [1]. The effect of flight delay on commercial airlines is multiple, ranging from clearly defined consequences such as reparation payable to passengers, late penalty and increased operational costs. The vague impacts for airline are in view of airline brand and customer reliability. As a consequence of this delay, airlines suffer penalties, higher rates of customer complaints and additional operational costs such as crew and aircraft retention in airports. Better understanding of the causes of flight delays may make the aviation industry wise respond to issues such as inclement weather and provide more flights with less delay.

The main goal of the proposed system is to develop a machine learning model that can provide prediction of flight departures and arrival delays based on weather information of about 10 days. This will help passengers from all over the world in real time while booking the airlines ticket in terms of money and time. The datasets are utilized for training and validating the proposed two-phase predictive model developed using supervised machine learning algorithms which predicts flight timing performance. In the first phase of the model, twofold categorization is performed to forecast the flight delays occurrence and Logistic Regression is performed to predict the delayed time in minutes in next phase.

The organization of the paper on Airport Analyzer model is as follows: Section 2 studies existing work that made use of either predictable machine learning or statistical algorithms for prediction of airlines delays. Section 3 presents problem statement. Section 4 explains the implementation and classification algorithms used for proposed framework.

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Data Dissemination Techniques using DBSCAN and DD-Rtree for Spatial Data Mining

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***Abstract*: *In today's scenario where data volumes are growing on enormous speed over cloud or internet, we want to limit this growing data size. This can be achieved by data processing methods where data processing can be done in parallel. To make the data processing done in parallel, various clustering sampling methodologies are in use such as Slink, DBSCAN, and Optics and so on. The power accomplished by various methodologies which already exist will be focusing to the preservation of three-dimensional surroundings such as grid tree, grid files, quad tree and tree like k-d-tree, etc. This all compartmentalization constructions are generally done in static way which is a fix way. Since this data volume size is very big, this results in a high cost of information sharing and clustering. Hence through this research work we want to analyze various clustering algorithms both on static level and at dynamic level. For doing this we are majorly comparing the dynamic distribution using DBSCAN and DD-Rtree algorithm by proposing a DD-Rtree will help us to preserver the spatial vicinity. In addition, DD-Rtree is not static but more than that it is dynamic, i.e. it will create build the data as we progress with clustering. DD-Rtree methodologies are based on R-Tree concepts which analyses the data at dynamic random way. We tend to compare DD-RTree's information distribution norm with one of the clustering system recently published, DBSCAN. On the side of the potential of DBSCAN formula, we tend to distinguish the potential of queries managed by these compartmentalization structures. Numerous applications requires such kind of implementation at dynamic level of spatial database system such as satellite images, X-Ray crystallography, metrological department or other such atomic equipment's spatial datasets. Our research work will help to implements spatial data dynamically using DDR-tree mechanism.*

Keywords: Data Dissemination, KNN, Spatial Data Mining, Density Clustering

I. INTRODUCTION

Over the past few years, data is increasing at a rapid speed over the globe with increasing use and demand of the Internet leading to increase the need for Big Data analytics. To work better and efficient with Big Data across various data centers, mining the data becomes very essential. To achieve this, many research works had done and proposed on clustering the dataset on the big data platform. When we distribute the data using a data mining algorithm, the preservation of spatial locality is taken care of. Whenever we are trying to allocate and access the data spatially over different clusters we also need to take care of reducing the inter-node communication time. Some of the spatially manipulating algorithms with native knowledge are DBSCAN [1], OPTICS [2] [3], etc. Recently a lot of work was carried out to place these methodologies on top of native and entirely different clusters are being made [3] [4] [5] [6]. In terms of execution, these methodologies implements or follow a certain structure or working. The data provision stage performs a crucial role in improving the execution of an inversion steps. Many algorithms for data processing may need to perform neighborhood and neighborhood (K-NN) queries. Carrying out such questions for the purpose of knowledge p becomes cost-effective once regional access is made to the information needed by these queries. If this request is not met, we would like to obtain knowledge from alternative cipher nodes and thus acquire inter-node communication value.

Many diverse variants of decentralized information frameworks are projected in the research which includes — Parallel Rtree[7][8], Distributed B-link tree, Distributed Random tree, Master-Client R-tree, Upgraded Parallel R-tree[9], SD-RTREE[10], etc. Several of such knowledge systems aim to increase the level of communication in order to induce optimal results of questions. SD-RTREE [10] is the last distributed system proposed that reduces the large overhead of communication in the construction of the dataset and querying the big data set over the clusters. It internally uses the R-trees concept of implementation of minimum bounding rectangles (MBR) along with splits of R-tree node structures. It gives access dynamically and performs well in terms of scalability even if we add the cluster nodes. Nevertheless, since its redeployment policy relies on K-NN search, SD-RTREE [10] ensures adequate preservation of the 3-Dneighborhood. It also does not ensure a good balance of load.

Therefore, an associated degree of efficient diverse distributed storage structure is needed that can satisfactorily maintain spatial section and ensure load equalization, thus helping in improving request efficiency in data processing procedures. DD-RTREE is a new active scattered arrangement constructed on R-tree, is the main interest of this article. It retains the section of space and ensures proper equalization of the load. Additionally, the design of DD-RTREE making it active meaning that the information is inserted gradually and that cipher nodes can be inserted progressively if required.

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Sustainable Development of Green Healthcare Communities for Prediction of Autism Spectrum Disorder using Machine Learning Approach

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Abstract

Autism is generally termed as pervasive disorder. The part "Pervasive" infers that the ailment is severe. There have been many technical advances in detection of autism traits, Machine Learning is one among them. This paper presents an approach of Machine Learning algorithms and methods to distinguish autism traits. Although, diagnosis and analysis of this disease are carried out at several age, but its symptoms mostly seems in their infancy. The procedure of diagnosing the disease is laborious and prolonged. The use of machine learning algorithms seems to offer promise in timely diagnostics. It seems to be more efficient and drastically lowers the time to diagnose the disease. Machine learning approach is a vigorous diagnostic algorithm grounded in human coded behavior. In this study, an autism model calculation was improved through combining the algorithms of Classification yet Regression Trees- Random Forest (RF- CART) yet Iterative Dichotomiser 3- Random Forest (RF- ID3). The model was tested and analysed with Autism Spectrum Quotient (AQ10) dataset and 1100 actual dataset gathered from persons of with and without autistic traits. The real datasets are acquired from hospital database. The suggested prediction model shows improved results in respect of accuracy (98%), sensitivity (98%), precision (91%), specificity (98%), and false positive rate (2%).

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A Study on Spectral and Morphological Analysis on Unidirectional Neodymium Doped KDP Single Crystal

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Abstract : A nonlinear optical unidirectional <101> Single crystal of Neodymium doped Potassium dihydrogen orthophosphate (KDP) was grown by Sankaranarayanan-Ramasamy (SR) method. The <101> oriented seed crystals were mounted at the bottom of the glass ampoule and the crystal of 16mm diameter; 120mm length were grown by SR method. The laser damage threshold was measured using Q-switched Nd:YAG laser (1064 nm) and was found to be 5.456 $Gwcm^{-2}$ respectively.The presence of functional groups was examined by Fourier transform infrared (FTIR) analysis. The surface morphology and dislocations along <101> plane was observed using Scanning electron microscope (SEM) and Transmission electron microscope (TEM).

Keywords: : Single crystal growth; Laser damage threshold; FTIR; TEM Analysis.

1. Introduction

Due to various significant applications, the search for NLO materials has continuously attracted attention in researchers since 1961. For a selected NLO material, ultimate aim is to obtain high conversion efficiency. Longer crystal length, smaller the phase mismatching, higher the power density, fast optical response time and larger the nonlinear coefficients will result in the high conversion efficiency [1].

This family of crystals plays a key role in nonlinear optics, and they possess high chemical stability and wide optical transparency [2]. On the other hand, KDP crystal is a famous inorganic Classical Ferroelectric Crystal that has a variety of applications in Laser Technology, Integrated and Nonlinear Optics [3].

The KDP is a widely known compound, wherein applicable NLO properties have made it, an extensively used crystal in frequency converters and modulators. These crystals have high optical quality, operated at high frequencies, can be enormously resistant to Laser radiation harm.

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Nonwoven fabric supported, chitosan membrane anchored with curcumin/TiO_2 complex: Scaffolds for MRSA infected wound skin reconstruction

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ABSTRACT

Use of biomaterial scaffolds as drug carriers for infected wounds treatment is of wide scope. A series of curcumin/TiO_2 complex loaded chitosan scaffolds are fabricated for the same. Synthesized wound dressing material is screened for their morphology, water absorption capacity; *in vitro* drug release patterns, *in vitro* antibacterial studies against gram +ve and a gram −ve bacteria, cell viability for 3T3-L1 cell lines as well as *in vivo* MRSA infected wound healing capability. Formation of curcumin/TiO_2 complex was confirmed by X-ray diffraction studies, the anchoring pattern of them on the chitosan scaffold was analyzed by FESEM and EDS mapping. All membranes showed a better performance towards *in vitro* antibacterial and *in vivo* wound healing properties than the control ones in 14 days. The bacterial count on wound for a regular time period was measured and the scaffold with higher amount of curcumin in its complex is found to give the better performance, along with skin regeneration due to synergistic effect of curcumin and TiO_2.

1. Introduction

Staphylococcus aureus (*S. aureus*) is a gram positive pathogenic organism involved in various clinical manifestations in both human and animal population [1]. Nearly 30% of healthy human beings are colonized with *S. aureus* [2]. Simultaneously, *S. aureus* cause wide range of infections when the immunity of host system compromised or associated with the selected morbidity such as metabolic complications and respiratory disorders [3]. *Methicillin resistant S. aureus* (MRSA) infection is a health care acquired infection and causing major risk across the globe by increasing in the mortality rate, prolonged stay in hospital and septic shock followed by infections [4–6]. Patients with wounds are more susceptible to MRSA infection and it is associated with considerable tissue damage and necrosis [7,8]. The phases of wound repair are complex and include haemostasis, inflammation, proliferation and remodeling [9]. At any of these stages, wound healing might stop and could be open for secondary infections. Increased microbial burden, volume of exudates and pus cells which results in necrosis of tissues and worsen wounds [7,10]. For the clinical affirmation on anticipation of wound intensifying, special emphasis must be given on wound dressings. An ideal wound dressing material must have an ability to avoid foreign infection, to balance moisture and should possess good permeability for exchange of gases [11,12]. Hence, infection control and speedy wound healing are the main challenges for wound healing experts. Use of metal oxide nanomaterials combined with natural polymer is on trend now resulting in higher competence, greater than the individual ones [13,14]. Employing wound healing scaffolds with antibacterial properties for dressing is the best way to fight above said issues [15–17].

On the other hand, titanium dioxide nanoparticles (TiO_2 NP_S) are one of the bio inert, bio friendly, biocompatible metal-oxides having

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Research Article

Facile Synthesis and Characterization of rGO Decorated $NiFe_2O_4$ Nano-composite Obtained from Waste Ni-Cd/Ni-MH Batteries

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ABSTRACT

The present study revealed the $NiFe_2O_4$/rGO composite synthesized from Ni-Cd/Ni-MH spent by hydrothermal method. The obtained $NiFe_2O_4$ nano particles was dispersed effectively on reduced graphene oxide and the obtained composite was subjected to X-Ray powder diffraction (XRD) to know the particle crystallinity, size and structural aspects. The nano sized $NiFe_2O_4$ and $NiFe_2O_4$/rGO nano composite were exposed to study the surface particle morphology by using Field emission Scanning Electron Microscopy (FESEM). The elements present in the sample was analyzed by using Energy Dispersive X-Ray analysis (EDX), the functional groups identification was done by Fourier Transform Infrared Spectrometer (FTIR) and the thermal stability was studies by using Thermogravimetry analysis.

Keywords: Waste battery; $NiFe_2O_4$; $NiFe_2O_4$/rGO; Characterization; Thermal analysis

INTRODUCTION

Nickel ferrite ($NiFe_2O_4$) nanocrystalline is one of the most vital ferrites among alternative ferrites from the spent battery because of most favorable uses in Ferro fluids, gas sensors, storage devices, catalysts and microwave devices [1-7]. Recently, extensive consideration has been paid on $NiFe_2O_4$ with variable size, morphology and shape as well analogous applications were studied [8,9]. In the synthesis of $NiFe_2O_4$, both chemical and physical methods have been established with different surface morphology. Compared to physical methods, the chemical methods have benefits such as large scale production, low cost and reaction taking place at very low temperature. The nano structured $NiFe_2O_4$ has been prepared by different process like sonochemical, polymeric precursor, mechanical alloying, hydrothermal, and co-precipitation methods [10-14].

The literature shows that a few works on the surface morphology controlled preparation of the $NiFe_2O_4$ nano particles. Newly, fabricated $NiFe_2O_4$ nano sheets using chemical method by Gunjakar et al. [15]. Chu et al. synthesized nano cubes and nanorods of $NiFe_2O_4$ through hydrothermal process [16]. Zhang et al. via polyethylene glycol method prepared $NiFe_2O_4$ nano particles [17], the hollow sphere $NiFe_2O_4$ nano rods and their magnetic properties was studied by Chen L et al. [18]. Also several studies have concentrated on the synthesis of spinel nano ferrites because of their quantum confinement effects, both chemical and physical properties and their surface effects.

The nano $NiFe_2O_4$ have AB_2O_4 structure. In this structure, O specifies the oxygen anion site and A and B shows tetrahedral and octahedral cation sites [19]. The nickel ions (Ni^{+2}) are located in B sites and iron ions (Fe^{3+}) are equally dispersed between A and B sites. It is well known that combined metal oxide nano particles are seemly very attractive to making the electrode materials due to their controlling morphology and size, high surface energy, attractive structural, magnetic and electronic activities, which improve their catalytic performance [20-22].

In the synthesis of nano $NiFe_2O_4$, reduced graphene oxide (rGO) was selected as solid subsidiary material to keep the nano $NiFe_2O_4$ from aggregation. The rGO based nano composite materials will have increased electrochemical performance like reversibility, capacitive action and cycling stability. The rGO doped nano composite have been widely used as anodes for rechargeable batteries and some recent studies shows the production of rGO based metal-oxide anode materials have equitably good development [23,24]. For example, $MgFe_2O_4$/rGO composites was displayed excellent cycling stability and rate capability synthesized by Zhang et al. and SnO_2/rGO nano hybrid exhibited that electrochemical Na-storage

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Analysis of Intelligent Power Management Controller with Cost Optimization for Solar/Wind Hybrid Power System

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Abstract

Numerous green energy sources are integrated with the hybrid power system to feed the load demand and to increase the reliability of the system. Integration of power system is a challenging process due to intrinsic qualities of existing renewable sources to be specific eccentrics and inconstancy. This necessitates an energy management controller to effectively utilise the available power and to increase the reliability of the power system. In addition to the reliability, consumer needs cost effective electricity. Hence in this article, an intelligent power management controller with cost optimization is proposed for a standalone hybrid power system. The proposed hybrid power system comprises solar, wind, battery and diesel generator. Intelligent power management controller receives available renewable energy details, battery SOC, load demand and charge of green energy to optimally select the source and manage the load. The Intelligent power management controller is programmed with six outputs to individually control renewable energy source, battery charging and discharging, diesel generator and non-critical load. The Intelligent power management controller is proposed to minimise the usage of diesel generator and to utilise low cost renewable energy. MATLAB based simulation analysis is presented to study the proposed system.

Key words: PV, wind energy system, hybrid power system, intelligent power management controller, cost optimization, FLC MPPT, INC MPPT.

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Parametric Continuously Programmable Infinite Impulse Response Filter for Non-Linear Real-Time DSP Applications

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***Abstract*- Considering the exponentially rise in non-linear signal filtering purposes, in this paper a novel parametric continuously programmable infinite impulse response (CPIIR) filter has been developed. Realizing the key up-surging significance of non-linear audio signal filtering, our proposed CPIIR filter model has been realized over parametric equalization system, which can have one or multiple IIR filters in cascade-design to perform continuous filtering. Structurally, our proposed model represents a PE solution containing shelving and second-order peaking CPIIR filters whose design parameters are optimized dynamically by reducing cost-function iteratively. Unlike classical approaches where merely filter coefficients are changed manually to cope up with non-linear signal filtering, our proposed parametric IIR filter employs sum-of-square error (SSE) as the cost-function to update filter design parameters like gain parameter, frequency and bandwidth. Noticeably, the use of SSE as cost-function intends to reduce error (i.e., difference between the target signal and the system frequency response) to optimize global gain parameter that eventually help updating other design parameter adaptively over different frequency-bins or windows. This process retains system response near 0-dB line and thus maintains optimal filtering performance over swiftly varying signal response. Unlike major at hand meta-heuristic based search approaches for parameter tuning, our proposed model applies simple grid search concept that avoided significantly large computation and hardware requirements. MATLAB based simulation with Gaussian white noise embedded non-linear signals reveals that the proposed parametric CPIIR model can achieve optimal filtering performance and suitability towards hardware implementation.**

***Keywords*-- Programmable Digital filter, Infinite Impulse Response, Parametric Equalization, Sum-of- square error.**

To ensure optimal signal reconstruction-quality different filtering approached have been proposed. Functionally, digital filters serve two key purposes; signal separation and reconstruction or restoration, where the earlier is considered when the signal is contaminated with interference or noise element(s). Unlike analog filters (AFs), digital filters (DFs) have performed better towards quality of signal construction and lower-computational complexity [1]. Though AFs are relatively low-cost, swift and have broadened amplitude/frequency range; it remains inferior over the DFs due to relatively superior performance and low hardware demands [1-3]. On the other hand, the recent development in DSP technique has broadened the use of DF over AFs [1-5]. Unlike classical AFs, DFs with dynamic programming assisted tuning can adapt non-linear behavioral model, which makes it more suitable across major DSP applications [5].

Though, DFs have broadened horizon towards different applications, increasing design complexity and higher filter's order demands significantly large hardware components and thus limits its uses [5][6]. Moreover, their ability as anti-aliasing filter too is limited; despite numerous researches have been towards the two key filter types; Finite Impulse Response (FIR) and Infinite Impulse Response (IIR) DFs [4]. Undeniably, FIR filters are relatively easier to design with low filter's order; however, factors like high hardware complexity, memory demand, and energy consumption limit its suitability for VLSI applications [1-5]. IIR DFs perform better than the FIR filters; though at the cost of increased design-cost [3][5]. Thus, low hardware utilization and eventual low-cost solution makes IIR superior over the FIR digital filters [5][7]. Structurally, the use of feedback component in IIR DF-design makes its

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HOST CONTROL INTERFACE AND REGISTERS AIDED CONTINUOUSLY PROGRAMMABLE FIR FILTER DESIGN FOR NON-LINEAR DSP APPLICATIONS

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ABSTRACT

This paper aims to design a continuously programmable digital finite impulse response(CPDF FIR) filter for non-linear signal filtering resolutions. The proposed CPDF FIR filter encompasses input block, host-control interface (HCI), register blocks aided parallel filter module, and an output block. The inputincepts with non-linear sequentially repeating chirp signal, which is subsequently processed for frame based (floating to fixed) sample generation and delay insertion. Here one sample per frame is used to avoid sample overflow and quantization error with the introduction of one clock delay. Consequently, the delayed sampled signal was subsequently processed using register block which functions in unification with HCI. Here, HCI helps in coefficient updates as well as low-pass coefficient assignment to the Butterworth direct discrete FIR filter for reference signal generation. On the other hand, it helps continuous coefficient update to the register block. Prominently, the register block uses low pass coefficients to filter each chirp signal or delayed samples in the beginning, followed by high-pass filter coefficient using direct discrete FIR filter model. CPDF with linear and differential optimization approach are used for coefficient updates. The overall work exposes that the proposed CPDF FIR filter accomplishes optimal filtering performance with low area, minimum hardware consumption such as reduced multipliers(43) and adder/subtractors(42). Furthermore, it exhibits significantly low delay of 6.166 ns. Such robustness indicates suitability of the CPDF-FIR filter towards varied non-linear filtering applications including industrial IoT data filtering or speech signals.

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Improved Caching and Trust based Reliable Mobile Communication in Distributed Environment

D Bhuvana Suganthi, Manjunath R, Punitha A, Raghupathi.S

Abstract: This work is to overcome the data confidentiality issue and lack of security due to possibility of unstable connections, inflexibility in transmission rate in a distributed environment. This work is carried in three stages. Firstly, the secure path is identified based on energy, link quality, and delay towards the destination node. The quality of the link is considered due to the node mobility in the mobile network. Secondly, in the identified secured path, the next algorithm called Distributed Caching and Fault-tolerant Communication (DCFC) protocol is employed to monitor the failure occurring on routing tree and initiates failure recovery technique which is suitable for increasing the data transmission rate with very less failure Thirdly, Trusted Security Policy based Routing Algorithm (TSPRA) is implemented to overcome the packet drops and increased overhead due to lack of security which proves that data are well secured due to specific access control policies and increasing the high secured data size. Henceforth the level of security is increased with respect to reliability, recovery, confidentiality, and integrity. Reliability is proved based on the linking of all the possible positive factors of the distributed mobile communication in a single system. This performance leads to enhancement of productivity, personal safety and ability to protect their way to public service in terms of communication through wireless networks in a distributed environment

Keywords: Mobile Distributed Networks, Trusted Security, Distributed Caching, Routing Algorithm, Overhead Ratio, Mobile Host, Reliable Paths, Bloom Filter, Mobile Agent.

Security mechanisms are used for safeguarding the system from intruders and to satisfy the requirements of the security applications. Integrity and availability schemes are concentrated in the distributed storage systems [2]. Security level is assigned to each transaction for a multilevel protection in a distributed database system. Hence the level of security is increased with respect to reliability, recovery, confidentiality and integrity.A source node uses either direct link or a multiple hop routing method for enhancing communication between two nodes. A high transmission range is possible in the multi hop method. Performance may behind in packet delivery to the nodes at destination due to node mobility. [2]. A research on routing protocol being done during the recent years in the area of mobile networks says that, on demand routing protocols is better compared to other routing algorithms in the presence of mobility of nodes in terms of routing overhead and packet delivery ratio. Battery powered mobile nodes with less capacity, affect various parameters like throughput, energy conservation and delay time in the network. Hence, an efficient energy based protocol is needed to enhance the duration of the node and network. The potential for significant increases in the accessibility of information technology is offered by distributed computing.

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Energy Efficient Target Tracking Method for Multi-Sensory scheduling in Wireless Sensor Networks

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Abstract: Data collection utilizing wireless sensors networks (WSNs) has been utilized for surveillance, monitoring environment, animal etc. Target tracking of maneuvering objects is an essential need of modern life. Nonetheless, because of diverse nature of sensor and complex environment, sensors measurement errors need to be minimized considering diverse motion states in process of tracking (sensing) operation. Enhancing network lifetime (i.e., reducing energy dissipation of sensor nodes) and improving tracking quality are major concern of target tracking using WSN. Form improving network energy efficiency, multi-sensory target tracking method has been modelled using Kalman Filter (KF) by existing target tracking method. The KF based model are affected due to presence of noise or missing data. For overcoming research issues this paper present an H-infinity filter (HF) to evaluate fusion for maneuvering target tracking in WSN. Further, to minimize the estimation errors and reduces/controlling the effects of outliers fuzzy H-infinity (FHF) filter for target tracking WSN is presented. Experiment outcome shows proposed HF and FHF fusion model attain better performance than existing KF based method for clustered based WSN in terms of positional and velocity root mean square error and energy dissipation.

Keywords: Energy efficiency, Fuzzy computing, H-infinity Filter, Kalman Filter, Network lifetime, Target tracking, Wireless sensor network.

WSNs.Tracking of moving object is an essential innovation in present day communication frameworks and incredibly adds to the non-military personnel applications [2. The goal of the target tracking is to compute the states dependent on the noise observed by SD's. The way to its fruitful organization relies upon the successful and exact/precise collection of helpful data.Challenge and issues in tracking of directional objects/targets is because of dynamic and complicated tracking procedure such as, first, precisely identifying the moving objects state condition, (The tracking object is normally non-cooperative in nature. Along with, it might be hard to precisely depict the direction and speed of the object.). Second, managing with SD systemic error (SE) [3]. Along with, external impedance/interference, the estimation outcome collected from each SD, for example, pitch angle, azimuth point/angle, and distance include a specific measure of arbitrary error, which makes it even more hard to precisely assess the attributes of the moving object. These difficulties makes tracking of moving object an intriguing and problematic research area.As of late a few well-known approximation strategies have been presented for addressing tracking of moving object such as KF [4], nonlinear (NL) least square (NLLS) [5], and extended KF

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DEVELOPMENT AND TESTING OF BIO-COMPOSITE STEERING WHEEL FOR AUTOMOTIVE APPLICATION

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ABSTRACT

In the verge of sustainability, an enormous amount of research is carried out in green technologies, to develop eco friendly products. The ultimate intension behind this work is to generate bio-composite material which is bio-degradable. The FRP composites have authoritative function for automobile, structural and various other applications. Natural fibres which can be used as reinforcements are strong, light weight and superior specific properties when compared with synthetic fibres. This investigation intends to replace the existing conventional automobile steering wheel with light weight, cost effective bio-composite steering wheel. The combination of natural fibres like jute, coconut, sisal, banana are reinforced in a shell like structure with epoxy resin as matrix. The natural fibers with relative proportions of 20%,30%,40% and 50% weight fraction, were treated with NAOH. The same were used for experimentation to identify the best results. The test specimens as per ASTM standards were designed, fabricated and tested; fabrication was done using manual hand layup technique. Tests were conducted based on parameters considering flexural strength and impact strength and better results were found. The bio-composite steering wheel exhibited better tensile and flexural strength. bio composite steering wheel exhibited good mechanical properties comparatively supporting our vision to substitute existing various automotive components, thus leading to eco friendliness.

KEYWORDS: Bio composite, steering wheel, Epoxy resin, Hand lay-up method, Automotive, Mechanical properties.

Original Article

1. INTRODUCTION

The Evolution of most advanced composite material, successfully proven in wide range of engineering applications for products which have markets specifications and its sophistications. The crucial parameters and direction at which composite materials have been headed towards weight reduction and superior mechanical properties, despite maintaining the cost effectiveness for industrial requirements [1-2]. The emergence of the innovative manufacturing techniques has been currently adopted in industries to attain advance manufacturing technology. The essentialities of delivering quality assurance is in been trade off by adopting integrated efforts in process, tooling, materials, design in such a scenario bio composites have created competence podium with MMC[3].

Subbiah Jeeva.Ga, et al., [4] concluded that coir fiber have higher interfacial adhesion when subjected to dry conditions. Ramesha M et al.,[5] Characteristics of natural fibers composites with the combination of polyester matrix with coir fibers subjected to different ageing solutions have shown better interfacial adhesion. Few of the research investigation have also proven the fact that hybrid composites delivered better results when compared to single type of fiber and made these successful attempts of also resulted in better properties when natural fibers are blended with glass fibers. Girisha C et al., the period of composites ageing have great influence on hybrid composites prepared the with glass fiber bamboo fiber and polymer matrix.the ageing phenomenon have crucial effect on tensile characteristics [6] and [7].

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EXPERIMENTAL STUDIES ON MECHANICAL PROPERTIES OF HYBRID POLYMER MATRIX COMPOSITES (JUTE / BASALT / GLASS FIBERS) WITH AL2O3 AS NANO FILLERS

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ABSTRACT

Promising as Sensible alternatives to the metal alloys in various applications like marine, aerospace, automobiles applications, materials of sports goods, etc. Composites of fibers are offering various advantages like high tensile strength, low specific gravity and young's modulus, better fatigue strength, compressive strength, etc compared with metallic materials. In this study, we have focused on tensile, flexural and inter laminar share stress (ILSS) properties of basalt-jute and glass-jute with nano-filler reinforced hybrid polymer composites which are fabricated using a technique of hand lay-up with various layering arrangement. Laminate of basalt-jute fibers with nano-filler shows a better result in terms of tensile strength, flexural modulus testing and observed that the laminates of glass jute fiber with nano-filler show a better result in terms of ILSS and also studied the fracture surface morphology using scanning electron microscope (SEM).

KEYWORDS: Composite Materials, Hybrid Composites, Aluminum Oxide, Basalt Fibers, E-Glass Fibers, Jute Fiber

Original Article

1. INTRODUCTION

There is a long history of composite materials for its application in various fields. It is an unknown for its beginnings, but its history is recorded for references to form a various composite materials. Israelites used the straw for strengthen the mud bricks is an example [1]. In the period 1940's, Jute was used for prepare plywood and still it is using as common method and it was first modern composite. Still today nearly 65% of all type of composite used for surfboard, hulls, swimming pool linings, sports goods, car bodies, pool lining, etc. Weight sensitive application like space vehicles and aircraft materials are very important in modern period which are prepared resin composites reinforced by fiber because of its higher strength to weight ratio and stiffness-to-weight ratios respectively [2].

In the present technologies, need material with remarkable property combinations that will not be together by the polymeric, ceramics and conventional metal materials. These types of materials are very much requiring for aerospace, automotive and other transportation purposes. For example, at present day, engineers are searching a strong, low densities, impact resistant, abrasion, stiff, not easily corroded and stiff materials for preparing structural materials [1, 3]. This is a quite difficult combination of properties. Lightweight, high strength, non-magnetic, on-corrosive properties and good fatigue patience are among some of the constructive properties that would help the application of FRP bars materials. Low modulus, high initial cost, still failure of linear stress strain (LSS) behavior and durability topic are some barrier to the implementation of FRP bar materials in transportation infrastructure [4,

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Behavioral Studies of Myoware Sensor During Automated Prosthetic Implementation

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Abstract

The revolutionary evolution in the field of biosensors have led to many innovations in the field of biomedical implants, prosthetics or orthotics, robotics, wearable medical devices, health monitoring systems and fitness bands. This study is about myoware sensors that works on principle of electromyography captured by myoware sensors based on electric potentials. A raw EMG signal is synthesized by amplification, rectification and integration of signals that is ready to use and programmed by any micro-controllers or ADCs' that were observed during the implementation of an automated prosthetics system for a human cru. Locomotion of a static pylon is attained by placing the myoware sensors at different muscles. The following two case studies are considered such as: [a] placing the myoware sensor on Rectus Femoris and operate the prosthetic limb when there is a valid signal computed by the micro-controller with the sensor's reading, [b] placing the myoware sensor on Deltoids and operate the prosthetic limb when there is a valid signal computed by the micro-controller with the sensor's readings.

Keywords: *Myoware, Sensors, Micro-Controllers, Prosthetics, Medical Devices*

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INTRODUCTION

There are many sensors available which adapt for various applications. The availability of application-oriented sensors are many and commercially viable, but not available in the familiar market. The market survey of sensors used in a research is an important aspect to be considered during a project. The sensor being used in this research is called myoware sensor, which detects the muscle movement at the sensor application site and taps the surface electric potential developed in that region. There are wide range of EMG sensors available, but myoware sensor is the one which is easily available and have been used for many commercial applications also.

The sensor contains three electrodes: two electrodes on the board are called the main electrodes and the third one which is connected to the board through a cable is called the reference electrode. The electrodes capture the surface electric potential developed in the form of raw electromyography (EMG). The circuit consists of an amplifier, rectifier and a low pass filter. When a movement is detected at the application site of the myoware sensor, the sensor taps the surface potential developed in that region through the electrodes which is in contact with the skin. The amplifier circuit amplifies the signal since the potential developed is in small amount of magnitude, the rectifier circuit removes noise from the amplified signal so that the output is clean and the low pass filter cuts off some unnecessary signal apart from noise so that, the output can be observed properly via computer program [1].

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DESIGN & DEVELOPMENT OF VASCULAR INTERVENTION ROBOT FOR DIAGONISTICS OF SUPERIOR AND INFERIOR VENA CAVA

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ABSTRACT

Fissure of pregnable plaque is the main cause of acute-coronary syndrome & myocardial-infarction. Spotting of vulnerable plaques and other blockages are essential to enable the evolution of treatment modalities to stabilize such plaques. Vascular intervention treatment is an effective method in the treatment of vascular diseases. This paper proposes an idea for the design & development of a closed loop robotic system with continuous rotary and linear locomotion with an invasive treatment method for the inspection of vascular plaques. This new device technology mainly concentrated on performing diagnostics of vena cava. This interventional robotic system intends to resolve the drawback of X-ray radiations in the event of angioplasty surgery, CT scan and also reduces potential complication during endoscopy.

KEYWORDS: Vascular Intervention, Medical Robots, Active Locomotion Micro-Robots, Wireless Vision Transmission, Esophago Gastro Duodeno-Scopies (EGDs)

Original Article

INTRODUCTION

The circulatory system of human body is made up of the vessels that carry blood and lymph throughout the body. It also includes the function of arteries which is to deliver oxygenated blood and nutrients to the body tissues and veins takes away deoxygenated blood and dead cells. Fig (a) illustrates the pictorial view of human vascular system.

The superior and inferior vena cava in the vascular system plays a important role in blood flow as they returns de-oxygenated blood to the heart for re-oxygenation and circulation.

With the expeditious development in the economy, lifestyle and in community, vascular diseases have expeditiously become a major ultimatum to human health.

At present there are twelve known vascular diseases, five known available tests and three effective treatments' for the cure. Despite of having the advancements in these treatment technologies they have their own operational and working environmental disadvantages. As in angioplasty during the process, the surgeon has to conduct the surgery in a radiation exposed environment, along with the guidance of a mean time imaging of the X - ray machine. This electromagnetic wave is the uttermost hazardous radiation for one who operates the patient. During surgical procedure surgeon has to wear bulky clothes which consist of lead fabric. Anyhow exposure to the X - ray radiation cannot be completely prevented by equipping the lead clothes, and the weight of clothes badly influences the comfort of the surgeon during operation and makes the surgeon more likely to get drained. [1]

Also in another invasive procedure known as endoscopy the patient has to undergo gastrointestinal tract examinations which are agonizing and increases the stress on patient. However, modern clinical products and devices are passive in which motion is carried out by natural peristalsis, which are unable to take the images of

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Efficient Resource Scheduling Algorithm for SDN Enabled Vehicular Adhoc Network

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Abstract: In general, safety application requires time-based message delivery among the vehicles; further, 802.11p is standard medium access control (MAC)for vehicular communication. Moreover, 802.11P uses Carrier sense- MA (Multiple Access) with collision avoidance, aka CSMA/CA, in place of MAC; further using CSMA/CA aid in inducing unbounded resource allocation delay. Thus, it increases the probability of collision in vehicular Adhoc network (VANET). Further, for minimizing collision in VANET, efficient MAC design for resource allocation is needed. Recently, the number of TDMA (Time Division Multiple Access) based resource scheduling technique has been presented.

Nonetheless, these models fail as they do not utilize bandwidth inefficient way. Some of the existing methods adopted a cognitive radio mechanism to allocate resources for increasing throughput under a multichannel environment. However, the existing resource allocation model induces highercollision and resource allocation is said to have an NP-hard problem. Further, this research work focuses on addressing these issues. This work presents efficient resource scheduling (ERS) algorithm under shared (i.e., overlapping) multichannel software defined vehicular Adhoc network (SDVN). The ERS model maximizes the throughput and, with a minimal collision, is proven through experiments. Simulation is carried out for evaluating the performance of ERS over the existing resource scheduling algorithm considering throughput and collision under a highly congested vehicular Adhoc network. Further, the benefit of using SDN in VANET is realized through experiment analysis considering dynamic radio propagation and mobility environment.

Keywords: *DSRC; IEEE 802.11p, MAC; Multi-channel, Software defined network; VANET.*

1. Introduction

Wide adaptability of wireless technology has resulted in inadequate attention in VANET (Vehicular Ad-Hoc Network); in general, VANET is defined as a specific MANET where communication occurs through various communication, namely V2I (Vehicle to Infrastructure), V2V(Vehicle to Vehicle) and

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CLOUD COMPUTING : SECURITY CHALLENGES AND ISSUES

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ABSTRACT

Over the past few years, Cloud Computing has grown extensively. Many companies can no longer sustain without transitioning towards cloud computing platforms. Cloud can provide companies the fast access to their business applications and significantly augment their infrastructure resources. Since the demand for cloud is increasing tremendously, one needs to look at the aspect of cloud security. Security acts as a backbone of any technology. Security in Cloud helps in protecting data from theft, getting overwritten or deletion of the data, natural disasters or even prevents from data leakage. This technology uses the concepts of tokenization and other means like Virtual Private Networks (VPNs), hardware and software based firewalls etc. to enhance security. Cloud Security is such a topic that one can dig deeper to find the root causes for the potential threats. This forms the basis of this research paper wherein we are going to do research about the issue related to cloud security and the challenges that the organization may be facing or can face in the future.

Keywords: Cloud security, challenges, cloud computing, cloud service, security issues.

I. INTRODUCTION

For the past few years, cloud computing has become fastest growing segment of the technology industry. Cloud computing comprises of accessing online software applications, processing power, use of social media, some forms of interpersonal computing and data storage. According to US National Institute of Standards and Technology, "Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" [1].

In the current scenario, where the presence of cloud computing has increased a lot, a pivotal role is being played by the data-center which is controlled by big multinationals like Google, Microsoft Azure, Salesforce and Amazon that provides the cloud infrastructure. Some of the characteristics of cloud include: the ability of resilient computing, homogeneity, service orientation, massive scaling, low cost software's and virtualization [2, 3]. Some of the essential characteristics of cloud computing are:

- Broad network access: Standard mechanism promotes use of thick and thin client platforms which include laptops, workstations, tablets, mobile phones etc.
- Resource Pooling: A multi-tenant model is followed in which all the computing resources are pooled to serve multiple consumers having varied physical and virtual resources which are assigned and reassigned dynamically depending upon the demands of the consumer.
- On-demand self-service: Eliminating the requirement of human interaction with the service provider, a user can himself change the computing capabilities according to her/his use such as server time and network storage.

Cloud Computing has mainly three service models, which includes:

- Software as a Service (SaaS): SaaS has a cloud infrastructure on which applications run. These applications can be used by the cloud users on subscription basis. Either thick clients such as computers and laptops can be used or thin client interface such as web browsers and web

Feature selection and instance selection using cuttlefish optimisation algorithm through tabu search

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Abstract: Over the recent decades, the amount of data generated has been growing exponentially, the existing machine learning algorithms are not feasible for processing of such huge amount of data. To solve such kind of issues, we have two commonly adopted schemes, one is scaling up the data mining algorithms and other one is data reduction. Scaling up the data mining algorithms is not a best way, but data reduction is fairly possible. In this paper, cuttlefish optimisation algorithm along with tabu search approach is used for data reduction. Dataset can be reduced mainly in two ways, one is the selecting optimal subset of features from the original dataset, in other words eliminating those features which are contributing lesser information another method is selecting optimal subset of instances from the original data set, in other words eliminating those instances which are contributing lesser information. Cuttlefish optimisation algorithm with tabu search finds both optimal subset of features and instances. Optimal subset of feature and instance obtained from the cuttlefish algorithm with tabu search provides a similar detection rate, accuracy rate, lesser false positive rate and the lesser computational time for training the classifier that we obtained from the original data set.

Keywords: data reduction; instance selection; feature selection; cuttlefish optimisation; tabu search.

Reference to this paper should be made as follows: Karunakaran, V., Suganthi, M. and Rajasekar, V. (2020) 'Feature selection and instance selection using cuttlefish optimisation algorithm through tabu search', *Int. J. Enterprise Network Management*, Vol. 11, No. 1, pp.32–64.

3.3.2 Number of research papers published in the Journals notified on UGC website during 2021

SL. No.	Title of paper	Name of the author/s	Department of the teacher	Name of journal	ISSN number	Indexing Database
252.	Adsorption behavior of sulfisoxazole molecules on tricycle arsenene nanoribbon -	Dr. Jyothi M S	Chemistry	Journal of Molecular Liquids	0167-7322	scopus
253.	Acid Orange-7 uptake on spherical-shaped nanocarbons	Dr. Jyothi M S	Chemistry	Nanomaterials and Nanotechnology	1847-9804	Scopus
254.	Interaction studies of benzene and phenol on novel 4–8 arsenene nanotubes – A DFT insight	Dr. Jyothi M S	Chemistry	Computational and Theoretical Chemistry	2210-271X	scopus
255.	Multidentate ligand approach for conjugation of perovskite quantum dots to biomolecules	Dr. Jyothi M S	Chemistry	Journal of Colloid and Interface Science	0021-9797	scopus
256.	Polythiocyanuric acid-functionalized MoS2 nanosheet-based high flux membranes for removal of toxic heavy metal ions and congo red	Dr. Jyothi M S	Chemistry	Chemical Engineering Journal	1385-8947	scopus
257.	Interaction studies of dichlobenil and isoproturon on square-octagon phosphorene nanotube based on DFT framework	Dr. Jyothi M S	Chemistry	Chemical Physics Letters	0009-2614	scopus
258.	Square-octagon arsenene nanosheet as chemical nanosensor for M-xylene and toluene – A DFT outlook	Dr. Jyothi M S	Chemistry	Computational and Theoretical Chemistry	2210-271X	scopus
259.	Performance of functionalized 1T-MoS2 as composite counter electrode material for QDSSCs and its analogy with 2H-MoS2	Dr. Jyothi M S	Chemistry	Materials Research Bulletin	0025-5408	UGC Care
260.	Azobenzene-based polycatenars: Investigation on photo switching properties and optical storage devices	Dr. Jyothi M S	Chemistry	Journal of Molecular Liquids	0167-7322	UGC Care list/Scopus/Web of Science
261.	Structural and functional elucidation of novel FAB inhibitors: A NMR, Molecular Dynamics, MM/PBSA and Biological Activity Study	Dr.V.Veeranna	Chemistry	International Journal of Innovative Science, Engineering & Technology	ISSN: 2348-7968	UGC Care
262.	Heterostructure Fe2O3-In2O3 Nanoparticles as Hydrogen Gas Sensor	Dr. Yallappa Shiralgi	Chemistry	Journal of Electronic Material	0361-5235	UGC Care
263.	AgCl-induced hot salt stress corrosion cracking in a titanium alloy	Sudha Joseph,	Mechanical Engineering	Corrosion science	ISSN 0010-938X	scopus

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2021

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264.	Mechanical Properties of Friction Stir Welded Metal Matrix Composite- AA6061-	Manjunatha. C, Sanjay. P & Girisha. C	Mechanical Engineering	International Journal of Scientific & Engineering	ISSN 2229-5518	scopus
265.	Impact of heat treatment on the mechanical performance of hot extruded Al6061-BN reinforced metal matrix composites.	Dr. Premkumar Naik	Mechanical Engineering	BULLETIN OF THE POLISH ACADEMY OF SCIENCES TECHNICAL SCIENCES,	ISSN 2300-1917	scopus
266.	Effect of P and Sr Additions on Cutting Force in Turning of Hypereutectic Al-20%Si Cast Alloys	K G BASAVAKUMAR	Mechanical Engineering	INDIAN FOUNDRY JOURNAL	ISSN 0379-5446	scopus
267.	Design and Development of Bionic Eye for Visually Challenged People using Raspberry PI processor	Dr.Amuthan	Mechatronics	Turkish Journal of Computer and Mathematics Education	3437-3443	scopus
268.	Medical Image Security Using a Visual Cryptography Technique along with Blockchain	Dr M Sathya	Information Science & Engineering	Design Engineering	0011-9342	scopus
269.	An Intellectual procurement innovation of smart grid power system with Wireless Communication networks based on Machine Learning	Dr M Sathya	Information Science & Engineering	International Journal Of Nonlinear Analysis and Applications (IJNAA)	2008-6822	scopus
270.	Energy Efficient Witness Based Clone and Jamming Attack Detection in WSN	Dr M Sathya	Information Science & Engineering	Journal of Green Engineering	1991-8178	scopus
271.	A Novel, Efficient, and Secure Anomaly Detection Technique Using DWU-ODBN for IoT-Enabled Multimedia Communication Systems	Dr M Sathya	Information Science & Engineering	HindawiWireless Communications and Mobile Computing	1530-8677	UGC Care
272.	An Intellectual Monitoring Of Power Sector By Machine Learning Applications	Dr M Sathya	Information Science & Engineering	NVEO – Natural Volatiles & Essential Oils	6609 - 6619	UGC Care list/Scopus/Web of Science
273.	Security Issues on Internet Of Things: General Survey	Ayain John	Information Science & Engineering	SSRN	SSRN 3812063	UGC Care
274.	CNN approach for medical image authentication	Dr.Ganga Holi	Information Science & Engineering	Indian Journal of Science and Technology	Online ISSN : 0974-5645	UGC Care
275.	An Efficient Routing Algorithm for Optimizing Energy Conservation and Improved Scalability in WSN	R Amutha	Information Science & Engineering	Annals of the Romanian Society for Cell Biology	ISSN:1583-6258	scopus

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2021

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276.	Design and development of automatic robotic system for vertical hydroponic farming using IOT and big data analysis	Jeevitha,Veena	Computer Science and Engineering	Turkish Journal of Computer and Mathematics Education	3437-3443	UGC Care
277.	Detection and exoplanets using machine learning	Snigdha kesh,Karthik	Computer Science and Engineering	CIIT International Journal of Artificial Intelligent System and Machine Learning	0974-9667	UGC Care
278.	Predicting Autism Spectrum disorder by Machine learning from Healthcare Communities	Srividhya Ganesan	Computer Science and Engineering	Psychology and Education Journal	ISSN: 1553-6939	UGC Care
279.	SOFTWARE DEVELOPMENT TESTING USING PRIORITIZATION	Supriya Srivastava	Computer Science and Engineering	JOURNAL OF CRITICAL REVIEWS	2394-5125	Scopus
280.	Evaluation of Agent-Network Environment Mapping on Open-AI Gym for Q-Routing Algorithm	Dr R Nagaraja	Computer Science and Engineering	The Science and Information (SAI) Organization	2156-5570	Web of Science
281.	Sparse Distributed Memory Approach for Reinforcement Learning Driven Efficient Routing in Mobile Wireless Network System	Dr R Nagaraja	Computer Science and Engineering	The Science and Information (SAI) Organization	2156-5570	Web of Science
282.	Blockchain based Secured Framework for Road Traffic Management using Fog Computing	Dr. S. Nirmala	Computer Science and Engineering	International Journal of Computational Intelligence in Control	ISSN: 0974-8571	UGC Care
283.	Smart Navigation System for Blinds using Internet of Things	Dr. S. Nirmala,Amutha, Ms.Parvathy	Computer Science and Engineering	International Journal of Computational Intelligence in Control	ISSN: 0974-8571	UGC Care
284.	Secured Framework for Fish Farming using Internet of Things and Blockchain	Dr. S. Nirmala,Mr.Shivananda S	Computer Science and Engineering	International Journal of Computational Intelligence in Control	ISSN: 0974-8571	UGC Care
285.	NetAI-Gym: Customized Environment for Network to Evaluate Agent Algorithm using Reinforcement Learning in Open-AI Gym Platform	Dr R Nagaraja	Computer Science and Engineering	International Journal of Advanced Computer Science and Applications	E-ISSN: 2156-5570	UGC Care
286.	Survey on Detection and Identification of Face Mask	Dr. Jenitta	Electronics & Communication Engineering	International Journal of Scientific Research & Engineering Trends	ISSN (Online): 2395-566X	UGC Care
287.	Review on Secured and Automated Healthcare System	Dr. Jenitta	Electronics & Communication Engineering	International Journal of Scientific Research & Engineering Trends	ISSN (Online): 2395-566X	UGC Care

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3.3.2 Number of research papers published in the Journals notified on UGC website during 2021

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288.	A Comprehensive Review on Supply Modulators and Control Strategies for Envelope Tracking RF Power Amplifiers in Mobile Communication	Prof. Ambily Babu	Electronics & Communication Engineering	IETE	ISSN: 0974-780X	Scopus
289.	Overview and Analysis of RPL Protocol Objective Functions	Mr.Vikram Simha	Electronics & Communication Engineering	Cognitive Informatics and Soft Computing	978-981-16-1056-1	Scopus
290.	A Comparative Study and Analysis of Different CMOS VLSI Technology used for SRAM	Dr.Savita patil	Electronics & Communication Engineering	IJCRT	ISSN: 2320-2882	Scopus
291.	A Novel Junction Less Dual Gate Tunnel FET with SiGe Pocket for Low Power Applications	Mr. SABITABRATA BHATTACHARYA	Electronics & Communication Engineering	Research Gate	978-1-7281-9955-9/21	Scopus
292.	Texture Based Image Retrieval Using Semi variogram and Various Distance Measures	Prof. Rajani	Electronics & Communication Engineering	Advances in Science, Technology and Engineering Systems Journal	ISSN: 2415-6698	Scopus
293.	Hybrid Adaptable Search Window with Diamond Pattern	Prof. Senbhagavalli	Electronics & Communication Engineering	Turkish Journal of Computer and Mathematics Education	e-ISSN 1309-4653	Scopus
294.	Multi Node Based Smart Monitoring System with Motor Dry Run Avoidance for Sustainable Agriculture	Dr. N V Umareddy	Electronics & Communication Engineering	IIETA	2269-8485	Scopus
295.	Analysis of High-Efficiency Transformer less Inverter for a Grid-Tied PV Power System with Reactive Power Control	Dr. Selvamathi R	Electrical & Electronics Engineering	Recent Advances in Computer Science and Communications	ISSN (Online): 2666-2566	Scopus
296.	Design, power quality analysis, and implementation of smart energy meter using internet of things	Dr. Selvamathi R	Electrical & Electronics Engineering	Computers & Electrical Engineering	ISSN: 0045-7906	Scopus
297.	Improved GA based power and cost management system in a grid-associated PV-wind system	C Kothaiandal,	Electrical & Electronics Engineering	International Journal of Power Electronics and Drive Systems (IJPEDS),	ISSN 2088-8694	Scopus
298.	Evaluation of Tribological Characteristics of Carbon Nano Tubes for Lubricants at Extreme Pressure	Dr. Saravanan R	Mechanical Engineering	International Research Journal of Engineering and Technology	e-ISSN: 2395-0056	UGC Care
299.	Investigation on Tribological Properties of Carbon Nano Tubes as Additive with Lithium and Calcium Grease	Dr. Saravanan R	Mechanical Engineering	International Research Journal of Modernization in Engineering Technology and Science	e-ISSN: 2582-5208	UGC Care

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Adsorption behaviour of sulfisoxazole molecules on tricycle arsenene nanoribbon - a first-principles study

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ABSTRACT

The density functional theory framework is used to study geometry and electronic properties of pristine tricycle arsenene nanoribbon (T-AsNR) and Ga substituted T-AsNR. The stable geometry of both T-AsNR is ensured based on the formation energies. The obtained formation energies for T-AsNR and Ga-substituted T-AsNR are −4.462 and −4.512 eV/atom, respectively. Also, the band gap is calculated to be 0.635 and 0.212 eV, respectively for pristine and Ga substituted T-AsNR, which are semiconductors. Furthermore, T-AsNR is used as a base substrate to adsorb sulfisoxazole in the aqueous medium. Moreover, the adsorption of sulfisoxazole on both T-AsNR possesses chemisorption. Besides, the adsorption energy at the valley site of T-AsNR and Ga-substituted T-AsNR are −6.313 eV and −6.346 eV. The average energy gap variation for Ga-substituted T-AsNR was highest at the top site and is about 174.06%, whereas the pristine one showed 6.93 %. The change in the electronic properties of T-AsNR is observed with regard to band structure, electron density, and density of states spectrum. Thus, the outcome suggests that T-AsNR is a prominent adsorbing medium of sulfisoxazole in contaminated water.

1. Introduction

The groundwork on the synthesis and applications of graphene by quite a lot of researchers has given a customary map to explore many other atomic layered 2D nanosheets (NS) [1–6]. With this context, 2D materials across many groups of the periodic table are emerging. To name few, boron nitrides [7], silicene [8], transition-metal dichalcogenides (TMDs) [9], phosphorene [10–12], antimonene [13], arsenene [14], graphydine [15–17] and others [18–21] are reported. High anisotropic transport and carrier mobility, promising thermoelectric and optical properties, lower Poisson's ratio were being characteristics of arsenene, motivated the fabrication of opto- and nanoelectronic devices [22,23]. These features have prompted researchers to look into the ability of arsenene, antimonene and bismuthene for the same. A detailed investigation on the properties of later materials evidenced the similar properties of arsenene making it available for various opto-electronic and sensing applications [24–27]. Han Zhang group [11,12,23,28] investigated different 2D materials, namely black phosphorene, TMDs, tellurium, etc. which are utilised in many potential applications including optical modulator, switches, opto-electronic devices, and electrochemical energy storage owing to its excellent properties (large surface area, direct and tunable band gaps, etc.).

A monolayer alignment of a chair and stirrup-shaped arsenene are found to be stable [29,30]. However, the greater carrier mobility of arsenene sheets could be reduced by cutting them into ribbons [26]. H. S. Tsai et al. synthesised few-layer arsenene nanoribbons (AsNR) on InAs substrate and the band gap was estimated to be ∼ 2.3 eV [31]. Moreover, the experimental evidence was also reported from J. Shah group [32]. The study demonstrated the synthesis of As layer on Ag (1 1 1) surface. The lattice constant obtained was 3.6 Å, and it fitted into the theoretically suggested values (3.54–3.64 Å). Several applications of arsenene and its doped forms are emerging. The efficacy has been analysed in the field of gas sensors, catalysts, and spintronics [33,34]. Though, arsenic is toxic to humans some of the beneficial aspects are reported. The practicality of arsenene as a potent anticancer drug carrier is proven by Nur et al. [35]. The therapeutic usage of arsenene in acute promyelocytic leukaemia cells was studied by Xiuxiu Wang et al. [36]. The synthesised 2D As NS showed 82 % of inhibition for NB4 promyelocytic leukaemia cells along with induced apoptosis, however with no toxicity towards the normal regular cells.

Nevertheless, different configurations of arsenene are the requisites for versatile applications. Zhang et al. demonstrated the

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Acid Orange-7 uptake on spherical-shaped nanocarbons

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Abstract

Acid-dyes, typically used in textile productions, could infer poisoning harmful effects on the environment as well as on human health, if not properly treated during their disposal. Henceforth, there is an absolute necessity to achieve new efficient low-cost techniques to remove these dyes from industrial chemical waste. Here, the leaves of oil palm, which are abundant in tropical countries, were used as precursor in the development of carbon nanospheres (adsorbent) to remove hazardous acid Orange-7 (AO-7) dye ($C_{16}H_{11}N_2NaO_4S$). The removal efficacy of spherical-shaped nanocarbons was investigated as a function of contact period, by varying their dose (0.5, 1, 1.5, 2 and 2.5 mg), pH (acidic, native and basic), and initial AO-7 concentration (10, 15, 20, 25 and 30 μM). Amazingly, the oil palm leaves–based carbon nanospheres removed acid-dye up to an efficiency of about 99%. Pseudo second-order kinetics governs the adsorption mechanism and the Redlich–Peterson isotherm model fits well to the adsorption results, with regression co-efficient close to unity. This study suggests the importance of natural biowaste-based carbon nanoparticles in sustainable recycling, within the worldwide demanded circular economy.

Keywords

Acid orange-7($C_{16}H_{11}N_2NaO_4S$), carbon nanospheres, biowaste, oil palm leaves, adsorption

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Introduction

Carbon materials are crucial for a widespread of technological applications, such as electrodes for batteries,[1,2] super capacitors,[3] catalysis and fuel cells,[4–6] gas storage[7] and water cleaning.[8,9] These carbon materials include structures as carbon fullerenes,[10,11] carbon nanofibers,[12] carbon nanotubes[10,13] and carbon nanospheres.[14,15]

Interestingly, the coupling of pentagonal, hexagonal and heptagonal carbon rings responsible in forming carbon nanotubes and nanofibers can also arrange to form spherical-shaped nanocarbons (NCs). Graphite sheets, when arranged spherically, generate several open surface edges due to unclosed shells, resulting in dangling bonds, which further form active spherical-shaped NCs.[16] Thus, in recent years, these new spherical-shaped NCs have gained

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Interaction studies of benzene and phenol on novel 4–8 arsenene nanotubes – A DFT insight

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ABSTRACT

The adsorption properties of benzene and phenol molecules on 4–8 arsenene nanotubes (4–8 AsNT) are investigated based on the DFT framework. The structural stability is confirmed with a formation energy of 4–8 AsNT, which has −3.696 eV/atom. The band structure and density of states spectrum reveal that 4–8 AsNT exhibits a band gap of 0.504 eV. The adsorption energy for the complex structure is noticed to be in the scope of −0.253 eV to −0.602 eV, which confirms that the benzene and phenol molecules are physisorbed on 4–8 AsNT. The charge transfer and electron density difference support the change in the electronic attributes of 4–8 AsNT due to the adsorption of benzene and phenol molecules on 4–8 AsNT. The chemi-resistive nature is observed upon adsorption of benzene/phenol on 4–8 AsNT. Thus, the study reveals that 4–8 AsNT can be employed as a chemical nanosensor for benzene and phenol detection.

1. Introduction

Unveiling the trace levels of volatile organic compounds (VOCs), even in ppb and ppm concentrations is crucial in monitoring human health and the environment. The World Health Organization (WHO) has mandated the monitoring of VOCs such as benzene, phenol, formaldehyde, acetone, ethanol, and many more [1-3]. Benzene and phenol have proven to cause greater health risks whose primary emission is from coal, petroleum, petrochemical, thinners, and paints industries. The long-term exposure to the emission of benzene and phenol vapours has shown carcinogenicity and higher toxicity on public health [4,5]. Gas chromatography is the traditional technique involved in the measurement of such gases, which suffers a major drawback with respect to time, cost, and portability [6]. Also, the detection of benzene is quite challenging in terms of its structure and it requires higher amounts of oxygen to convert it into carbon dioxide and water molecules along with greater enthalpy change [7]. Hence, removal of such VOCs using adsorbents is demanding. Some of the metal oxides like ZnO [8], MoO_3 [9], Cu_2O [10], etc. have been investigated for their ability in sensing benzene. Nonetheless, signal drifts, substandard levels of sensitivity, and deprived selectivity are the major limitations of metal oxide sensors [11]. To overcome the challenge, researchers have developed core-shell structures, which again encounter synthesis and stability issues [12]. Two dimensional single-walled, multi-walled and randomly adapted nanotubes are emerging to address all kinds of challenges [13,14]. Few of these investigations worked upon the detection of Schottky barriers resistance across nanotubes and metal acquaintances and that could offer real-time sensing [15].

Lately, several types and structured 2D materials have been investigated for gas sensing applications and few are theoretically proven [16,17]. T. Mahmood group [18] recently reported the adsorption behaviour of chemical warfare agents on graphdiyne using DFT studies. Further, they have also used cyclic oligofuran and oligomers for the detection of toxic molecules such as CO, CO_2, CH_4, H_2S, HCN, phosgene, formaldehyde, thiophosgene, etc. using first-principles calculation [19,20]. To consider, a monolayer of arsenic termed arsenene is a new category of a 2D material with distinct elements [21-23]. The structural characteristics of a perfect arsenene are similar to silicene with sp^3 hybridised atoms having buckled honeycomb type of networks. Besides, higher carrier mobility and a band gap of 2.49 eV at the HSE06 level of theory make arsenene a suitable material for gas sensors and optoelectronic devices as well [21]. Our previous investigations provided computational perspectives on the efficacy of square octagon arsenene nanosheets for VOCs, M-xylene, toluene, and other organic compounds [24,25] and arsenene nanoribbons of the hydrogenated armchair and zigzag structures for NH_3 and PH_3 adsorption [26]. Along with which

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Regular Article

Multidentate ligand approach for conjugation of perovskite quantum dots to biomolecules

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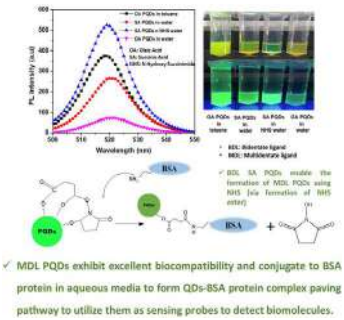
GRAPHICAL ABSTRACT



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ABSTRACT

Building compatible surface on perovskite quantum dots (PQDs) for applications like sensing analytes in aqueous medium is highly challenging and if achieved by simple means can revolutionize disease diagnostics. The present work reports the surface engineering of $CsPbBr_3$ QDs via "simple ligand exchange process" to achieve water-compatible QDs towards detection of biomolecules. The monodentate oleic acid ligand in $CsPbBr_3$ QDs is exchanged with dicarboxylic acid containing (bidentate) ligands such as folic acid (FA), ethylenediamine tetra-acetic acid (EDTA), succinic acid (SA) and glutamic acid (GA) to develop an efficient water-compatible PQD-ligand system. optical and theoretical studies showed the existence of a stronger binding between the perovskite and succinic acid ligand as compared to oleic acid (OA) and all other ligands. Replacement of OA with SA and retention of crystal structure is validated using spectroscopic and microscopic tools. It is observed that SA ligands facilitate better electronic coupling with PQDs and show significant improvement in fluorescence and stability. Further *N*-Hydroxy succinimide (NHS), which is a well-known compound to activate carboxyl groups, is used to bind onto SA PQDs as multidentate ligand, to form water stable PQDs. SA PQDs react with NHS (in water) to form multidentate ligand passivated PQDs that show very high photoluminescence (PL) as compared to OA PQDs in toluene. This also results in the formation of an NHS ester that allows bioconjugation with PQDs. This simple probe in water is further utilized for sensing a highly hydrophilic bovine serum albumin (BSA) protein as a model target to demonstrate the potential and effectiveness of this process to create compatible QDs for the successful conjugation of biomolecules. Although the focus of this work is to demonstrate bioconjugation and not achieving higher sensitivity levels, the intrinsic sensing level of these compatible QDs towards BSA shows a detection limit of 51.47 nM, which is above par with other reports in literature.

1. Introduction

Emergence of perovskite quantum dots (PQDs) has encouraged the replacement of conventional chalcogenide QDs (CQDs) in

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Polythiocyanuric acid-functionalized MoS_2 nanosheet-based high flux membranes for removal of toxic heavy metal ions and congo red

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ABSTRACT

MoS_2 nanosheets were functionalised by polythiocyanuric acid (PTCA) in varying ratios (MoS_2:PTCA = 1:1, 1:2, 1:3). The modification enabled the materials to be strongly adsorbed onto polyethersulfone (PES) membranes without requiring prior exfoliation. This was in strong contrast to MoS_2 itself. Spectroscopic characterisation indicated adhesion was through strong hydrophobic π-π* stacking and electrostatic interactions between PTCA and PES. Modification of the PES resulted in an increased hydrophilic character, as evidenced by a decreasing contact angle (78° unmodified, 40° – 50° modified) and an increase in water uptake (WU) from 12.8% to 17 – 27% (%WU = $[(W_w / W_d) - 1] \times 100\%$, where W_w and W_d refer to wet and dry membrane weights, respectively). When modifying PES using different MoS_2-PTCA ratios, increasing the PTCA content decreased the permeate flux and pure water flux, while increasing the % removal of congo red, Hg(II), Cr(VI) and Pb(II) to approximately 80%. The potency of the membranes is ascribed to the formation of lamellar structures with increased hydrophilicity and the synergy between the disulfide linkage and absorptive capabilities of the MoS_2.

1. Introduction

A large number of industrial processes have the potential to release heavy metals and organic pollutants into the environment [1]. The entry of heavy metals into water sources can come via industries such as mining, paint, cosmetics, rubber, plastics, batteries and electroplating processes [2]. Industries such as textiles and paper manufacture can result in the contamination of water by organic species, especially dyes [3,4]. Since many of these species are non-degradable they can be harmful to human and other forms of life [5,6]. Thus, a large research effort has been devoted to the removal of toxic chemicals from wastewater [7]. Techniques which have been examined include: precipitation, adsorption and ion exchange methods, used for removal of toxic metal ions (Pb^{2+}, Hg^{2+}, Cd^{2+}, As^{3+} and Cr^{6+}) [8–12], adsorption/photocatalytic degradation used for the removal of organic dyes/contaminants [13,14], electrochemical or photoelectrochemical methods were used where the dyes are degraded and metal ions are reduced/adsorbed on the electrode surface [15,16], and membrane-based methods, including reverse osmosis and ion-exchange [17]. The use of membranes is considered attractive due to the possibility of scale up to treat large volumes, ease of use, and the fact that membranes occupy very little space and can achieve high removal efficiencies [18,19]. Materials which have been examined for their membrane properties include polymers, mesoporous ceramics and zeolites [20]. However, issues that can be encountered with these materials include low stability, high cost and low water fluxes [21]. For these reasons there has recently been

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Research paper

Interaction studies of dichlobenil and isoproturon on square-octagon phosphorene nanotube based on DFT frame work

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ABSTRACT

Square-octagon phosphorene nanotubes (so-PNT) have aroused attention among researchers owing to their interaction with pesticide molecules. In the current report, the adsorption features of dichlobenil, and isoproturon on so-PNT at three different orientations (inner, octa, and tetra vacancy of so-PNT) are explored with the framework of density functional theory. Moreover, the adsorption features are conversed in terms of adsorption energy, band gap variation, charge transfer, and band structure maps. Besides, the adsorption aspects of dichlobenil and isoproturon are also demonstrated with regard to the density of states spectrum. The electron density difference of so-PNT articulates the adsorption features of target molecules. In addition, the outcome of the proposed study enunciates the chemisorption nature of dichlobenil, and isoproturon molecules on so-PNT. Thus, so-PNT can be considered as an efficient material for the removal of dichlobenil, and isoproturon molecules. Furthermore, the chemisorption process is attributed to the presence of polar groups and the aromatic rings in the targets system offering π- π interactions and stacking along with electron-donor–acceptor interactions between target contaminants and so-PNT.

1. Introduction

In recent years, the concern on distribution and probable aggressive effects on the well-being of the living system has been increased and is directly associated with the contaminants of aquatic systems. Pharmaceuticals, flame retardants, personal care products, endocrine disruptive chemicals, surfactants, and pesticides are such emerging contaminants, which are widely and most frequently used [1]. Some of these contaminants are truly insistent with the conventional water treatment process and are also resistant to microbial degradation. Hence, the removal of such contaminants via adsorption sets crucial importance. Adsorption of herbicides such as dichlobenil (DCB) and isoproturon (IPT) is considered as the target contaminants of this proposed work.

DCB is a derivative of nitrile herbicide and IPT belongs to the urea family of herbicides. It is known that the fate of DCB is soberly persistent in the atmosphere [2], it has no or little downward passage with the movement of water [3] and fairly hard to degrade in aquifer constituents [4] and easily adsorb on to soil [5]. Besides, IPT is moderately hydrophobic, water-soluble, and weakly adsorbed on soil [6]. Both of these herbicides are widely used in the production of cereals to avoid the growth of weeds. To regulate the usage and release of these contaminants into the atmosphere, Water Framework Directive 2000/60/EC and Directive 2008/105/EC are customised where a list of few chemicals that need to be controlled in water is given and our target contaminants are also mentioned [7]. Along with regulation in the distribution of these herbicides, it is also important to remove them from the contaminated water and for which adsorption is adopted.

Investigations on the adsorbents for DCB and IPT have reported the use of carbon nanotubes. The adsorption was explained based on the specific surface area and micropore volume of nanotubes. An activated carbon and titania catalyst was used for the removal of IPT from the water via combined photocatalysis and adsorption process [8]. The same strategy was followed with the use of carbon (from guava seeds)-TiO_2 hybrids [9]. Guang-Cai et al. reported the adsorption of DCB on multiwalled carbon nanotubes (CNTs) from water [10]. The adsorption of contaminants on carbon nanotubes is aided by hydrophobic interactions [11], hydrogen bond formation [12], electrostatic [13], π-π [14] and Lewis acid-base interactions [15]. Though exciting adsorption properties are offered by CNTs, the practical utility of them is restricted due to a) their easy aggregation in both bare and functionalised forms, b)

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Square-octagon arsenene nanosheet as chemical nanosensor for M-xylene and toluene – A DFT outlook

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ABSTRACT

In the density functional theory framework, the geometric stableness and electronic properties of square-octagon arsenene nanosheet (O-AsNS) are studied. The O-AsNS shows semiconductor nature with a bandgap of 1.348 eV. The O-AsNS is used as a base material to adsorb M-xylene and toluene vapours. The adsorption energy shows the physisorption of M-xylene and toluene on O-AsNS. Furthermore, the charge transfer, electron density, and bandgap variations of O-AsNS clearly support the chemi-resistive nature of O-AsNS. Besides, the band structure and projected density of states mapping disclose the change in the electronic properties of O-AsNS owing to M-xylene and toluene adsorption. Thus, the result reveals that O-AsNS can be deployed as a chemosensor for the detection of M-xylene and toluene vapours.

1. Introduction

Worldwide the solid waste generated per year is about 1.3 billion tons and is expected to double in the next two decades [1]. Utmost, these landfills suffer poor management or open environment [2], leading to microbial degradation and the emission of odorous gases directly to the atmosphere [3]. A major component of this odorous gas is methane and carbon dioxide, along with a substantial amount of benzene, toluene, xylenes, and ethylbenzenes [4]. These gases being volatile organic compounds (VOCs) impose negative health effects on the environment and human health causing sensory and respiratory issues [1]. Among several VOCs, toluene and M-xylene are the most common VOCs accompanying with municipal solid waste [4]. Quite a lot of approaches have been implemented to manage the discharge of these VOCs into the environment, which includes chemical, biological, and physical treatments but owing to costly chemicals and high operational costs there is a need for solid-state sensors [5]. However, to work upon operational costs, realising the quantity of VOCs generated for specific amounts of the landfill is vital and for which several processes and products are emerging [6–8]. Regardless of emerging materials, the evaluation of quantification between measured and calculated gases and also the final chemical composition is not fully explored. Chuandong Wu et al. addressed this issue by measuring VOCs of landfills from Beijing, China [9]. Besides, gases were quantified using gas chromatography and olfactometer. With motivation from this work, we explored based on density functional theory (DFT) insights on adsorption of toluene and M-xylene on 2D square-octagon arsenene nanosheet (O-AsNS). Toluene and M-xylene are the aromatic hydrocarbons, benzene ring decorated with one and two methyl groups, respectively. M-xylene is one of the three isomers of xylene with two methyl groups in the meta position.

Nearly six decades ago, variations in electronic features of semiconductor materials due to changes in the surrounding atmosphere were reported by Brattain [10] and Sandler et al. [11]. Several metal oxides based sensors are used to detect hazardous gas molecules such as NO_2, NO, N_2O, NH_3, H_2S, CO, CH_4, CO_2, and SO_2 [12]. Since then sensing heavy metals and hazardous gases have been scrutinised by several researchers. A contribution of graphene-like 2D materials such as reduced graphene oxides, germanene, phosphorene, MXenes, and transition metal dichalcogenides to the world of gas sensing is craved for their good adsorbing ability for organic molecules [13–22]. Tang et al. [23] reported silicon doped graphene, which act an excellent catalyst for CO oxidation. W. Ju and D. Ma group [24–26] have studied the magnetic properties of monolayer silicene material including structural stability, electronic properties, and adsorption behaviour of transition metal atom on InSe and MoS_2 using the DFT method. The layered structure of 2D materials offers a high surface-to-volume ratio with huge active sites along with the surface diffusion of the gas molecule into the host molecule that facilitates the adsorption process [27]. Arsenene

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Performance of functionalized 1T-MoS_2 as composite counter electrode material for QDSSCs and its analogy with 2H-MoS_2

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ABSTRACT

1 T phase of MoS_2 has been recently established as a high photo and electro active catalyst for hydrogen generation and energy storage applications. The present study explores the possibility of utilizing its enhanced features for photovoltaic applications with a detailed analogy of the two phases of MoS_2 for counter electrode applications in Quantum dot sensitizes solar cells (QDSSCs). The two phases namely 2H and 1 T phase of MoS_2 have been synthesized by two different approaches namely bottom up and top down methods. The functionalized (stabilized) 1 T phase shows a significant improvement in its photovoltaic performance over 2H phase as a composite counter electrode (CE) material used with CuS in QDSSCs. The study is supported by material characterization via microscopy, spectroscopy and electrochemical characterization through impedance studies. The metallic 1 T phase with its bandgap less than 1 eV significantly improves the electron life time, charge transfer, charge separation and hence the overall performance of the QDSSCs thus offering itself as a new stable photovoltaic CE material.

1. Introduction

Multiple exciton trend in quantum confined environment achieved through quantum dots (QDs) is reviving hopes for 3rd generation QDSSCs [1–3]. With much devoted efforts, only 14 % photo current efficiency (PCE) is achieved so far though 44 % PCE is theoretically achievable [4]. QDSSCs consist of mesoporous photoanodes into which electrons are injected from chemically adsorbed QD molecules, followed by regeneration of redox pair in the electrolyte. Further, the oxidized electrolyte will be reduced at counter electrode (CE) and the reduced electrolyte combines with holes again by transporting to photoanode [5, 6]. CE is less studied among all other elements of solar cells, even after its immense contribution to keep the device active and stable. CE brings the oxidized carriers to ground state and catalyzes the regeneration of redox pair in the electrolyte [7]. Importantly, the conductivity of CE setting charge transfer kinetics at CE/electrolyte interface affects the fill factor (FF) and short circuit current. Most conventional Pt based CEs are incompatible (for polysulfide electrolyte) because of their strong chemisorption with S^{2-}/S_x^{2-} redox couple [6]. Research on other metal based CEs [8–12], carbon derivatives [13–16], polymers [17] and composite CEs [18–20] are in progress. In case of composite CEs, synergistic effect of combination of two or more materials are reported to give better overall performance. Copper sulfides have established themselves as good CE materials with relatively high catalytic activity and conductivity to polysulfide electrolytes [21]. Layered molybdenum compounds with good electrocatalytic activity can be promising

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Azobenzene-based polycatenars: Investigation on photo switching properties and optical storage devices

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ABSTRACT

We report the photo switching behaviour of azobenzene-based rod-like polycatenar molecules having three hexyloxy chains at one terminus and a variable chain at the other terminus. The latter was varied with $-OC_6H_{13}$, $-SC_6H_{13}$, $-C_7H_{13}$, $-OC_{10}H_{21}$ and $-O(CH_2)_4C_6F_{13}$ chains. All molecules are liquid crystalline exhibiting wide ranges of nematic phases with cybotactic clusters in addition to Smectic C phase. The effect of variation of terminal chains on the photo-switching properties of the above series of azo compounds upon light irradiation and their kinetic reactions are presented. Surprisingly, *trans-cis* conversion in solutions takes around 85 s, while relaxing back i.e. *cis-trans* conversion takes ~30–60 min depending on the type of the terminal chain. On the other hand, irrespective of the nature of the terminal chain all of them exhibit fast thermal back relaxation time. A possible reason for the observed phenomena is presented based on a caterpillar model. Moreover, the potential of one selected example in optical storage device is elucidated. Therefore, this work shows the structure-property relationship in such type of polycatenar molecules related to their photo switching properties.

1. Introduction

The contemporary science is relishing a fascinating contribution from researchers in the field of photo-switchable and photo-controllable functional materials [1]. Liquid crystals (LC) represent a category of functional materials that combine between molecular order and mobility with the possibility of their applications in display and information technologies [2–5]. The ordering or disordering of molecules brought out by the action of light is an important feature in optical storage devices [6,7], in which photosensitive organic molecules are embedded in a solid matrix and their orientations are strongly controlled by light irradiation [8]. Several research accomplishments on bent-core [9–12] star-shaped [13], polycatenars [14–17], hydrogen-bonded [18], halogen-bonded [19–21], thiadiazole derivatives [22], polymeric LCs [23], hydrophilic and hydrophobic azobenzene-based derivatives [24], and many more have been achieved [4,11,16,25–28]. The molecular architecture and orientation behaviour of azobenzene-based materials are crucial factors for controlling their photo-switching properties. Although different classes of LCs were reported, polycatenars attracted a lot of attention due to its unique chemical structure [8,15–17,29].

Polycatenar LCs refer to mesogens having an elongated aromatic core terminated with multi chains which might be grafted equally or non-equally at both terminals of the aromatic core [15,17,30]. The molecular architectures of polycatenars shared between rod and disc-like mesogens provide rich polymesomorphism presenting cubic, lamellar, nematic and columnar LCs phases [15,16,27,28,31–34]. It is interesting to study the conformational changes when light sensitive azobenzene moieties were incorporated inside polycatenar LCs. Upon UV illumination of wavelength 365 nm, energetically stable *trans* configuration (π-π^*) turns to metastable *cis* configuration (n-π^*). The reverse process where metastable *cis* is converted to *trans* can be brought either by shining white light of wavelength ~450 nm or by keeping the sample in the dark for a certain period. The later process is known as thermal back relaxation [35]. Higher the thermal back relaxation time, better is the optical storage device. Strong photoisomerization was reported for bent-shaped photo-switchable moieties having azobenzene side arms and exhibiting $SmA_{intercal}$ mesophases, where *trans-cis* transformation takes place in 50 sec and the thermal back relaxation takes around 31 h [6]. Longer thermal back relaxation was recorded for azobenzene-based fluorinated esters exhibiting nematic (N) and smectic phases [36,37].

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Structural and functional elucidation of novel FAB inhibitors: A NMR, Molecular Dynamics, MM/PBSA and Biological Activity Study

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Abstract

Beta-ketoacyl-acyl carrier protein synthase III (or FABh)is one of the key enzymes for bacterial fatty acid biosynthesis. FABh was extensively studied in *E.coli* by various research groups earlier as a therapeutic target for drug resistant strains. Thus, it became a key target for structure-based drug design to develop novel antibacterial. In our previous study, we screened nearly more than 10 synthesized compounds to test its binding affinity by molecular docking. In the present study, we used top two compounds, A7 and A9, from our previous molecular docking study were subjected to understand their structural and functional features with respect to their binding mode to theFABh enzyme by employing a combination of NMR, molecular dynamics simulations, free energy calculations using the MM/PBSA approach and biological assay activity. Results from MD simulations were extracted to predict the strength of interactions of protein-ligand systems by binding free energy (ΔG_{bind}) calculation obtained from MM/PBSA. The (ΔG_{bind}) was then correlated with experimental IC_{50} values to gain insights into inhibitory activities of two compounds. This study provides structure –function relationship of two novel inhibitors, A7 and A9, with FABh protein.

Keywords: FABh, molecular dynamics, MM/PBSA, NMR, IC_{50}, free binding energy.

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Heterostructure Fe_2O_3–In_2O_3 Nanoparticles as Hydrogen Gas Sensor

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Abstract

Fe_2O_3–In_2O_3 (9:1 mol.%) heterostructure nanoparticles were prepared by the thermal decomposition of stoichiometric amounts of $Fe_2C_2O_4$ $2H_2O$ and $In(OH)_3$ at 400°C for 20 h. The sample was characterized by x-ray diffraction (XRD), Fourier-transform infrared spectrometry, thermogravimetry–differential thermal analyzer, scanning electron microscopy/transmission electron microscopy, and a superconducting quantum interference device magnetometer. The XRD pattern could be indexed to both the rhombohedral α–Fe_2O_3 and cubic bixbyite In_2O_3 phases. This heterostructure system showed ferromagnetic properties (due to the presence of γ–Fe_2O_3 phase) from 5 to 300 K and a spin-glass-like behavior of magnetization versus temperature under zero-field-cooled and field-cooled

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AgCl-induced hot salt stress corrosion cracking in a titanium alloy

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ABSTRACT

The mechanism of AgCl-induced stress corrosion cracking of Ti-6246 was examined at 500 MPa and 380 °C for 24 h exposures. SEM and STEM-EDX examination of a FIB-sectioned blister and crack showed that metallic Ag was formed and migrated along the crack. TEM analysis also revealed the presence of SnO_2 and Al_2O_3 corrosion products mixed into TiO_2. The fracture surface has a transgranular nature with a brittle appearance in the primary α phase. Long, straight and non-intersecting dislocations were observed in a brittle appearance fractured primary α grain, with basal and pyramidal traces. This is consistent with a dislocation emission view of the cracking mechanism.

1. Introduction

Titanium alloys generally exhibit good corrosion resistance owing to the formation of a well-adhered and protective nanometric TiO_2 layer [1]. Combined with the benefits of low density and good intermediate-temperature mechanical properties, Ti-based alloys are found to be outstanding structural materials for weight-critical fatigue limited aerospace applications at elevated temperatures (300-600 °C) [2]. Approximately one third of the structural weight of modern turbofan engines are composed of titanium components, mostly in the fan and compressor sections, as both blades and discs [3]. Ti-6Al-2Sn-4Zr-6Mo (wt.%, Ti-6246), is a relatively heavily β-stabilised $\alpha+\beta$ alloy used in high temperature compressor discs/rotors due to its good elevated temperature strength [2].

However, since the 1960s there has been a recurring concern around hot salt stress corrosion cracking (HSSCC) susceptibility in Ti alloys when exposed to halides, particularly chlorides [4–8]. Bauer first reported the failure of a Ti-6Al-4V turbine blade due to HSSCC attack by NaCl residues from fingerprints during laboratory creep testing at 220 °C [9]. Subsequent investigations found that other chloride-containing metal salts, such as $MgCl_2$, $CaCl_2$ and KCl, found in seawater could cause a similar effect [4,5]. Molten salts can also cause liquid metal embrittlement (LME) and have more deleterious effects on mechanical properties [10]. In addition, the susceptibility to HSSCC in titanium alloys can be influenced by test conditions, alloy composition and alloy heat treatment condition [6,7]. The threshold stress intensity for SCC, K_{ISCC}, is well below both the conventional fatigue cracking threshold stress intensity and fracture toughness. K_{ISCC} is dramatically reduced by increasing the exposure time and temperature according to a Larson-Miller type relationship [5].

A number of reaction models or mechanisms have been proposed and it is widely agreed that the presence of moisture and/or oxygen is critical for cracking [4,9,11]. Initially the protective oxide layer can be ruptured mechanically or consumed through its reactions with salts in the presence of moisture and/or oxygen, subsequently forming HCl or Cl_2. Then the underlying alloy can be attacked by HCl or Cl_2, generating titanium chlorides and atomic hydrogen at elevated temperatures, >300 °C. Other alloy chlorides have also been observed, such as Al, Sn and Zr. Pyrohydrolysis reactions of such chlorides can provide further HCl which can then continue to attack the base alloy. Titanium hydrides have been observed by X-ray diffraction (XRD) and transmission electron microscopy (TEM) [12]. Consequently, hydrogen embrittlement is generally considered to be the mechanism by which corrosion results in cracking, with crack/pit initiation being assisted by localised anodic dissolution. Often, hydrides are not directly observed, but dissolved solute hydrogen is presumed to be present as a result of formation of corrosion products, such as various alloy chlorides. Hydrogen enhanced localised plasticity (HELP), the proposal that elevated solute hydrogen

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Mechanical Properties of Friction Stir Welded Metal Matrix Composite- AA6061-B4C influenced by Tool Pin Geometry

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Abstract

The present work is focused on evaluating the mechanical properties of casted Aluminum Metal Matrix Composite [AA6061-B4C] and Friction stir welded Aluminum Metal Matrix Composite using different tool pin geometry and their extent of use in nuclear, aerospace, land transport, railway and marine industries applications. AMMCs' were made by stir casting process with varying weight percentage of B4C. AA6061-B4C composite friction stir welded joints were made by optimized rotational speed, transverse speed and tilt angle, with taper and square pin tool geometry profile. The welding process parameters and tool profile geometry plays larger role in deciding the weld quality. While making FSW AMMCs, the welded plates were maintained at constant thickness of 3mm. From the result obtained, it is observed that better mechanical properties were obtained at optimized tool rotating speed of 1400 rpm and transverse speed of 40mm/sec with tilt angle of zero deg. The Square pin tool geometry profile showed greater refinement of microstructure in AMMC. Higher tensile strength and hardness were obtained for 9% B4C reinforcement of casted AMMC.

Keywords: Friction Stir welding (FSW), AA6061-B4C MMC, Taper pin tool geometry, Grain refinement.

1 Introduction

Aluminum compositesreinforced with B4Care used in nuclear power plants because of their higher chemical and thermal resistant properties. Currently nuclear power plants uses aluminum based boron and metallic composites as a neutral absorber material [1] AMC's haveconsiderable mechanical and physical properties which includes thespecific strength, low thermal expansion co-efficient and good wear resistance.

Infusion welding, joining of composites brings certain drawbacks on mechanical properties. SoAMC'smay face many problems like high thermal expansion and conductivity, deleterious reaction with reinforcement and solidification shrinkages etc. [2]. Hence to overcome disadvantages of fusion welding, FSW is preferred method for joining AMC's to produce better weld quality product.

The main advantage of FSW is to fabricate the low cost and higher efficiency joints [3], and primarily it was used for aluminum alloys because metals were joined beneath the solidus temperature. Hence FSW was derived and has established many

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Impact of heat treatment on the mechanical performance of hot extruded Al6061-BN reinforced metal matrix composites

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Abstract. Boron nitride (BN) reinforced Al6061 aluminum-based composites are synthesized by conventional stir casting method followed by exposure to hot extrusion. The optical images confirmed the distribution of BN nanoparticles in the aluminum alloy matrix. The concentration of BN is varied from (0.5, 1.5, 3, 4.5, 6, 7.5, and 9 wt%) in the composites and its effect on the tensile strength was investigated. The results revealed that both extruded and heat-treated composites specimens showed enhanced toughness an tensile strength by increasing BN nanoparticle concentration. The heat-treated composite samples showed lower flexibility of up to 40%, and further, it exhibited 37% greater hardness and 32% enhancement in tensile strength over the extruded sample. The tensile properties of Al6061-BN composites were evaluated by temperature-dependent internal friction (TDIF) analysis and the results showed that the as-prepared composite's strength increased with temperature..

Key words: Al6061; metal matrix composites; boron nitride; heat treatment; hot extrusion.

1. Introduction

In the present-day significance, composite materials play a very vital role, and their constant exploration and improvement made them attractive in different applications such as automobile, aerospace, biomaterials, defense, and sports. It is expected that the application of composite materials will cover many emerging research fields in the future and dominate many applications for a longer period [1–3]. Over the last 30 years metal matrix composites (MMC's), with aluminum as the base metal, have emerged as an important class of materials for aircraft, aerospace, automobiles and various other fields [4, 5]. In addition, BN which is used as target reinforcement material has gained enormous attention because of its properties like excellent thermal conductivity, higher melting point, and good electrical resistivity [6, 7]. So, coupling MMC's with BN often presents remarkable improvement in MMC's strength, stiffness, conductivity, etc. Hence, various researchers have tried out many synthesis approaches such as semi-solid powder metallurgy, mechanical alloying technique, squeezed casting, stir casting to fabricate aluminum-based ceramic BN reinforced metal matrix composites.

Recently, BN reinforced composite specimens have shown exceptional ability to enhance the mechanical strength of materials. For instance, Chunguang *et al*. synthesized Al6061-BN composite by adopting the liquid-solid powder metallurgy technique and reported that mechanical properties of as-prepared composite material could be enhanced by reducing their particulate size [8]. Chawla *et al*. developed particulate reinforced composites by mechanical alloying technique and demonstrated that the hardness of developed compounds is significantly affected by milling time during the alloying process [9]. Lotfy *et al*. adopted the squeeze casting method to fabricate aluminum-based composites and had demonstrated that the composites developed by squeeze casting exhibit uniformity in reinforcement distribution in the matrix alloy [10]. Besides, the composites prepared by stir casting technique consume less time and are more economical for mass production [11]. By refining their microstructure, the mechanical properties could be enhanced and thus it could be used in automobile and space applications [12, 13]. Aluminum alloy reinforced with TiB_2 particles shows drastic enhancement in toughness and flexible strength in comparison with aluminum alloy [14]. The rate of wear is inversely proportional to reinforcement concentration and hot extrusion of metal matrix composites thus, increase the composite's mechanical properties [15, 16]. The work of Berndt *et al*. showed that extrusion and heat treatment of aluminum alloys leads to enhancement in mechanical properties [17]. Firestein *et al*. have witnessed the strength and ductility in aluminum alloy compos-

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Effect of P and Sr Additions on Cutting Force in Turning of Hypereutectic Al-20%Si Cast Alloys

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Abstract

The machinability and microstructure of hypereutectic Al-20Si cast alloy were studied after combined addition of refiner and modifier with uncoated, PVD, and CVD inserts. Results indicate that combined grain refined and modified hypereutectic Al-20Si cast alloys have uniform microstructure distribution of α-Si grains, eutectic Al-Si, and AlP fine particles. The modified alloy exhibited better machinability and surface characteristics compared to unmodified alloy. Performance of the turning inserts; Uncoated, PVD, and CVD were evaluated in the machining of hypereutectic Al-20Si and Al-20Si-1P cast alloy under a dry environment using a conventional lathe. The CVD insert outperformed the uncoated and PVD cutting inserts which suffered from BUE leading to higher forces and poor surface finish.

The objective of the paper is to study the combined effect of refiner and modifier and its effects on machinability characteristics with different inserts (Uncoated, PVD and CVD).

Keywords: Hypereutectic Al-Si alloys, Machinability, Uncoated, CVD, and PVD.

Introduction

The application of hypereutectic Al-Si alloys in the automotive sector increased over the past few decades, the major driving forces for the hypereutectic Al-Si alloys are high wear resistance, high strength-to-weight ratio, low thermal expansion, and good castability[1-4]. These alloys naturally contain hard primary silicon particles, which is non-metal implanted in the eutectic mixture. This possesses some attractive properties of the alloy and also one of the promising elements for repacing steels. These properties make them more suitable for the automobile and aerospace industries. Especially in the production engine blocks, pistons, cylinder.

However, the serious issue with this hypereutectic alloy is machinability, due to presence of primary hard coarse silicon particles[5]. The morphology of primary Si in hypereutectic is mainly dependent on the rate of solidification[6,7]. This mainly suffers from macrosegregation, particularly under a slow cooling rate as a result, coarse primary silicon particles will appear in the alloy. This problem can be overcome by proper melt treatment or by adding growth hindering agents to the alloy. Many researchers have been reported to describe the use of refiner and modifiers in refining the primary silicon in hypereutectic Al-Si alloy [7-11].

The main objective of the research is to investigate the effect of refinement of primary silicon particles and their effects on machinability characteristics with different inserts.

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Research Article

Design and Development of Bionic Eye for Visually Challenged People using Raspberry Pi Processor

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Abstract: Bionic Eye will play a major role in the future development of visually challenged people. This research focuses on design and development of Bionic Eye to detect the hurdles for visually challenged people. This intelligence system uses the shape and movement of an object for detection and tracking. The object recognition rate is improved with the help of Stochastic Decent Gradient algorithm. Raspberry Pi is the processor used for the Bionic Eye as it gives out command on the object detection and the data from the camera is collected and then transmitted to the system. The distance and object movement is obtained by ultrasonic sensor. The range of the ultrasonic sensor is set and the distance is measured. A camera is used for capturing the object. A voice output saying "there is an object in front of you" is heard after an object is detected. The accuracy of the object detection is obtained by the deep learning algorithm. Increasing the recognition rate is the main advantage over object detection systems.

Keywords: Raspberry Pi, Bionic Eye, Stochastic Decent Gradient Algorithm, Camera, Ultrasonic sensor.

1. Introduction

Visually challenged people in the world are around 290 million, where 40 million people have no vision; 250 million people have less vision. Most of them are above 50 years. The Bionic Eye - a visual aid for the impaired people is an object detection device. This model uses deep learning algorithm in order to detect objects at high data accuracy rate. It also uses an ultrasonic sensor for measuring the distance and a voice note is received from the audio jack. This paper gives an overview of object detection technique to channelize the objects through open computer vision and deep learning.

Object detection is a computer technology for computer vision and image processing that deals with the detection, in digital images and videos, of instances of semantic objects of a certain class (such as people, houses, or cars). In many fields of computer vision, object recognition has applications, including image processing and video surveillance. Algorithms for object detection usually use machine learning or deep learning to generate useful results. The design network architecture is needed to learn the features for the objects of interest in order to train a custom object detector from scratch. Using deep learning leverage transfer learning, many object detection workflows use an approach that allows you to start with a pre-trained network and then fine-tune it for the specific application.

This proposed work is an attempt to design an object detection module for visually impaired people which is the Bionic Eye - a visual aid system. It uses deep learning algorithms for auto detection of objects. This deals with the design and development of a system for the aid of visually challenged to roam outside world. The prototype is a model based on object detection. It can be used as a wearable like belt, glass, hat etc. This prototype uses Raspberry Pi as the processor with a memory of 16GB. An ultrasonic sensor is interfaced with the processor to detect the distance of the obstacle.

2. Review of Object Detection

Andreas H. Pech et al[1] outlines a new approach to Ultrasonic Signal Analysis for pedestrian detection in vehicles where the ultrasonic sensor tests signals dispersed back from the obstacle by task-specific methods of signal analysis. Charmi T. Patel et al[2] developed multi sensor-based object detection in an indoor environment for visually impaired people. The device consists of a multi sensor-based system for object detection using statistical parameters on a captured image, which is further validated using the algorithm of the support vector

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Medical Image Security Using a Visual Cryptography Technique along with Blockchain 268

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Abstract:

As the fastest mode of communication in today's world is the World Wide Web i.e. the Internet. Securing data transmitted through the internet is essential. The data can be shared in the form of either image, audio or video, and so on. In the literature review, there are many techniques proposed to provide Data Confidentiality (secrecy of data). One among them is Visual Cryptography. For Medical Image security, a Visual Cryptography Technique along with blockchain (BVCT) is proposed in this paper. Secret information can be shared in the form of images, text, etc., using this technique. In this paper, by using the proposed technique at the sender side the medical image is encrypted first and then embed the image with blockchain. Blockchain is an immutable record book, and it is shared that helps the process of transactions which are already recorded, and it is useful for tracking assets in a business environment. Followed by decryption reconstruction of the secret image is done using three meaningful shares at the receiver side. In the secret image blockchain is used by meaningful shares for each pixel. In this paper for encryption, no pixel expansion approach is implanted. Less complex and Lossless embedding and encryption approaches are used.

Keywords: Blockchain, Cryptography, Encryption, Decryption.

I. INTRODUCTION

On the internet there is an increase in data exchange is taking place daily and the data transmitted through the medium are in the form of either image, animation, audio, text or video. Data transmission can be done with the help of visual cryptography technique through the

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An intellectual procurement innovation of smart grid power system with wireless communication networks based on machine learning 269

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(Communicated by Madjid Eshaghi Gordji)

Abstract

The phased array antenna is one of the most significant applications in fifth-generation mobile networks. It is one of the most important applications in fifth-generation networks. An electric power source that powers the whole application, including the antenna's root, is required. Even with the most outstanding design, if the programme does not have a sound power supply system with minimal packet loss and cant Path find performance, it will be rendered ineffective. When seen from the perspective of the multiplex information, Machine Learning comprises a communication network based on the Internet that transmits information to the control centre via the objects (IOT). To put it another way, the proposed communication infrastructure, via the provision of, and the chance micro-grid state to collect, analyze, and two-way communication link control information, offers the chance to resolve the voltage regulation issues. This cutting-edge communication infrastructure, as well as a suggested state estimation filter focused on improving speed and performance in renewable energy production, are both examples of creative communication infrastructure. Current research is focused on analyzing and enumerating a range of energy abundances in the context of smart grids, which are now in their fifth generation. Rather than concentrating on the future development plan, which should be a problem of illusion, it should concentrate on the composition of the future potential of smart grid communications framework. An in-depth investigation to give evidence to the Machine learning will help intelligent networks in the future conduct a thorough evaluation.

Keywords: Internet of things (IoT), Machine learning, communication infrastructure provides, Smart grid power supply system

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Energy Efficient Witness Based Clone and Jamming Attack Detection in WSN

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Abstract

The nature of broad cast medium of transmission causes wireless vulnerability to sensor networks in terms of security attacks. The nodes are not physically protected due to their positioning in a dangerous or hostile environment, the wireless sensor networks are further vulnerable. Major issue is the attack detection in Wireless Sensor Network (WSN). To address the challenge, Witness Based Clone and Jamming Attack Detection of WSN is proposed. The neighbors of a node send a message including a claim node to begin a walk randomly in the network, and these passed nodes are chosen as nodes witness that store the claim. If any witness node receives different locations with a similar ID, then claims node will be used for revoking the replica attack nodes. The table consist of two columns, namely node id and claim digest that is a truncated authenticated message code, which depends on random value. On receiving the location claim, the node matches the entries with similar node ID for any claim in its table. The jamming attack can be detected by analyzing the features of cross-layer, such as

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Research Article

A Novel, Efficient, and Secure Anomaly Detection Technique Using DWU-ODBN for IoT-Enabled Multimedia Communication Systems

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The Internet of Things (IoT) is enhancing our lives in a variety of structures, which consists of smarter cities, agribusiness, and e-healthcare, among others. Even though the Internet of Things has many features with the consumer Internet of Things, the open nature of smart devices and their worldwide connection make IoT networks vulnerable to a variety of assaults. Several approaches focused on attack detection in Internet of Things devices, which has the longest calculation times and the lowest accuracy issues. It is proposed in this paper that an attack detection framework for Internet of Things devices, based on the DWU-ODBN method, be developed to alleviate the existing problems. At the end of the process, the proposed method is used to identify the source of the assault. It comprises steps such as preprocessing, feature extraction, feature selection, and classification to identify the source of the attack. A random oversampler is used to preprocess the input data by dealing with NaN values, categorical features, missing values, and unbalanced datasets before being used to deal with the imbalanced dataset. When the data has been preprocessed, it is then sent to the MAD Median-KS test method, which is used to extract features from the dataset. To categorize the data into attack and nonattack categories, the features are classified using the dual weight updation-based optimal deep belief network (DWU-ODBN) classification technique, which is explained in more detail below. According to the results of the experimental assessment, the proposed approach outperforms existing methods in terms of detecting intrusions and assaults. The proposed work achieves 77 seconds to achieve the attack detection with an accuracy rate of 98.1%.

1. Introduction

Considering the rapid development of IoT (Internet of Things) [1] technology, researchers and developers are urged to look at new smart services that can extract vital information from IoT data [2]. When physical objects such as mobile devices, home appliances, vehicles, and buildings are implanted with electronics, software, sensors, and network connectivity, the Internet of Things (IoT) came into effect. The Internet of Things (IoT) enables these objects to collect and exchange data with one another. By using the existing network infrastructure, the Internet of Things

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An Intellectual Monitoring Of Power Sector By Machine Learning Applications

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Abstract

Power sector growth has been primarily focused on increasing the scale at which electricity is generated and transmitted throughout the course of the past century, which has been the case for the bulk of the twentieth century. As a result of the applications have been introduced. These include WAMSin the middle of other applications. This has presented unmatched tests to power grids that have been functioning reliably for periods. In order to meet these difficulties, the power sector must develop and deploy sophisticated automated management and control methods as soon as possible. With the context of the power sector in mind, this study investigates and forecasts the application of leading-edge machine learning technologies in power grids, as well as putting forth some novel concepts that are not previously considered. Some novel machine learning applications for the power sector have been studied and suggested, and some have already been implemented. Additionally, the benefits and drawbacks of each are addressed in detail.

Keywords: *Root mean squared error; stacked auto encoder; Long short-term memory; Machine learning*

1.Introduction

In recent times Machine learning field of study in electrical engineering, having begun relatively new field of study in electrical engineering. As a result of the modernisation of electricity systems, these two seemingly inconsequential topics are beginning to converge. For many years until the 1990s, the conventional power system was built on a top-down structure that began with generating units, progressed via transmission and distribution networks, and finally terminated at consumers. In the context of framework, the power system has continued to develop perspectives of the elements listed below [1]: (1). Remarkable advancements are being made in both the capacity of electricity production and the transmission of electricity across vast distances. The amount of energy produced in the United States has increased [2]. The development has also resulted in a rise in the distance of electricity transmission, which has gone from a few [3]. That were formerly separate have been linked together in order to guarantee reliable electricity supply and improve the distribution of generating

SECURITY ISSUES ON INTERNET OF THINGS: GENERAL SURVEY

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ABSTRACT

Internet of Things is integrated with variety of technologies. Internet-of-Things (IoT) is used for connecting different application and technologies to a single network. IoT platform as a software for connecting the machines and devices for processing, transforming, organizing and storing machine and sensor data. The new rule for IOT is Anything that can be connected, will be connected. While security considerations are not new in the context of information technology, the attributes of many IoT implementations present new and unique security challenges. Challenges to ensure security in IoT product and services must be a rudimentary priority. Users require to faith, that IoT devices and related data services are secure from vulnerabilities. The objective of the research behind this paper is how to develop more secure and attack proof IoT devices and describes the solutions to overcome the challenges of IoT related hardware, design and data security issues.

Keywords: security issues in IoT , IoT security risk for hardware, device and data ,IoT security challenges, end-end security solutions

1. INTRODUCTION

The Internet of Things are the growing network of connected objects for collecting and exchanging data using embedded sensors. The IoT also opens up to all companies over the world for large security threats. IoT first task is to recognize basic components of each application. Next, all these components are broken down in to smaller elements. IoT architecture organize, those elements in to more general framework. [1] The IoT reference model are never ending reference for IoT applications. IoT arm are the sort of compendium for the common language for the internet of things. Security must be the foundational enabler for IoT. The main problem IoT is facing in scenarios of security, as there are enough potential hackers who are always eager to attack. Other problem includes the standardization problem, addressing problem, scalability problem, etc.

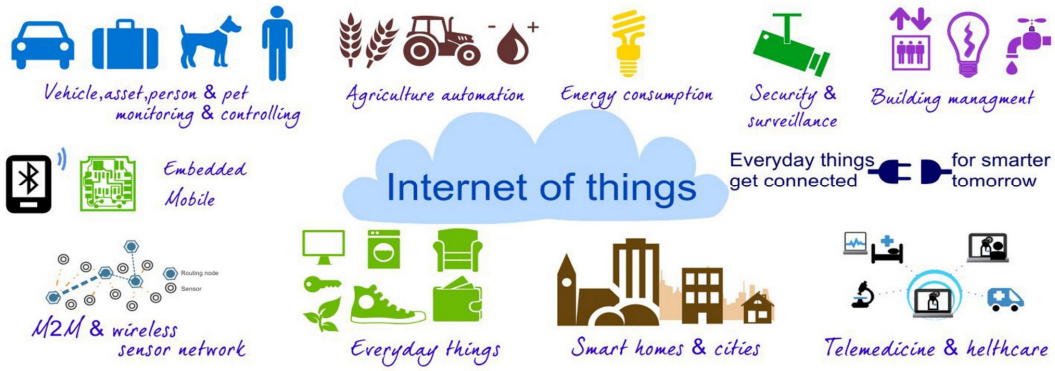

Figure 1: Architecture of IoT

INDIAN JOURNAL OF SCIENCE AND TECHNOLOGY

RESEARCH ARTICLE

CNN approach for medical image authentication

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Abstract

Objectives: To propose a Non-blind watermarking based on a Convolutional Neural Network (CNN). **Methodology:** An iterative learning model is proposed to ensure robustness and imperceptibility of watermarking process. In the first step, Stationary Wavelet Transformation (SWT) and Singular Value Decomposition (SVD) are used for the initial transformation and for embedding. The neural network is used to determine the relationship between host and watermarked image to extract the watermark. **Findings:** We have implemented our algorithm using Magnetic Resonant Imaging (MRI) and Computerized Tomography (CT), Mammogram and Retinal Images with different attacks and proved to have good robustness with Normalized Correlation coefficient (NC) value of 0.99 and invisibility feature with Peak Signal to Noise Ratio (PSNR) of 43.77 DB. We have compared our method with that of others and it proves to be good in terms of PSNR and NC values. **Novelty/Application:** This study provides a novel method to train CNN with both watermarked , attacked images and to classify them.

Keywords: Medical image authentication; stationary wavelet transform; convolutional neural networks; singular value decomposition

1 Introduction

Digitization of smart healthcare has led to the development and growth of communication and multimedia information systems. Nowadays, we find an essential requirement in telehealth applications, such as telediagnosis, teleconsulting, and telesurgery, which are being utilized for providing effective health care facilities. This comprises the exchange of important health data among physicians, hospital personnel, and patients, which need to be secured against any form of malicious and unintentional attacks. Digital watermarks have been majorly used for ownership protection to multimedia data. Machine learning is a part of artificial intelligence (AI) that enables the systems to automatically learn and improve from the experience. Machine learning emphasizes on the development of programs that can access the data and use it learn from them.

Artificial Intelligence (AI) is the best tool to assist doctors to diagnose, analyze with a prediction of the disease, so that faster actions can be taken. These techniques facilitate doctors and researchers to understand and analyze the diseases. Bilal et.al [(1)]

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An Efficient Routing Algorithm for Optimizing Energy Conservation and Improved Scalability in WSN

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ABSTRACT

Wireless Sensor Network (WSN) is a familiar technique to develop various real-world applications through sensor nodes on wireless networks. Energy efficiency and scalability are the important challenges in WSN, along withsome other parameters such as reliability, availability, and security. The nodes' path and communication network have been decided based on routing techniques among the network nodes. Classical routing algorithms have improved the efficiency and accuracy of WSN nodes, but it works only in the limited range. The number of nodes is increased in WSN, and security of data transmitted has a lot of limitations in routing. This problem has been considered for a long time, but the level of improvement is only within a short range, not for larger networks and high-volume nodes. This problem has been overcome by an efficient routing algorithm SEERA (Scalable Energy Efficient Routing Algorithm). Familiar routing protocol techniques such as LEACH (Low Energy Adaptive Clustering Hierarchy), Multi-LEACH, CELL-LEACH when compared with this algorithm shows that SEERA provides better security, energy efficiency and scalability. Also, the proposed algorithm uses hybrid MAC protocols along with the clusters communicated in Intra mode on the network. This research paper summarizes the results of SEERA withmore scalable nodes on WSN and also improved their energy efficiency among all nodes.

Keywords: Cluster hierarchy,LEACH,MAC protocol, Scalabilityand Routing algorithms

Introduction

WSN is made of combined,adaptive, low-power, multi-operational sensor nodes, which are collected and connected in a centralized place called a Base Station (BS). All the nodes are connected with the same operational entity known as size, functionality and the frequency range of sensors and are grouped to form clusters. A Cluster Head (CH) is assigned for all nodes in the network to control and monitor the sensors which are connected wirelessly. The nodes are connected to the CH and are then controlled continuously on the network clusters through CH. Routing is the technique used in WSN to maintain the distance between nodes and their cost-effectiveness through hops. To improve the scalability in WSN,a huge number of clusters are connected and their energy should be high at all times for efficient data transmission. When sensor nodes are connected continuously, routing them in a network is challenging for all researchers working on WSN. If nodes are connected in multi-hops, then the routing of sensor nodes gets confusingas the number of devices increases on the network path. To overcome this problem, several routing protocols are used to improve the routing in terms of distances. Most of the routing protocols have improved the energy efficiency of the sensor nodes in WSN but their scalability and security are still not consideredin the larger networks even though clusters are working perfectly. A major problem identified in WSN is scalability and energy efficiency over the networks. This routing algorithm improvesscalability on a huge number of nodes in a

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Research Article

DESIGN AND DEVELOPMEENT OF AUTOMATIC ROBOTIC SYSTEM FOR VERTICAL HYDROPONIC FARMING USING IOT AND BIG DATA ANALYSIS

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ABSTRACT

In this digital world, all the developing countries' growth has improved elastically with the impact of farmers and their innovative farming processes. Generally, the farming process can be developed with ancient traditional methodologies for maintaining the quality of the crops and their yields. Their farming was developed and has given more profit only with the quality of the soil and the nutrition's used on land. But the drawback is they were spending much time to get their yields from their land and the nutrition level was not maintained at all times. Moreover, more space was used for farming with huge manpower is required for maintaining the entire land. Most of the countries are moved to smart farming concepts with IoT platforms for optimizing the time and techniques. In that hydroponic the best innovative idea to produce more crops, vegetables, and fruits without soil. Rockwool is used for farming processes with water contaminants at regular intervals will provide huge productions as well as no need to wait for a long time for cultivation. This method was implemented in most of the countries that were doing smart farming with less manpower and low cost. The hydroponic farming methodology is implemented with IoT sensors for monitoring crop's status and health continuously. Once their nutrition level or water level has decreased it will provide all at constant time intervals to the entire system effectively. A few years ago hydroponic farming was horizontally implemented on smaller spaces for the regular water flow. But now a day it is implemented on a vertical surface to reduce the space and water flow is only at the time of need. This technology is used to increase the productivity of the crops with a small space of land and less manpower. Perhaps the cost of the entire system has been taken into the consideration by small-scale unit farmers vertical hydro farming provides better results when compared with previous classical methods. This research paper has given the design and implementation of automated vertical hydro farming techniques with IoT platform and their analytics will be done using big data analytics.

Keywords: Hydroponics, Nutrient Solution, Rockwool, Submarine Motor, Plant growth light

1. INTRODUCTION

India is a majorly Agri based economy with 70% of farmers in rural house depend primarily on agriculture with 82% of farmers being poor due to which India is witnessing stark challenges and losing its importance due to urbanization [1]. This research work is transforming the farmer's life using IoT-based Hydroponic vertical Farm by eradicating the above-said problems. Hydroponic farming proposes suitable weather-based recommendations for farmers to improve their crop yields [2]. Vertical Hydroponic farming remembers preferences, reproductive history, and relevant data about farmers and facilitates better access and efficient use of reproductive crops without soil to achieve optimal soilless crops and plants [3]. Hydroponics System has been developed to facilitate cultivation in small-scale environments, and improve farming quality using soil less methods. [4]. In this novel world, hydroponic farming is formerly entrenched horizontally which takes more space and human power for managing the whole farm [5]. The following figure 1 denotes the existing hydroponic cultivation model.

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Detection of Exoplanets using Machine Learning

Snigdha Kesh, Karthik, MS. Karthik, Kiran Kurian Kanjirakattu and M. Arjun Mano

***Abstract*—**This paper proposes a System for detecting the exoplanets using a "Convolutional Neural Network" (CNN). It's the type of Neural Network that's used for processing grid like topologies like an image. The required data for this project comes from the NASA's Exoplanet Archive. With over 2,000,000 stars across the universe that are to be analysed, we in this paper put forward an efficient algorithm to analyse all the data with the help of a Convolutional Neural Network. And the main objective of the project is to explore the possibilities and to increase the accuracy of such an algorithm in the field of Exoplanet Detection and Space Research. We make use of Keras which is a high-level neural network framework built upon the Tensor Flow library.

***Keywords*—**CNN (Convolutional Neural Network), Exoplanets, NASA, Transit

I. Introduction

"ARE We alone in the universe?" - it's still one of the questions to which we have no answer. The answer is a "YES or NO", either of which is fascinating. Finding habitable-exoplanets is an important part in the process of space research. It also helps us to understand our Universe.

Exoplanets are the planets outside our solar system. They are detected by astronomers by observing the intensity of their parent stars. With the data from NASA's Telescopes, and using Artificial Intelligence (AI), searching for exoplanets becomes an easy task. The exoplanet detecting algorithm is going to predict exoplanets based on the data from NASA. Using this data, the system will predict and detect the possible exoplanet candidates.

In the last decade, over 1,000,000 stars were monitored to detect transiting planets. Manual interpretation of exoplanet candidates is a labour-intensive work and it is subject to human error, the results of this is difficult to handle. Here we implement a way of detecting exoplanet candidates in large planetary search projects. Neural networks, also called "deep learning" or "deep nets", are a state-of-the-art machine learning technique designed to offer a computer perception into a selected problem by training it to recognize patterns. Unlike past transit detection algorithms deep nets detects patterns in light curves rather than depending on hand-coded metrics that humans perceive as the most representative.

II. Literature Survey

A. Radial Velocity Method

RV method is the short form of Radial Velocity Method. It was the best technique that was used to detect exoplanets until Transit Method. In 1995 Michel Mayor and Didier Queloz found the first exoplanet using this RV method. 860+ Exoplanets were till date found using RV method.

Disadvantages:

- The Radial Velocity Method also has few drawbacks. Main drawback is that, it is not possible for us to observe thousands of stars at a time with just a single telescope.
- Addition to that, sometimes Doppler effects can produce false signals, mainly multi-star systems. This effect is due to the magnetic fields that are present in the system.
- False signals can also be obtained due to insufficient data, since the stars are not usually observed continuously.
- Anyway, these drawbacks can be overcome by combining radial velocity method with another method, the effective of which is Transit method.

B. Detection Using Classifiers

In this case, many machine learning classifiers and datasets are used to predict. A Random Forest Classifier was selected as the efficient model to classify the candidates in Kepler Object of Information data.

Disadvantages:

- The biggest factor in exoplanet's candidacy is the minimum flux according to feature importance tables.
- The best result got by defined model is approximately 86.8% for test accuracy.

C. Using simple Artificial Neural Network

Artificial Neural Network (ANN) is a machine learning model that is designed as neurons in a Brain. The information passing through this network changes the structure of the ANN as the network learns every time information is passed through it. ANN are deep learning models capable of complex

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Predicting Autism Spectrum disorder by Machine learning from Healthcare Communities

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ABSTRACT

Autism Spectrum Disorder is a syndromic disorder related to neurological elements resulting to the problems in communication, interacting socially, behavioral, and sensory. According to World Health Organization, the count of patients detected with Autism Spectrum Disorder is slowly increasing. Recent studies concentrate on data collection, Clinical analysis, and brain image laboratory analysis. They do not concentrate much on diagnosing Autism based on Artificial Intelligence and Machine learning.

Goal: This paper mainly intends to classify and categorize Autism data to give an understandable, rapid and simple means to help early intervention of Autism Spectrum Disorder.

***Methods*:** Three groups of Autism Spectrum Disorder datasets are taken for Child, adolescence, and adults. We applied k-Nearest Neighboring, Support vector Machine and Random Forest algorithm to classify the Autism Spectrum Disorder data. During our experimentations, the data was split at random into training sets and test sets. The sections of data were picked at random to assess the classification algorithms.

***Outcomes*:** The outcome and results were evaluated by average values. This is proven that Support Vector Machine and Random forest are efficient algorithms for Autism Spectrum Disorder classification. In specific, Random forest algorithm classified with 100% accuracy for all datasets.

***Conclusion*:** It is been observed that early intervention is possible absolutely. The accuracy of diagnosing Autism Spectrum Disorder will be higher if the data samples count is huge. The results show that Support Vector Machine and Random Forest algorithms gives good classification score compared to k-Nearest Neighboring algorithm w.r.t accuracy, F-measure, sensitivity, and Area Under Curve. We found that Random Forest algorithm is efficient and effective compared to Support Vector Machine and k-Nearest Neighbouring algorithm for data classification.

Keywords- Machine learning, Autism, supervised learning, Support Vector machine, k-nearest neighboring, Random Forest

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1. INTRODUCTION

According to World health organization (WHO) statistical data, 63 percent of children are detected with Autism. Autism spectrum disorder (ASD) appears in children, adolescences, and adults. ASD is a neurodevelopment disorder with high health care expenses. Individuals with ASD have a problem in communication, social interaction, behavioral issues. It is exceedingly difficult for them to think and imagine, interact with other children, communication issues with other people.

Early intervention will improve the standard of life of individuals with Autism and plays a vital role in clinical diagnosis. The process can take long time to diagnosis ASD with expensive testing methods. In recent times, ASD cases are increasing rapidly across the globe. It is the motivation for scientist or doctors to invent more efficient screening methods.

Massive amount of data can be stored with an advancement in innovative technology. Data mining which is associated to machine learning plays an important role to take decisions based on the data collected. Machine learning is acquiring much importance on medical and biomedical field. Machine learning methodologies are mainly applied to help data interpretation in clinical decision-making and diagnostics. Hence, techniques of screening disorders along with the help of Machine learning are widely analyzed.

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SOFTWARE DEVELOPMENT TESTING USING PRIORITIZATION

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Abstract
Software testing is a critical part of any software development, and is done to save resources while doing testing of any software. Software test cases prioritization is the process used for providing priority to the test cases which are built by dividing total code into various small parts. Selection of test cases is also a challenge in the testing and priority of testing for various test cases are also required. Software testing is based on priority of the test cases and also the comparison over priority of the test cases and without priority of the test cases. Graphical user interface testing process is also involved.
Keywords—Software Development Life Cycle, Software testing, Test case priority, Graphical Interface

1. INTRODUCTION

The Major Module of the Project includes the Priority of the test cases in this the user can only test those cases which the user feeling is might be important as compare to the rest of the test cases. So that he can skip the rest of the test case. As it provides an option to the user to test the test cases and the output of the cases according to the priority will be displayed. As it reduces the time and the cost. If we only click on priority button first and then graph it will display a message in new frame that click on without priority and priority button to see graph. Hence we have to click on the priority and then without priority button and the graph between without priority and priority will be shown in new frame.

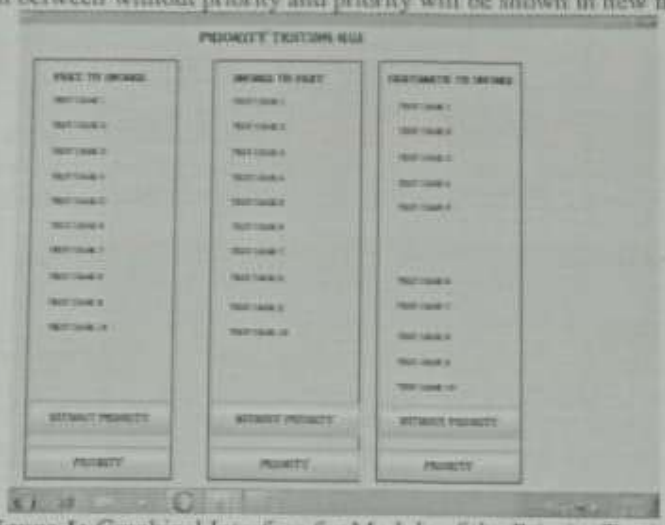

Figure 1: Graphical Interface for Module of the Priority Testing

2. AUTOMATED PRIORITY TESTING

We are developing automated testing for priority wise testing. Software testing approach is to save resources while doing testing in any software. Software test cases prioritization is the process used for providing priority to the test cases which are built by dividing total code into various small parts. Selection of test cases is also a challenge in the testing and priority of testing for various test cases are also required. So, if first click on priority and then graph. The message will be displayed

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Evaluation of Agent-Network Environment Mapping on Open-AI Gym for Q-Routing Algorithm

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***Abstract*—** [illegible]

***Keywords*—Reinforcement learning; environment; agent; network; Net-AI-Gym; Q-routing; rule-based routing**

I. Introduction

The collaboration of entities either in the form of computing devices or the people or be it any things through some specific form of connectivity and set of communication protocols forms a network [1]. Examples of networks may include computer networks [2], social networks [3], the network of things as the Internet of Things (IoT) [4]. The adoption of machine learning is a requirement to bring automation in the process of routing.

A. Machine Learning Models

The machine learning models learn to perform a specified task(T). The machine learning models (MLM) are broadly classified into three categories as i) Supervised learning Model (SLM), ii) Unsupervised Learning Model (USLM), and iii) Reinforcement Learning (RL) model, as shown in the Fig. 1. The selection of the MLM depends upon the type of task(T) to be performed by the machine. Whereas the learning experiences (LE) in different MLM comes from the different sources of the data. In the SML, the 'LE' comes from the input and output mapping of the data. The USML gains the 'LE' from the pattern of the data.

B. Reinforcement Learning

The RL Model is a goal-oriented ML approach, where the 'LE' for performing a 'T' comes by interacting with the uncertain and dynamic environment. The RL enables the computer to make a sequence of such decisions that ensure to maximize their cumulative rewards (CR) automatically even if the computer is not explicitly programmed to complete the 'T.' Fig. 2 illustrates the architectural diagram of the typical RL context.

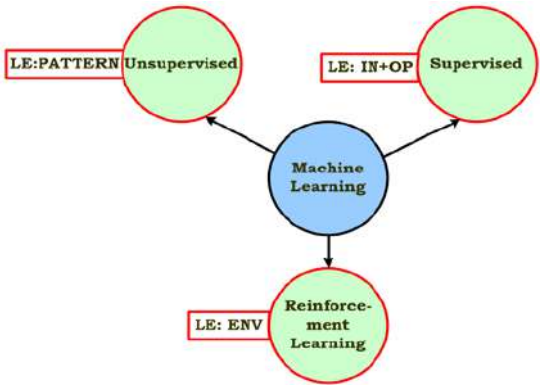

Fig. 1. Classification of Machine Learning Models

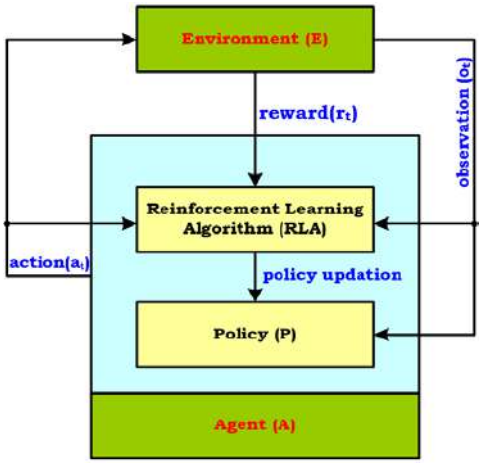

Fig. 2. Architectural Diagram of Typical RL Context.

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Sparse Distributed Memory Approach for Reinforcement Learning Driven Efficient Routing in Mobile Wireless Network System

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***Abstract*—In recent years, researchers have explored the applicability of Q-learning, a model-free reinforcement learning technology towards designing QoS-aware, resource-efficiency, and reliable routing techniquesin a dynamically changing network environment. However, Q-learning is based on tabular representation to characterize learned policies that frequently encounter a dimension disaster problem when introduced to the uncertain and dynamically changing network environment. In addition, the time required for agent learning in the training phase is too long, which makes it difficult for the agent to generalize the observation state efficiently. To this end, this paper attempts to overcome the overhead memory problems encountered in Q-learning-based routing techniques. In this paper, the study presents a novel memory-efficient intelligent routing mechanism based on adaptive Kanerva coding, which minimizes the storage cost required for storing large action and a state value. Unlike existing schemes, the proposed method optimizes memory requirements. Also, it enables better generalization by storing the learnable parameters of the function approximator present in the agent in a Kanerva-coding data structure. The Kanerva-coding is a sparse memory with distributed reading and writing mechanism which enables optimal compression and state abstractions for learning with fewer parameterized components making it highly memory efficient. The design and implementation of the proposed technique are done on the Anaconda tool. Simulation results demonstrate that the proposed technique can adaptively adjust the routing policy according to the varying network environment to meet the transmission requirements of different services with low memory requirements.**

***Keywords*—Mobile wireless network; reinforcement learning; Q-learning; Kanerva coding; routing; memory optimization**

I. Introduction

A. Background

A mobile wireless network can be regarded as a transient system that is inherently dynamic, decentralized, and formed via randomly deployed several wireless and mobile communicating sensor nodes to perform the distribution of the sensory information to the end node [1]. The ad-hoc feature in this transient system ensures fast and cost-effective network deployment. The sensory nodes operate as a router by receiving and forwarding the traffic of their nearby sensor nodes [2]. The salient features of mobile wireless networks are multi-hop communication, dynamic topology, bandwidth, and resources constraints. Interruption due to uncertain and dynamic topology changes affects the efficiency of the node resources. It also compromises the transmission of data packets from the source to the end node. In this regard, efficient routing in wireless networks has been extensively studied in the literature [3-5]. Therefore, various routing mechanisms have been introduced, mainly divided into reactive, proactive, and location-based routing protocols. The routing scheme of proactive type is a table-driven approach where information regarding the entire network topology is maintained at each sensor node. However, updating the table introduces a huge overhead problem due to the large control traffic in the dynamic network. In the reactive routing mechanism, the route discovery executes on on-demand [6]. However, it requires collecting adjacent information, which is a costly procedure, and, in many instances, it may not be able to determine the end-to-end path. In location-based routing, the selection of the next-hop nodes is carried based on the predefined parameters but not suitable to dynamic networks as it has restricted adaptability. Although the routing protocol of these types is advantageous in many specific situations, it has several limitations when introduced to the dynamic networking scenario [7-8].

Recently, machine learning (ML) has been widely employed to solve network problems. Incorporating the potential of machine learning technology in routing mechanisms helps to optimize network resources. In general, there are three particular types of ML techniques viz. supervised, unsupervised, and reinforcement learning. In supervised learning (SL), both input and output variables are required to train the models [9]. In un-supervised learning (UL), the model learns explicit features and generalizes the data category with only input variables. Reinforcement learning (RL) is the agent and environment interaction mechanism that enables a system to automatically explore, learn, through a trial-and-error process. However, RL is more suitable and dominant in literature when focusing on routing problems because it does not require any dataset like other ML models such as SL and UL [10].

B. Reinforcement Learning

The Reinforcement Learning (RL) technique is a specific type of ML method that comprises agent function and its interaction with the environment. RL has illustrated great

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Blockchain based Secured Framework for Road Traffic Management using Fog Computing

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Abstract

Nowadays, technology proceeds at rapid rate and the number of smart gadgets continues to grow substantially. As a result, there is a need for ubiquitous platforms to support an interconnected, heterogeneous, and distributed network of devices. This network of objects is commonly called the Internet of Things. This research paper combines the Blockchain and IoT with other related technologies for secured road traffic management. It includes blockchain, cloud computing, wireless sensor networks and fog computing. The research paper mainly focuses on the role of blockchain and fog computing in IoT-based secured framework for road traffic management. The Internet of Things concept is normally associated with cloud computing. The research paper proposes blockchain based Secured Framework for road Traffic Management using Fog Computing and Internet of Things with a novel layer called Fog layer into the architectural framework for traffic environment. Here the fog computing plays an intermediary responsibility between the IoT layer and the cloud layer. The use of fog based model is to reduce latency and the total cost for the implementation of the system.

Keywords: Internet of Things, Fog Computing, Cloud, Traffic Management, Blockchain

1. INTRODUCTION

The IoT is significant because an object that can represent itself digitally, becomes something greater than the object by itself. No longer does the object just relate to the process; it now connects to surrounding objects and database data, permitting "big data" analytics and insights. In particular, "things" might communicate autonomously with other things and other devices, such as sensors in manufacturing environments or an activity tracker with a smart phone.

The IoT technology has evolved from the convergence of wireless technologies, micro electromechatnical systems, micro-services and the internet. This convergence has torn down the walls between operational technology and information technology, allowing unstructured machine-generated data to be analyzed for insights that will drive improvements. The Internet of Things (IoT) is the network of devices or things that can automatically connect to the Internet and talk to each other without any external intervention. This technology uses numerous sensors to collect data from the surroundings. The output devices for the Internet of things is called actuators. The IoT has many challenges or issues due to its limited power and storage. Security, reliability, privacy and performance are considered to be the major challenges of IoT.

Due to the heterogeneity of the IoT devices, the development of new applications is a tedious job. Sensors and other devices in the internet of things generate high volume of stream data. These sensor data are basically big data. Data transmission between the cloud and the sensor need high bandwidth. Fog computing was introduced to solve the above-said issues. The network major, Cisco, coined the term Fog. The relevant computing paradigm is called fog computing. Fog computing is

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Smart Navigation System for Blinds using Internet of Things

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Abstract

This research work presents the development of a smart navigation for blind people using Internet of Things. In this project we will be using Raspberry pi to which we will make smart stick for blink people which will be embedded with moisture and ultrasonic sensor to detect the real time hurdles while walking with the Google Maps cloud attached to the raspberry pi for perfect navigation for the low-vision or blind people. This will make a smart system which will be very useful for the blind people and also at the same time more accurate and safe. The blind people interact with the system in voice.. The proposed system can provide more abundant surrounding information and more accurate navigation, and verify the practicability of the newly proposed system

I. INTRODUCTION

According to the World Health Organization, there are around 4.8 million outwardly debilitated people in the year 2019. This people are totally dependent upon others. They even can't walk in isolation. Bigger piece of them are using ordinary white stick to assist with course. The obstruction in using white stick is that the information is obtained by reaching the articles by the tip of the stick. So we have made arranged and developed A Ultrasonic Blind Walking Stick contraption which will help surprise people to walk around basic openly. As a more direct variation, we have used vibrating sound to alert them if anything erroneously happen and help them with dealing with this issue. The essential objective of this endeavor is to help with blinding people and moreover for nearly deaf to walk around straightforward and this system offers moves up to the current structure plan. It endeavors to make the current structure more capable, supportive and straightforward. The essential section used for this contraption is the Ultrasonic sensor. The Ultrasonic sensor sends a high repeat sound heartbeat and subsequently learns a chance to get the indications of the sound resonation to reflect back. The sensor has 2 circles. One of them goes probably as the transmitter and sends the Ultrasonic waves. The other one goes comparably recipient and gets the rehashed sound sign. The sensor is changed by the speed of the sound in air. With this changed data, the time qualification between the transmission and get-together of sound not settled forever to register the distance of the article.

LITERATURE SURVEY

EXISTING SYSTEM

In the current framework, the vast majority of the outwardly debilitated individuals are utilizing ordinary white stick to support route. The regular strolling stick utilized by them is exceptionally restricted in scope of discovery and it is utilized uniquely to recognize the article which is close to the client. The utilizing of white stick is that the data is acquired by contacting the items by the tip of the stick. The hindrance of the traditional stick, notwithstanding, is its inability to recognize obstructions outside of its span.

PROPOSED SYSTEM

The examination of as of late made structures and assessment of it, let us to describe an as of late pre-arranged system which could beat the weights of the past structures. So as such using the current advances we offer a

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Secured Framework for Fish Farming using Internet of Things and Blockchain

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How to Cite: Dr.Nirmala , Dr.M.Jeyaselvi, Dr.M.Latha, Mr.Shivananda S, Ms.Pavithra.A, 2021. Secured Framework for Fish Farming using Internet of Things and Blockchain. International Journal of Computational Intelligence in Control (13).

Abstract

This paper proposes a blockchain based secured framework for legacy fish farming to ensure data integrity. Traceability of various operations involved in fish farming is accomplished with blockchain. This proposed framework strengthens the remote monitoring of the fish farming based on the Internet of Things (IOT). The presented framework is implemented with different sensors to decrease the faults in the legacy fish farming. The sensors measures the important factors of the water like temperature, pH value and water level. The sensor data is analyzed through the "Think speak" cloud. The analyzed results is then sent to Fish Farmer as notifications on smart phone and it is programmed using python. The purpose of this proposed work is to provide traceability of fish farming accordingly sparing time, cash and intensity of the rancher and it provides warning messages when it needed a user intervention. Various processes of the fish farming are performed automatically with smart contracts to decrease the faults occur during the operations.

Keywords: Internet of Things, Monitoring, Fish Farming, Temperature, pH Value , Water Level

1. INTRODUCTION

The Internet of Things (IoT) is the network of devices or things that can automatically connect to the Internet and talk to each other without any external intervention. This technology uses numerous sensors to collect data from the surroundings. The output devices for the Internet of things is called actuators.

The IoT has many challenges or issues due to its limited power and storage. Security, reliability, privacy and performance are considered to be the major challenges of IoT. The IoT technology has evolved from the convergence of wireless technologies, micro electromechanical systems, micro-services and the internet. This transition has torn down the walls between operational technology and information technology, permitting unstructured machine-generated data to be analyzed for insights that will drive enhancements. Fish farming is precisely farming of aquatic in surrounded places of the river, sea and small ponds through simulated atmosphere.

It has been estimated that world fish supply in 2020 reached 30 million tons due to growing aquaculture farms. If well conserved, fish farm would be successful with high yield and help reduce world food security problems. Intelligent fish farming is a progressive and optimum way of farming fish through use of recent technologies such as Internet of Things, Cloud and big data analysis.

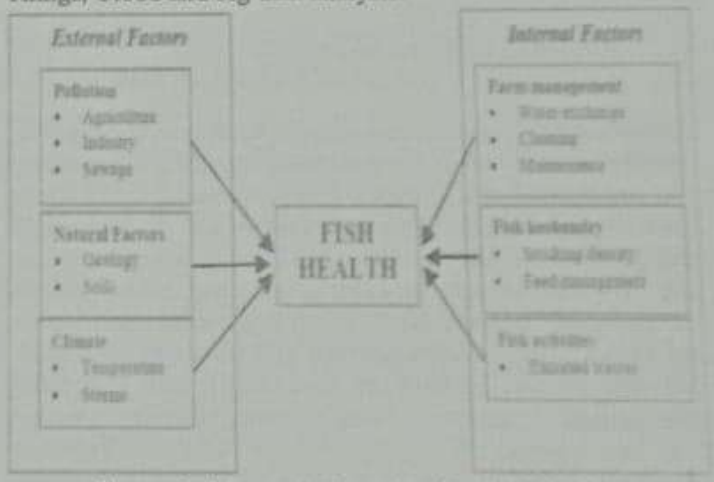

Figure 1: Factors influencing for Fish Health

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NetAI-Gym: Customized Environment for Network to Evaluate Agent Algorithm using Reinforcement Learning in Open-AI Gym Platform

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***Abstract*—The growing size of the network imposes computational overhead during network route establishment using conventional approaches of the routing protocol. The alternate approach in contrast to the route table updating mechanism is the rule-based method, but this also provides a limited scope in the dynamic networks. Therefore, reinforcement learning promises a better way of finding the route, but it requires an evaluation platform to build a model synchronization between route and agent. Unfortunately, the de-facto platform for agent evaluation, namely Open-AI Gym, does not provide a suitable networking environment. Therefore, this paper aims to propose a networking environment as a novel contribution by designing a suitable customized environment for a network synchronically with Open-AI Gym. The successful deployment of the proposed network environment: NetAI-Gym provides a functional and practical result that can be used further to develop routing mechanisms based on Q-learning. The validation of the proposed NetAI-Gym is carried out with different nodes in the network regarding Episodes Vs. Reward. The experimental outcome justifies the validity of the proposed NetAI-Gym that it is suitable for solving network-related problems.**

***Keywords*—Open-AI Gym; network; environment; agent; reinforcement learning**

I. Introduction

Artificial intelligence (AI) is being explored way back in 1997 for some problems like exploring the possibility of adaptive-AI using a network of neurons like adaptive elements, where the focus of the study was on the adaptive systems, where the learning system adapts some behavior from the environment to maximize the signal. It is being observed that this approach has received very little attention from the researchers from the computational perspectives [1][2]. At the same time, the same idea of the hedonistic-learning system (HLS) of that time has been realized today as Reinforcement Learning (RL). However, with a hypothesis that data are collected only from the IEEE Digital library. It is found that the routing problem in the network became an active research problem in the last 20 years, with an overall publication of 86,226. It is observed that in the last decade, the total publication for the same problem is 52,344, which is alone 60.7%, which shows that the active focus of the researchers is higher in the running decade. Considering this 60.7% data as 100% and then the stake of Reinforcement Learning is found only 322 in totality, which is hardly 0.6% and 0.3% from last two decade. Therefore, it can be concluded that more efforts are required to study and develop a solution paradigm for routing problems in a network using reinforcement learning. The typical architecture of reinforcement learning is shown in Fig. 1.

The basic design of RL includes building two functional blocks, namely E and Ag. The Ag takes appropriate Ac based on the O provided by E and subsequently based on the Ac taken, E gives positive or negative R. Therefore, to evaluate the agent algorithm, a suitable platform of the environment is required as per the domain context and particular task. The role of RL is to solve the problem of sequential decision tasks in different networking scenarios. There are many methods found in the literature to solve this problem by using i) Game theory [3], ii) Swarm [4], iii) a probabilistic technique [5], and many more [6-7]. However, all these approaches are associated with some advantages and limitations. But RL can be utilized to address very complex problems that conventional approaches cannot address. RL refers to the computer intelligence field that studies programmed computing procedures and dynamically optimizes their performance based on experience learned from the environment. Therefore, RL offers promising context that can be used to develop adaptive mechanisms for network routing so that better performance can be achieved on complex problems without performing any engineering particular to the problem. RL's logic considers a decision-maker component (agent) in the environment (set of states with inputs). At every step, the agent takes action and gets observations and rewards when interacting with the environment. The RL algorithm tries to maximize a certain amount of reward achieved by the agent. The RL environment for networking was configured based on a general backbone network according to the concept of a partially observable Markov decision process [8]. However, most of the researchers failed to produce their experiments based on the RL. Recently, an introduced RL tool kit, namely Open-AI Gym, removes this problem and lacking standardization in the research process by giving versatile numbers of the environment with great ease of setting up. This toolkit offers a collection of test problems. It concentrates on RL's scenario setting, in which the experience learned by the

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Survey on Detection and Identification of Face Mask

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***Abstract*- The world is coming out of lockdown and starting its new normal. As Education plays a key role in every student's life, the Government is planning to reopen schools and colleges after the COVID-19 pandemic situation. It is mandatory for the educational institutions to follow Standard Operating Procedure(SOP) to reduce the risk of spread of COVID-19 in the institution campus. In SOP one important point is wearing a face mask because the virus that causes COVID-19 is mainly transmitted through droplets generated when an infected person coughs, sneezes, or exhales. These droplets are too heavy to hang in the air, and quickly fall on floors or surfaces. This paper aims to review various state of art methods available to find whether the person who is entering the institution is wearing a face mask or not, using various machine learning techniques.**

***Keywords*- COVID-19, face mask, Machine Learning.**

I. INTRODUCTION

COVID-19 or Coronavirus has been declared as a pandemic by the World Health Organization (WHO) on 11th March 2020. There was a drastic loss of economic growth of the entire nation around the world. It basically originated as a cluster of cases of pneumonia in the city of Wuhan, Hubei province in China in the beginning December 2019. The common signs of COVID-19 infection are similar to the common cold and include respiratory symptoms such as dry cough, fever and breathing difficulties. This disease is similar to MERS-CoV and SARS-CoV. In more severe cases, infection can cause pneumonia, severe acute respiratory.

(WHO) enforced people to follow certain protocols such as maintaining social distancing in public places, wearing face masks is mandatory and sanitizing hands & to be hygienic. To prevent the spreading of COVID-19, wearing a face mask is one of the essential and effective methods [3].

The trend of wearing face masks in public areas has risen since the spread of COVID-19 pandemic. Earlier, people used to wear masks to protect their health from air pollution. Scientists have proved that wearing face masks work on the impending COVID-19 transmission. Lawmakers are facing a lot of challenges and risks in facing the spreading and transmission of viruses. People are forced by the government to wear face masks in public in many countries.

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Review on Secured and Automated Healthcare System

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Abstract- Diseases are one of the biggest challenges for developing countries. Due to the growth in population, providing health-care services is becoming difficult day by day, especially in rural areas. The problem also lies in updating doctors of the monitoring parameters and the history of patients from time to time. The use of remote healthcare technology may reduce most of the management of chronic diseases, meanwhile it may also contribute to the improvement of people's quality of life. Healthcare monitoring systems, by using low cost wireless sensors and existing Internet of things technology as a communication platform, alerts the doctors if a patient is in need of medical attention or hospitalization. The Internet of things is being applied in healthcare.The physiological parameters of the patients like Pulse rate , heart beat, body temperature, humidity are sent to doctors for monitoring and based on doctors advice the medicines will be automatically given to the patients who are away from doctors which is connected to a physician server or medical server through the internet. This paper gives a review about the various technologies used in remote health monitoring systems.

Keywords- Healthcare Monitoring System, Pulse-sensor, DHT11, telemedicine, patient monitoring, Raspberry pi.

Review Article

A Comprehensive Review on Supply Modulators and Control Strategies for Envelope Tracking RF Power Amplifiers in Mobile Communication

Ambily Babu, B.G. Shivaleelavathi & Veeramma Yatnalli

Published online: 20 Oct 2021

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Abstract

To meet the ever increasing demands from the consumer end, modern mobile communication systems resort to complex modulation schemes like OFDM and QPSK. These modulation schemes have increased the Peak to Average Power Ratio (PAPR) of the RF signals to 12 dB and beyond. The transmitter block of the mobile communication system needs to

Cognitive Informatics and Soft Computing pp 321–332 | Cite as

Overview and Analysis of RPL Protocol Objective Functions

S. N. Vikram Simha & Rajashekhar C. Biradar

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Abstract

In the Internet of Things (IoT) framework, the pivotal element is Low power and Lossy Networks (LLNs). Due to constraints on nodes in terms of memory and power consumption, the protocol used for routing has to be chosen with utmost prominence. This in turn decides the lifetime of a node. This paper includes Routing Protocol for LLNs (RPL) in which the concept of objective function is included for choosing the best path to the destination. The performance analysis of RPL in terms of the two objective functions, Minimum Rank with Hysteresis Objective Function (MRHOF), Objective Function zero (OF0) present in the protocol focuses on identifying which among the objective functions is better. Experimental testbed

Sections Figures References
Abstract
References

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A Comparative Study and Analysis of Different CMOS VLSI Technology used for SRAM

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***Abstract*—This paper presents a comparative study and analysis between Various Nano meter CMOS technology used to implement the Radiated Hardened 14T-SRAM. The technology used in this paper include 65-nm, 28-nm, 22nm and 16nm technology.**

In order to design and Implement of 14T-SRAM that is used for Space applications, a precise CMOS technology and speed, power and area has been considered.

A comparison has been made on basis of the CMOS technology, Area and Power between the simulation results. Comparison of these models have been made with proposed design CMOS Technology.

***Keywords*—CMOS, Power, Area, Technology, Radiation Hard By Design (RHBD)**

conditions that may bargain the honesty of the Stored information, or prompt the memory gadgets to fizzle. By and large, the memory gadgets are essential for a bigger implanted System, where the memory gadget is only one of numerous gadgets.Having a similar bite the dust. The honesty of the memory gadgets utilized in space applications

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is basic in light of the fact that the data Stored by the memory gadgets might be identified with basic capacities, Such as direction, situating, and transmitting and accepting information from a ground base Station.

Moreover, Semiconductor memory gadgets for use in Space applications ought to stay useful for the lifetime of the Satellite, which might be up to Several years. Differentiation

A Novel Junction Less Dual Gate Tunnel FET with SiGe Pocket for Low Power Applications

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***Abstract*— A novel junction-less dual gate tunnel FET device with P+ $Si_{1-x}Ge_x$ pocket near the source end is introduced in this paper. The device exhibits sharp subthreshold slope of 63.5mV/dec, very high I_{ON}/I_{OFF} ratio of 10^{11} and low drain induced barrier lowering (DIBL) of 22.2mV/V. The junction less behaviour and high-k gate oxide/high work function gate contact boosts the ON current in the device. The double gate enhances the control of the gate on channel conduction and improves the drain current. The P+ pocket near the source end having narrow band gap material $Si_{1-x}Ge_x$ drastically reduces the tunnelling length and increases the I_{ON}/I_{OFF} ratio. The device is designed and simulated on Visual TCAD (Cogenda) device simulator for 18nm gate length. The device is simulated for various pocket materials and gate contact/oxide combinations to propose the present one. It has been tested for various gate length and SiGe mole fraction variations. It is also found to be efficiently operational over a wide range of temperature from 200K to 400K.**

Keywords*— *Junction-less Double-gate tunnel FET, subthreshold slope, DIBL, ION/IOFF ratio, BTBT, high-k.

dissipation at the OFF state. The minimum possible value of SS for a MOSFET is $\frac{kT}{q}\ln 10$, which comes out to be 60mV/dec at room temperature of 300K. Therefore, to get an I_{ON}/I_{OFF} ratio of 10^6, we must apply a gate voltage of 6 x 60 mV=0.36V. Thus, it would not be possible to achieve high I_{ON}/I_{OFF} ratio without sacrificing the supply voltage scaling. These basic disadvantages of MOSFET of higher OFF state currents and high subthreshold slope limits their application in low power circuits.

The tunnel field effect transistor or TFET is the device which is prone to these fundamental limitations of MOSFET. It can provide the solution by controlling the band to band tunnelling phenomenon and making it the source of drive current in place of thermionic emissions in MOS devices. Structurally TFET is very similar to MOSFET, except that the source and drain here are having opposite doping. This similarity makes TFET very much compatible with MOSFET based circuits. TFETs are found to be immune to various

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Texture Based Image Retrieval Using Semivariogram and Various Distance Measures

292

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ABSTRACT

In a content-based image retrieval system(CBIR) feature classification,identification, and extraction play an important role. The retrieval of images using a single feature is a challenging task in CBIR systems. The high retrieval rates are reported based on combining multiple features, multiple algorithms and preprocessing steps, feature classification, and segmentation because the image retrieval are mainly based on the content in an image. This paper presents a texture feature extraction for the image retrieval system from semivariogram and robust semivariogram technique. A semivariogram is a statistical approach that provides the textural information based on the lag distance 'h'.The proposed method is tested on various standard image databases such as Corel-1k, Corel-10k, and Coil-100 database. The semivariogram and robust semivariogram methods are tested for the Corel 1k database using four distance metrics i.e. Euclidean, Manhatten, Canberra, and Chord distance to check which distance measure is appropriate for the CBIR system.The proposed method is also tested on three types of databases to investigate the performance of the CBIR system. The Matlab simulation results show that the effective performance of the system with Euclidean distance.

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Research Article

Hybrid Adaptable Search Window with Diamond Pattern

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Abstract-In Video Coding Standards such as MPEG, H.26X contains Block Matching Motion Estimation process in Video processing. Finding Motion Vectors are important in Video Compression point of view. Since any video coding techniques can be included after movement estimation. Many quick quest calculations are accessible for Motion Estimation. The proposed algorithm contains a combination of the Adaptive Search Area Selection and the Diamond Search algorithm, which is called the Hybrid ASW-DS algorithm to reduce the processing time of ME. The proposed algorithm is compared to other algorithms by considering parameters such as PSNR, Computations per block and Search Point number.

Keywords-Motion Estimation, Sum of Absolute Difference, Exhaustive Search, Diamond Search, PSNR, Search points, Mean Square Error, Search Window selection

1. INTRODUCTION

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Advancing the World of Information and Engineering

Instrumentation Mesure Métrologie
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Multi Node Based Smart Monitoring System with Motor Dry Run Avoidance for Sustainable Agriculture

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Keywords:
agricultural internet of things, intelligent monitoring, wireless monitoring sensor nodes

ABSTRACT

Food is the major source for the existence of the mankind. In order to meet the food requirements for the ever increasing population, the quantity of the food production has to be increased maintaining the quality standards. Agriculture is one such major sector which provides the food for mankind. It not only provides food but also supplies raw materials for industries. Implementation of advanced technologies such as Internet of Things in agriculture helps in improving the production with limited resources. The key parameter for the sustainable agriculture is moisture content available for the crop from the soil. This can be supplied efficiently by controlling the irrigation process. In this system an intelligent agriculture monitoring system with multiple wireless monitoring sensor nodes are used at different locations to monitor the parameters such as temperature, moisture content in the soil, humidity and rainfall. The data from the various sensors is aggregated at each node and transmitted to the coordinator station using long range transceiver. The data received at the coordinator station is subjected to a rule based decision making process to efficiently control the irrigation process. Also motor protection against the dry run was implemented, which not only protects the motor from break down but also avoids the unwanted power consumption. All the live data is in turn uploaded to the cloud so that the user can have a track of the current status of his farm at any time.

Recent Advances in Computer Science and Communications

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Research Article

Analysis of High-Efficiency Transformerless Inverter for a Grid-Tied PV Power System with Reactive Power Control

Author(s): Selvamathi Ramachandran and Indragandhi Vairavasundaram*

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Abstract

Background: In recent days grid-tied PV power systems play a vital role in the entire energy system. In a grid –tied PV system Transformerless Inverter (TI) topologies are preferred for its reduced price, improved efficiency, lightweight etc. Therefore many transformerless topologies have been proposed and verified with real power injection only. Recently, almost every international standard has imposed that a specified amount of reactive power should be handled by the grid-tied PV inverter. According to the standard VDE-AR-N4105, grid-tied PV inverter of power rating below 3.68kVA, should attain Power Factor (PF) from 0.95 leading to 0.95 lagging.

Objective: To address this issue of grid-tied PV system with reactive power control, in this paper Fuzzy gain scheduling controller is proposed as a power controller for High Efficiency Transformeless (HETL) inverter. The performance of the proposed scheme is analyzed and validated with the comparison of a conventional PI controller based active and reactive power controllers.

Methods: This paper is with the intention of improvement in the performance of the system, the FGS controller is anticipated as active and reactive power controllers. In conventional PI controller gains are constant for any value of the error, which makes error and delay in optimum value of voltage (V_α and V_β). Hence in this analysis FGS controller tunes PI controller gain with respect to change in active and reactive power error.

Results: Comparative performance of PI and FGS based HETL inverter is presented in this paper. It is noted that for any cases either P_{ref} is constant or variable the FGS reduces ripple than PI based HETL inverter system. Compare to constant reference power case variable reference case produces more ripples in both systems.

Conclusion: From the analysis FGS based HETL inverter in a grid-tied PV based power system produces the best performance in all aspects such as voltage, active power and reactive power.

Keywords: Fuzzy controller, grid-tied PV, HETL inverter, Proportional-Resonant (PR) controller, reactive power control, transformerless inverter.

Graphical Abstract

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Design, power quality analysis, and implementation of smart energy meter using internet of things

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Abstract

Effective energy consumption plays a massive role in the growth of smart-grid in the power system. But it is difficult to monitor and control the existing energy meter while using non-linear loads. The programmed control affects the quality of power and leads to distortion of current and voltage waveforms. A smart energy meter is proposed to overcome this glitch based on the Internet of Things (IoT). The proposed smart energy meter controls and calculates energy consumption using the Fast Fourier Transform (FFT). The sensed voltage and current values are fed into the ATMega328-P microcontroller, and the various power-related parameters are calculated by the instantaneous power calculation technique. The experimental values are verified using three standard meters: Fluke 317, Mecho 5760, and Fluke 434 series-II power quality analyzer. The data are uploaded to various fields of the Thing Speak cloud platform for efficient monitoring.

Introduction

Energy conservation means energy optimization according to the application demand. The wastage of energy can be reduced only when the application utilizes the energy more efficiently. The energy audit tool is the best mechanism for making effective energy conservation. Auditing is the method to detect the excess of energy without disturbing the efficiency and growth rate. This new smart equipment is mandatory for efficient monitoring and controlling of industrial equipment in all types of industries and reduces their production costs. Nowadays, these industries need an autonomous system to turn on/off the load; when the load is unnecessary

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Improved GA based power and cost management system in a grid-associated PV-wind system

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ABSTRACT

Renewable hybrids play an essential part in assisting India with quickening the decarbonization of power production and lowering power production expense in the medium term. PV and wind energy are complementary to each other, making the system to generate electricity almost throughout the year. In this paper, a grid-associated PV-wind energy system tied with a battery is analyzed. PV, wind, grid and battery are the sources to be effectively scheduled for uninterrupted power and cost minimization. Energy management controllers use optimization strategies for effective utilization of sources and cost minimization. The methodologies are detailed as optimization problems. Limiting the household energy cost is considered as objective, and the delivery ratio of power offered to the grid and utilized locally is treated as the optimization variable. In this paper, an improved genetic algorithm is proposed to solve the formulated nonlinear optimization problems. The time-of-use tariff is becoming popular in India; therefore, this article analyses the improved genetic algorithm based intelligent power and cost management system under time-of-use tariff. Using MATLAB, the proposed approach's performance is presented with the comparative analysis of conventional self-made for self-consumed and rest for sale mode and genetic algorithm-based energy management controller.

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1. INTRODUCTION

Integration of various sustainable power sources to satisfy customers' energy requirements in remote places is becoming increasingly common these days [1]. Because wind and sun energy is opposed, the organization can generate electricity almost all year. Due to the discontinuous nature of both solar and wind energy sources, the use of an energy storage structure (ESS) is common in standalone applications [2]-[5]. In the meanwhile, owing to the inherent characteristics of available renewable sources, such as eccentricity and fluctuation, running hybrid renewable energy systems with greater reliability is a big issue. As a consequence, there are several control mechanisms available to ensure a smooth power transfer. The wind energy conversion system (WECS) requires a regulator capable of ensuring its activity mode around the optimal operating point in order to maximize the amount of energy delivered from a wind turbine as indicated by wind speed vacillations. Three forms of maximum power point tracking (MPPT) have been extensively studied in the literature: tip speed ratio, power signal feedback control, and hill-climbing search [6]-[8]. However, it necessitates wind speed, which increases the expense and complexity of implementation.

Evaluation of Tribological Characteristics of Carbon Nano Tubes for Lubricants at Extreme Pressure

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Abstract - *In the present work lubricant lithium and calcium with carbon nano tubes strengthened on grease were prepared. Multi-walled carbon nano tubes are allotropes of carbon with molecular structures that are tubular in shape. The carrying power of nano-lubricants was characterized at extreme pressure (EP). Carbon nano tubes displayed drastically improves load carrying ability and reduced frictional properties. The percentage of coefficient of friction reduced by 78.37% and the frictional torque decreased by 88 % at the same concentration. Because of these changes, the hallow multi-walled tubular shape and high elastic modulus will allow them to withstand the loads and thus decreases metal to metal contact.*

***Key Words*: CNT- Lubricant, Frictional coefficient, Extreme pressure**

1.INTRODUCTION

The introduction of different carbon nano lubricants has shown huge advantages, especially in improving the efficiency of industrial processes. Sridharan U et. al [1] and Shen B et. al [3] have shown many of the production processes profiting from the use of nano-lubricants and Optimization of surface roughness on slitting knives by titanium dioxide nano particles as an additive in grinding lubricant. The benefits of nano-tubes additives have been a major reduction in the coefficient of friction (COF), decreasing the load carrying force in the machining process and a decrease in the process energy consumption. Rajmohan et. al [6] have shown modelling and analysis of cutting force in turning of AISI 316L stainless steel (SS) under nano cutting environment and Sharma AK et.al [11] have shown progress of nanofluid application in machining process. Rout IS et.al [5] have shown optimization of drilling parameters using nano fluid minimum quantity lubrication improve the manufacturing part's durability by reducing the thermal stress for high pressure application (EP) and Khalilpourazary S et.al [12] have shown Investigation of the effects of alumina nanoparticles on spur gear surface roughness and hob tool wear in hobbling process. Many research studies have focused on frictional reduction and lubricant load carrying ability with different types of nano-tubes Abdullah MIHC et.al [13] and Pena Paras L et.al [17]. As compared to the grease without the CNTs, the friction coefficient was reduced by 26%. Kobayashi et al. [16] has studied the effect of carbon nano-horn additives on grease lubrication to improve the wear, friction reduction, and EP properties. Masuda-Jindo K et al. [19] have shown Fracture and mechanical properties of nanotubes and nanowires. Yu M. et al. [22] have shown strength and breaking mechanism of multiwalled carbon nanotubes under tensile load, several research studies centered on friction reduction and lubricants load carrying ability with many types nano-tubes, it was for this reason that their exceptional mechanical properties such as a module of up to 1TPa and tensile strengths of 11-63GPa were explored. NiB, Sinnott S B et al. [23] have shown Tribological properties of carbon nanotube bundles predicted from atomistic simulations, the Ni and Sinnot tribological enhancement mechanism depends on the working conditions at low pressures CNTs pose a rolling/sliding mechanism, while CNTs move between the surfaces at high pressure like a tank belt. Bhaumik S. et al. [24] have shown Extreme pressure property of Carbon Nano Tubes (CNT) based nanolubricant and Thermal transport and tribological properties of Nano greases for metal-mechanic applications. Pena-Paras L et al. [25, 26]. Cornelio JAC et al. [27] have shown Tribological properties of carbon nanotubes as lubricant additive in oil and water for a wheel rail system, as shown in the literature, CNTs have greatly improved tribological characteristics of the lubricants. For example, Bhaumik [24] found that the load of synthetic grease with 0.1wt. % increased by 25% CNTs. Another research showed that the industrial grease pressure loss capacity was increased with CNTs by 10-15 % [26]. At 0.1wt.% CNTs, for deep drawing applications, the load carrying capacity of synthetic and mineral oil increased by 21% and 36% respectively. Finally, Cornelio JAC et al. [27] when tested in a wheel rail network, CNTs have friction reducing properties. The simulation of their modulus through molecular dynamics was predicted to range from 0.125 to 1.5TPa [29]. The carbon nano-tubes are created by circular CNTs that link their two ends. Since of this excellent properties and their overlap with CNTs, we suggest carbon nano-tubes as lubricant additives. In this research, nano-lubricants consist of different concentrations of carbon nano-tubes with a lubricant. Throughout this work, nano-lubricants consist of varying concentrations of carbon nano-tubes with lubricant; lithium and calcium-based lubricants are commonly used for metal forming and metal working applications and are prepared and checked to evaluate their tribological properties under EP condition [25]. In such conditions also the tribological mechanism is proposed. This paper is an extended version of the findings published at the congress of tribology.

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INVESTIGATION ON TRIBOLOGICAL PROPERTIES OF CARBON NANO TUBES AS ADDITIVE WITH LITHIUM AND CALCIUM GREASE

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ABSTRACT

The multi-walled carbon nanotubes (CNTs) were added to lithium and calcium grease with varying percentage. CNTs with an average diameter of 10-15nm and an average length of 5μm was used and its structural characterization was carried out through electron microscopy. Tribological properties of grease added with varied percentage of CNTs were evaluated using a four ball tribometer. The obtained results revealed that, CNTs addition to grease reduced coefficient of friction and wear scar diameter (WSD) compared to neat base grease. The optimal values of results were obtained at 0.6wt.% addition of CNTs for better anti-wear and anti-friction characteristics of grease. Also, increased CNT to 6 weight % has resulted in smooth surface on contact area. The severely rubbed marks were evident on scanning electron microscopy (SEM) images of neat grease lubricated worn surface. Whereas, SEM images of CNT added grease lubricated worn surface revealed the scuff marks on contact area.

Keywords: CNTs; Lubricant; Tribology; Frictional Coefficient; Wear Scar Diameter.

I. INTRODUCTION

Industrial machine components such as bearings demand for better tribological characteristics viz. wear resistance, low friction and high speed lubricants. Grease is widely used type of lubricant and also as sealant in various engineering applications. It is generally available in the form solid and semi-solid. Commercially available grease typically comprises of polyalphaolefin based oil and metal-soap thickeners such as lithium, calcium and aluminum. The thickeners impart peusdo-plastic property to the grease. Besides, under static load condition, boundary film of lubricants collapses resulting in adhesion and surface damage to components. Thus, anti-wear additives were added to base grease to reduce surface damage caused with the application of load and generated friction [1]. In addition, different types of additives such as graphite, molybdenum disulfide, etc are blended to base grease. They play role as anti-wear additives, friction modifier, rust inhibitors extreme pressure stabilizers. Shafi and charoo [2] have shown that avocado oil blended zinc dialkyl dithiophosphate improves the tribological performance of oil through the formation of stable tribofilm between pairs.

The addition of nanoparticles to lubricants has gained importance due to their contribution in enhancing lubricant tribological characteristics like reduction of friction, wear, etc [3]. Various researchers have employed metal nano-particles as additive to grease to achieve better lubrication performance characteristics [4–8]. Xue et al. [9] have shown that surface modified TiO_2 nanoparticles additive in liquid paraffin has enhanced its friction and wear characteristics. Zhou et al. [10] and Zhang et al. [11] have found that addition of Cu nanoparticles to lubricating oil reduces the friction and wear. Also, authors have observed the presence of Cu boundary tribofilm on worn surface. Liu et al. [7] have concluded that Sn and Al nano particle can improve antiwear and extreme pressure properties of lubricant. Wu et al. [12]reported that nano-cerium oxide (n-CeO_2) particles outperform as additive in improving tribological characteristics of poly-alpha olefin. The n-CeO_2 addition of 0.2% has resulted in better anti-wear property. Many researchers are paying attention to green additives. Perhaps environment concern lies in using nano-green additives over various other nanoparticles comprising heavy metals, sulphur or phosporous, etc. $CaCO_3$ nanoparticles are promising in this regard as an additive. Literatures [13,14] have reported that $CaCO_3$ nanoparticle addition has improved the friction and wear behavior through the formation of tribofilm containing $CaCO_3$ and CaO.

Over the last few years, carbon nano-tubes (CNTs) have attracted various researchers and engineers due to their unique physical and chemical properties in engineering applications [15,16]. In tribological applications, carbon nano-tubes were added with grease to reduce friction and wear [17]. Tonk [18] has presented state-of-art on CNTs as additives for lubrication. The study suggested that CNTs as lubricant additives helps in reducing friction and wear, thereby improves the performance of machinery and reduces frequency of maintenance. Also, forecasted that in another 5 years nanolubricants will be the incorporated elements for lubricants for