3.4.4.1: Total number of books and chapters in edited volumes / books published, and papers in national/international conference-proceedings year wise during last five years

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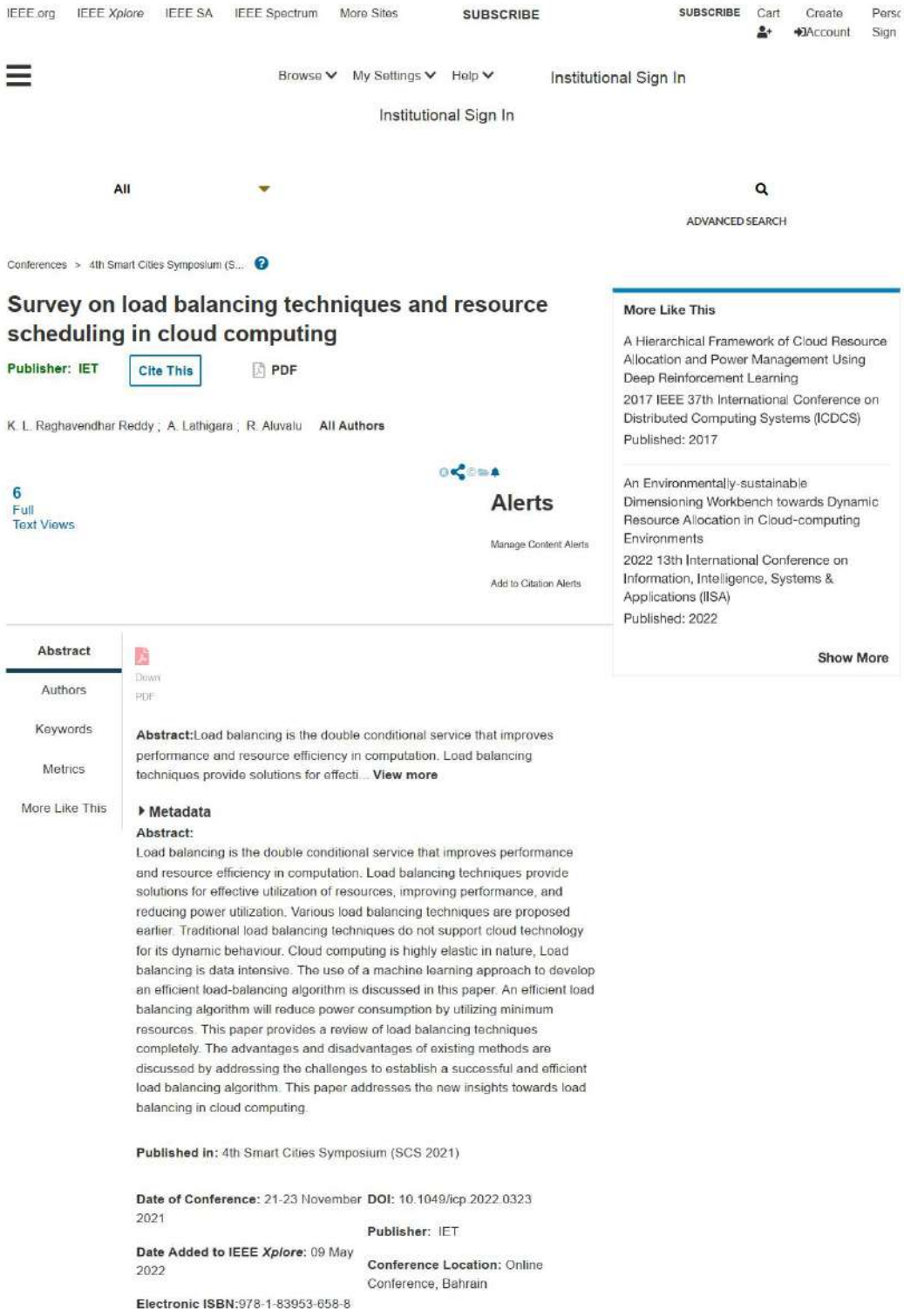
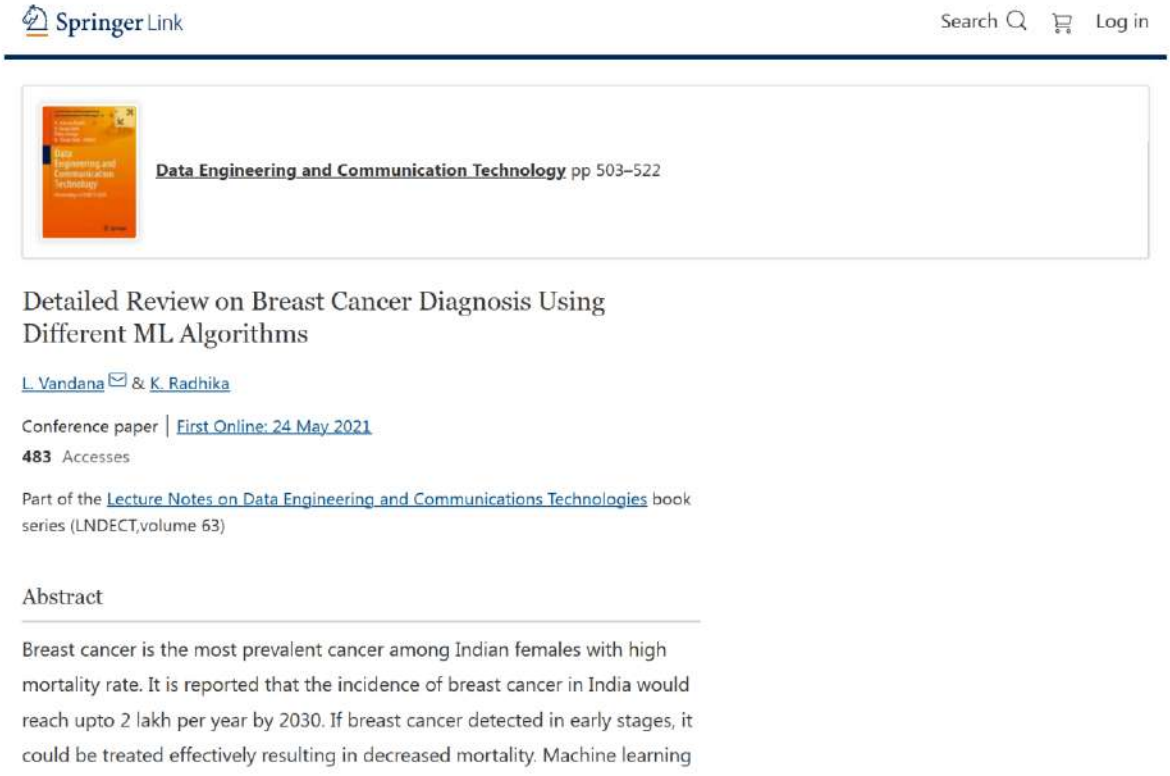


Detailed Review on Breast Cancer Diagnosis Using Different ML Algorithms



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Data Engineering and Communication Technology pp 503–522

Detailed Review on Breast Cancer Diagnosis Using Different ML Algorithms

L. Vandana ✉ & K. Radhika

Conference paper | First Online: 24 May 2021

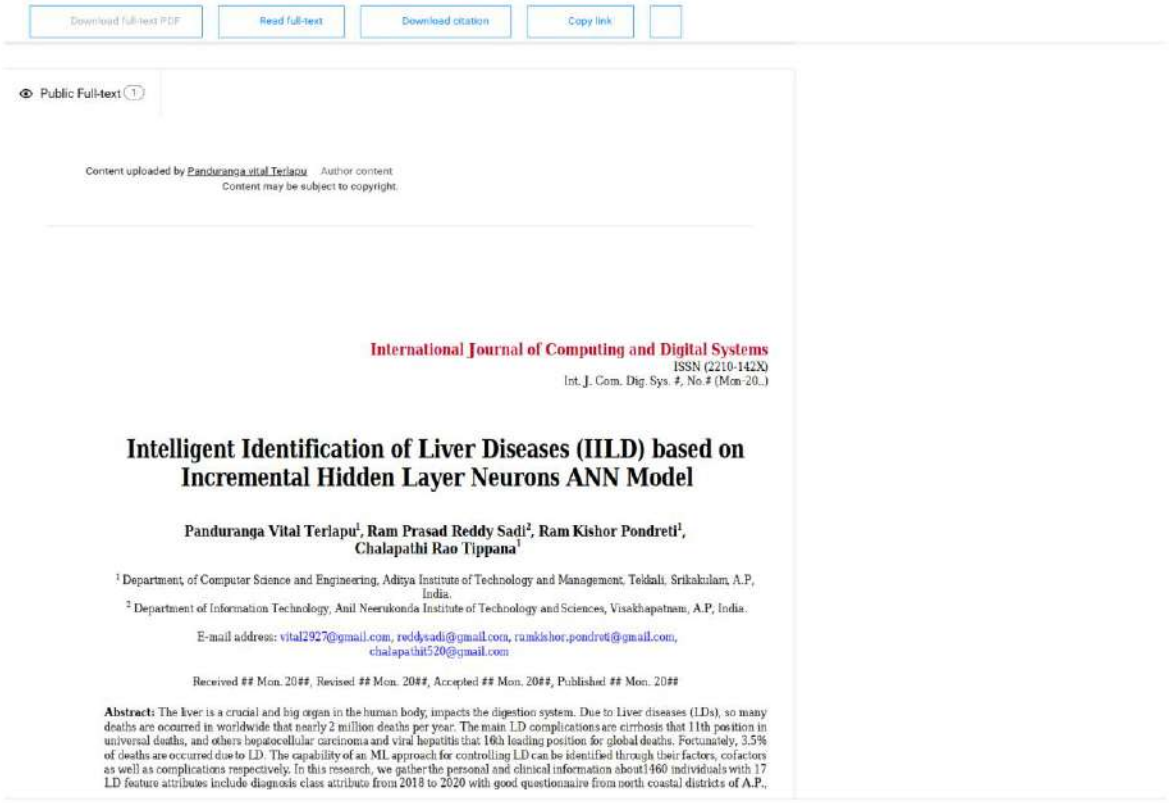
483 Accesses

Part of the Lecture Notes on Data Engineering and Communications Technologies book series (LNDECT,volume 63)

Abstract

Breast cancer is the most prevalent cancer among Indian females with high mortality rate. It is reported that the incidence of breast cancer in India would reach upto 2 lakh per year by 2030. If breast cancer detected in early stages, it could be treated effectively resulting in decreased mortality. Machine learning

Intelligent Liver Disease Prediction (ILDP) System Using Machine Learning Models



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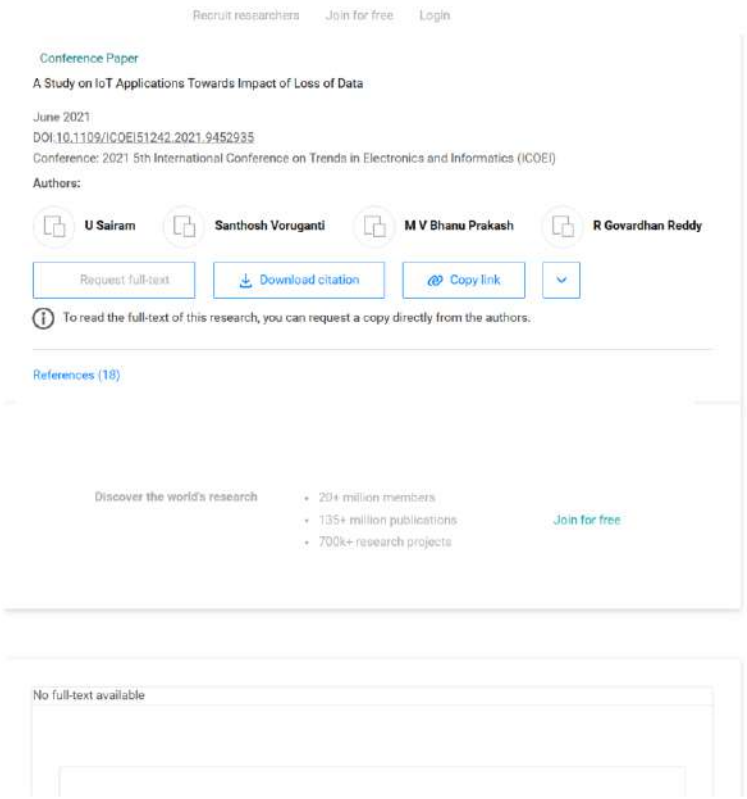

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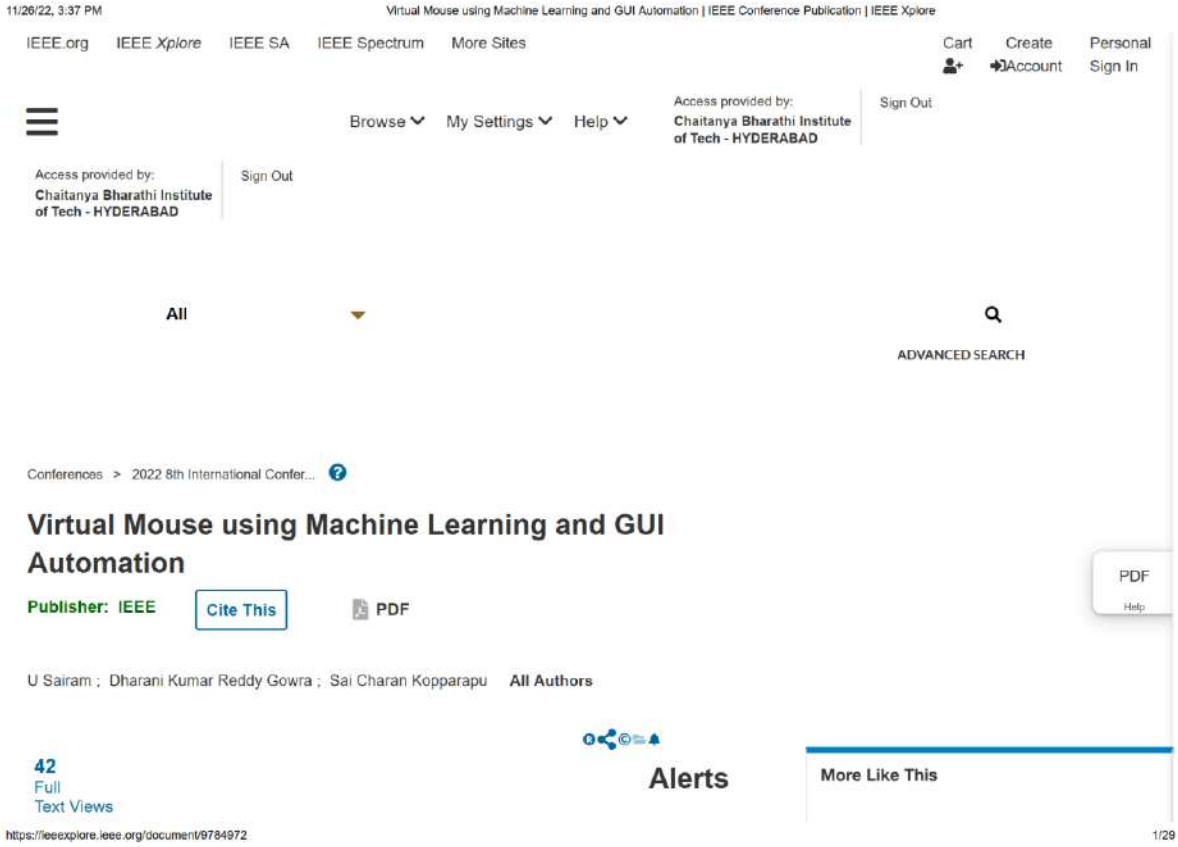


Smart Computing Techniques and Applications pp 117–125

Fake News Detection Using Text Analytics

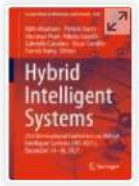
Uma Maheshwar Amanchi, Nithesh Badam & Rama Lakshmi Elaganti

Conference paper | First Online: 08 July 2021

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 225)

Abstract

Fake news is a form of news consisting of false statements from the real ones spread via news media or online social media. In this paper, we aim for the fake news detection model which is capable of detecting the fake news from large amounts of data that are daily produced on online platforms. The approach for our model is a machine learning technique which is text analysis and for classifying fake news we have used k means clustering. Using the data preprocessing, classification, and topic modeling we get topics from the article, and they are compared with legitimate news. We modeled a framework named Fake News Detection (FND) which



International Conference on Hybrid Intelligent Systems
HIS 2021: **Hybrid Intelligent Systems** pp 615–624

Non-invertible Cancellable Template for Fingerprint Biometric

Ilaiah Kavati, G Kiran Kumar, M Venu Gopalachari, E Suresh Babu, Ramalingaswamy Cheruku & V Dinesh Reddy

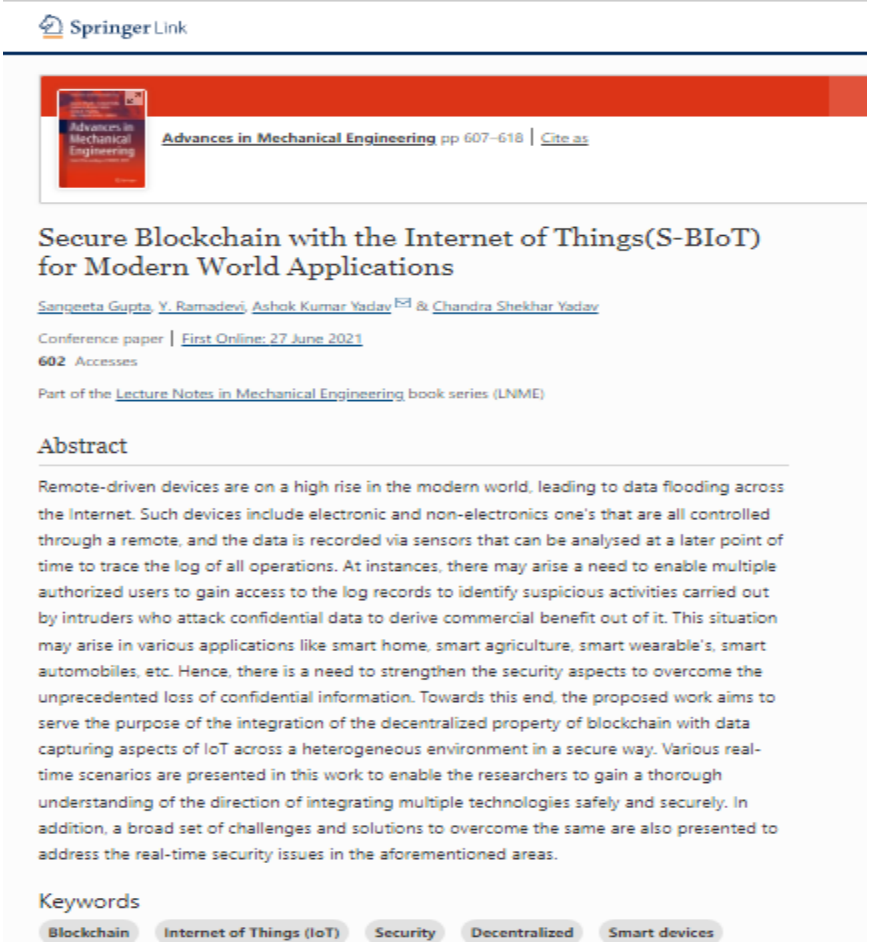
Conference paper | First Online: 04 March 2022
251 Accesses

Part of the Lecture Notes in Networks and Systems book series (LNNS,volume 420)

Abstract

In this work we propose an approach for generation of secure and non-invertible fingerprint templates. Firstly, we have to find the points around the reference point and select the n points sorted in ascending order. Then we have to construct a n sided polygon from the n selected points. The polygon created will have all its points connected to the reference minutia which will in turn divide the polygon into n triangles. The area and semi perimeter of the triangle, the angle between the two lines joining the reference minutiae from the two points is calculated and the orientation of the points in the triangle is taken. These all features together

Secure Blockchain with the Internet of Things(S-BIoT) for Modern World Applications



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Advances in Mechanical Engineering pp 607–618 | Cite as

Secure Blockchain with the Internet of Things(S-BIoT) for Modern World Applications

Sangeeta Gupta, Y. Ramadevi, Ashok Kumar Yadav ✉ & Chandra Shekhar Yadav

Conference paper | First Online: 27 June 2021
602 Accesses

Part of the Lecture Notes in Mechanical Engineering book series (LNME)

Abstract

Remote-driven devices are on a high rise in the modern world, leading to data flooding across the Internet. Such devices include electronic and non-electronics one's that are all controlled through a remote, and the data is recorded via sensors that can be analysed at a later point of time to trace the log of all operations. At instances, there may arise a need to enable multiple authorized users to gain access to the log records to identify suspicious activities carried out by intruders who attack confidential data to derive commercial benefit out of it. This situation may arise in various applications like smart home, smart agriculture, smart wearable's, smart automobiles, etc. Hence, there is a need to strengthen the security aspects to overcome the unprecedented loss of confidential information. Towards this end, the proposed work aims to serve the purpose of the integration of the decentralized property of blockchain with data capturing aspects of IoT across a heterogeneous environment in a secure way. Various real-time scenarios are presented in this work to enable the researchers to gain a thorough understanding of the direction of integrating multiple technologies safely and securely. In addition, a broad set of challenges and solutions to overcome the same are also presented to address the real-time security issues in the aforementioned areas.

Keywords

Blockchain | Internet of Things (IoT) | Security | Decentralized | Smart devices

About this paper

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Gupta, S., Ramadevi, Y., Yadav, A.K., Yadav, C.S. (2021). Secure Blockchain with the Internet of Things(S-BIoT) for Modern World Applications. In: Manik, G., Kalia, S., Sahoo, S.K., Sharma, T.K., Verma, O.P. (eds) Advances in Mechanical Engineering. Lecture Notes in Mechanical Engineering. Springer, Singapore. https://doi.org/10.1007/978-981-16-0942-8_57

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Hand Written Devanagari Script Short Scale Character Recognition

Hand Written Devanagari Script Short Scale Character Recognition

Kachapuram BasavaRaju ✉ & Y. RamaDevi

Conference paper | First Online: 19 April 2022

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 282)

Abstract

India is a country of various languages right from Kashmir to Kanyakumari. The national language of India is Hindi which is also the third most popular language in the world. The script in which the Hindi language is written is known as Devanagari script which in fact is used to write many other languages such as Sanskrit, Marathi, Nepali, and Konkani languages. Neural networks are recently being used in several different ways of pattern identification. It is common knowledge that every person's handwriting is dissimilar. Therefore, it is challenging to recognize those handwritten monograms. The sector of pattern recognition that has become a hot topic for research purposes is handwritten character recognition. This is where neural networks play an important role. The competence of a computer to take in and decipher comprehensible transcribed input whose origin is paper documents, touch screens, photographs, and alternative gadgets are termed as handwriting recognition. Handwritten recognition of words is a model which is used to convert the written text into words that are crucial in the human computer interface. The handwriting recognition area is an extensively experimented branch till date and the Devanagari script recognition is progressing area of research. The above application is used in mail sorting, office automation, cheque verification, and human computer communication, i.e. the growing age of artificial intelligence. A sample of the dataset of images which are centralized and grayscale are considered and analysed using the K-nearest neighbour classification, extremely randomized decision forest classification and random forest classification are considered.

Cite this paper

BasavaRaju, K., RamaDevi, Y. (2022). Hand Written Devanagari Script Short Scale Character Recognition. In: Bhateja, V., Satapathy, S.C., Travieso-Gonzalez, C.M., Adilakshmi, T. (eds) Smart Intelligent Computing and Applications, Volume 1. Smart Innovation, Systems and Technologies, vol 282. Springer, Singapore. https://doi.org/10.1007/978-981-16-9669-5_36

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A Survey on data security challenges in multi cloud environment

A Survey on data security challenges in multi cloud environment

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***Abstract*—Ensuring the security and privacy of data stored in cloud is one of critical requirement for enterprises. Recently multi cloud is proposed as a solution for ensuring security, privacy and high availability of data for enterprises. Multi cloud is an integration of public, private and managed clouds with a single interface to the users. Data to be stored in the cloud is partitioned across different clouds in multi cloud based on the reliability of the cloud and degree of sensitivity of the data. This survey studies the existing multi cloud based security solutions to identify the open issues and scope for further improvement.**

Keywords –Cloud Computing, Public Cloud, Private Cloud, Multi Clouds.

I. INTRODUCTION

NIST (National Institute of Standards and Technology) describes cloud computing as —a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources such as networks, servers, storage, applications, and services, that can be rapidly provisioned and released with minimal management effort or service provider interaction over the internet on pay per use basis.

Cloud computing offers three delivery models such as Infrastructure as a Service (IaaS) where the Cloud Service Provider (CSP) delivers computer hardware such as servers, storage, and networking technologies as a services. Platform as a Service (PaaS) where software tools that are needed to develop, run the applications as a service and the last one is Software as a Service (SaaS) in which the CSP host the application on cloud infrastructure.

Fig 1. Service models and computing resources delivered

The stated services can be delivered by using any of the deployment models: public cloud, private cloud or hybrid cloud.

Public cloud

Public clouds are the most common type of cloud computing deployment. The cloud resources are owned and operated by a third-party cloud service provider. Microsoft Azure is an example of a public cloud. In a public cloud, we share the computing resources with other organizations or cloud "tenants," and you access services and manage your account using a web browser.

Private cloud

In private cloud requested computing resources used exclusively by one business or organization. The private cloud can be physically located at your organizations on-site or it can be hosted by a third-party service provider. Private clouds are regularly utilized by government agencies, financial institutions, any other mid- to large-size organizations with business-critical operations seeking enhanced control over their environment.

Hybrid cloud

Hybrid cloud computing is a combination of public and private clouds. This is a more complex cloud solution in that the organization must manage multiple platforms and determine where data is stored. An example of a hybrid cloud solution is an organization that wants to keep confidential information secured on their private cloud, but make more general, customer-facing content on a public cloud.

Cloud computing is being rapidly adopted in enterprises due to their scalable on demand availability of the resources and pay as you go manner[14]. Among the different services like platform as service, infrastructure as service, software as service etc storage service is most used by both enterprises and individuals. Extensive use of Google drive, Amazon S3, Dropbox etc proves the popularity and demand for cloud storage services. There is also increasing trend of leakage of data stored in cloud. Ensuring the security, privacy and

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Reduction of Alert Fatigue using Extended Isolation Forest

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Reduction of Alert Fatigue using Extended Isolation Forest

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***Abstract*— Alerts are tasks that continually monitor active queries to look for and report on specific events or conditions like system performance, security incidents, and threats for a system or network. Companies with an extensive IT infrastructure often deal with many alerts per day, varying from a routine host or network performance notifications to security incidents raised by Network Security Devices. With an increase in cyberattacks, Network Security Devices play a vital role in detecting critical incidents and threats. However, more often than not, these security incidents are frequently occurring low threat alerts. As the number of alerts skyrockets, it becomes increasingly tedious to sift through all the alerts generated and identify critical one. This may result in longer response time or overlooking important alerts, which is referred to as alert fatigue. Aiming to tackle this problem, our paper proposes a solution to reduce alert fatigue by identifying and highlighting anomalous alerts using Extended Isolation Forest, an isolation-based anomaly detection technique. Our model reduces the number of alerts received at the Security Operations Center (SOC) by 82.15%. The security analyst needs to monitor only 17.85% of the 50,000 total alerts received from the IDS.**

Keywords*— *Alert Fatigue, Anomaly Detection, Extended Isolation Forest, Isolation Forest, Security Operations Center

I. Introduction

The advent of the internet has changed the dynamics of business, education, healthcare, and government work. It has become almost indispensable and crucial for the functioning of most organizations. Consequently, it has also given rise to up-and-coming threats over the internet known as cyber threats. Large companies and organizations, the main targets of these threats, are left with no choice but to secure their network and IT infrastructure. Network and system monitoring lookout for faults, performance issues, cyberattacks, and malicious behaviour in the company's internal network using devices such as Firewalls, Intrusion Detection Systems (IDS), Intrusion Prevention Systems (IPS), and Web Traffic Monitoring Tools. The SOC receives daily alerts from these network monitoring tools with the purpose to handle these incidents [1].

As the company's IT infrastructure increases, they face an overwhelming number of daily alerts. Most of these alerts are just routine host and network performance notifications or frequently occurring low threat security alerts. It becomes increasingly tedious for the SOC or security analysts to sift through all the alerts generated and identify critical one. This may result in longer response time or overlooking important alerts, which is referred to as alert fatigue. Research shows that anywhere from 72-99% of all clinical alarms are false [2]. Similarly, a survey in security firms found that 52% of alerts were false and 64% were redundant, robbing the critical alerts of the importance they deserve [3]. Desensitization to the increasing number of alerts has also become a common problem where the analyst just stops monitoring the massive amount of alerts received. According to a study done by Cisco, analysts overlooked around 44% of alerts received at the SOC while 56% of the legitimate alerts could not be resolved [4]. The 2013 data breach at Target is an example of a disastrous consequence of desensitization to threat alerts [5]. Despite repeated threat alerts by the system, the operators didn't react to these alerts as they had seen such alerts frequently. The alerts were classified and treated as false positives. This led to the details of 40 million credit card users being exposed.

Increasing person-hours or hiring more analysts will surely help, but it is not an efficient solution in the long run and is just a workaround to the actual problem. Instead of looking at ways requiring manual intervention, using a smart automation system to identify anomalous alerts is more time and cost-effective. The SOC is notified only when an unusual or aberrant alert is identified, reducing the workload of the analysts. This paper proposes an unsupervised machine learning approach for anomaly detection. Isolation Forest (iForest), an algorithm widely used for anomaly detection, has a few drawbacks due to the bias introduced in the splitting process of generating its trees (iTrees). Due to these limitations, we use its improved version known as Extended Isolation Forest (EIF).

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Analysis and Issues of Artificial Intelligence Ethics in the Process of Recruitment

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Abstract— Artificial intelligence has evolved into a virtual human. Similar to the standards and ethics of humans, Artificial intelligence also has standards and ethics. On the other hand, Artificial Intelligence [AI] technologies should also incorporate moral values. Today, the amount of work done at the university has increased. The amount of time spent for the recruitment of the required faculty has become important for the functions of universities. Artificial Intelligence [AI] can be used for the process of recruitment, it will save a lot of time for recruitment board. The primary motivation of this research work is to explore all the AI tools used for recruiting and the challenges of incorporating AI tools in the process of recruitment.

Keywords: Artificial Intelligence, Ethics, properties, screening, interview, KNearestneighbour, SVC, Decisiontree

I. INTRODUCTION

Artificial Intelligence [AI] is generally known as the study of intelligent agents. It combines both the human intelligence and machine intelligence with the help robot datasets. By using AI, the machines are trained in such a way that they can mimic the human actions.

Artificial intelligence has become an alternate to human intelligence. It imitates the human actions. It impersonates humans by its problem solving capabilities.AI contains a subsection called machine learning which produces output without explicit programming. Machine learning contains a subsection called Deep Learning which enables unmanned learning. The goals of AI are Studying, Thinking and understanding. Artificial intelligence tries to impersonate the human intelligence and completes the tasks. It tries to develop the human cognitive abilities. At some point it is believed that, the AI will exceed the position of humans. Today AI is being used in various industries like developing self-car driving in automobile industry and detecting a fraudulent transaction in debit card in financial industry.

There are two types of AI. One is delicate AI, it comprises PC games and unique assistants such as Alexa and Apple's Siri. Second is Powerful AI, it comprises of delivering the problem-solving capabilities without human intervention.

Machine learning delivers the output without explicit programming. It learns by training set and tries to predict the output. We can use the test set to check the accuracy of the algorithm used for prediction. The input can be a dataset which can contain a variety of data set. There are various types of algorithms like linear regression, logistic regression, decision tree etc.

Deep learning contains various algorithms, which contains different layers of neural networks. It is a deep level machine learning algorithm. An example of neural network is back propagation algorithm, where we give the network with a data and upon generating the output, if the output is not a desired output, and then we change the weights of the input to network and again generate the output. We keep on changing the weights of the input until we get the desired output. In Deep learning, CNN algorithm has achieved a stupendous success in image processing.

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Diagnosis of Parkinson's Disease Using Deep Neural Network Model

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Diagnosis of Parkinson's Disease Using Deep Neural Network Model

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Abstract— Parkinson's disease is a neuro-degenerative disorder that effects central nervous system and is observed in many people worldwide. PD diagnosis is complex for the clinicians as it requires meticulous analysis of the patient. Though there are many characteristics and symptoms that indicate the disease, voice characteristics play a major role among the predictive characteristics. Person with PD experiences several vocal degradations like shaky and low speech. Voice analysis offers the additional benefit of being non-invasive, low cost and simple to diagnose. Many enthusiastic and great researchers have created new models and improved existing models in this area, and there is a vast amount of research in this field all over the world. We created an optimized Deep neural network (which is referred as Opt-DNN in rest of the paper) model and compared it to various algorithms such as random forests, SVM, XG Boost, and KNN in this paper. Among all the algorithms used, the proposed model turned up to be the best algorithm with accuracy 95.14.

Keywords— Parkinson's Disease, Neural Network, K-Nearest Neighbor Principal Component Analysis, Random Forest.

I. INTRODUCTION

Parkinson's disease is a progressive neurodegenerative condition that affects mostly senior citizens. The cause of Parkinson's disease is unclear, but if the disease is diagnosed at early stage, the symptoms can be alleviated. Majority of the studies revealed that people with Parkinson's disease had voice problems. As a result, voice data can be used to diagnose Parkinson's disease.

PD affects millions of people, according to the American Parkinson Disease Association, and causes severe health problems. Even though people with Parkinson's disease show a wide range of symptoms, determining the root cause remains difficult. People over the age of 50 are more likely to develop this disease early because their bodies are more susceptible to degenerative diseases. PD is caused by a lack of dopamine or a decrease in dopamine levels, which makes motor movements difficult. PD symptoms are divided into two categories: motor symptoms and non-motor symptoms. clinical tests of motor symptoms are used to diagnose the disorder. Most patients with Parkinson's disease have vocal impairments, which are referred to as dysphonia. The key characteristic used to diagnose the presence of PD is dysphonia.

The diagnosis of Parkinson's disease at an early stage is a difficult challenge for doctors because the symptoms intensify and affect the individual day by day. Many researchers in this area have conducted comprehensive surveys and developed numerous models for detecting Parkinson's disease. [7]created a model that used a combination of SVM and a gaussian Radial basis kernel function to predict PD with a 91.4 percent accuracy. [8]have done a comparison of regression tree, decision tree, and ANN and found that ANN produces better results. [9] proposed a multi-class classifier with an accuracy of 89.47 percent, as well as a new collection of measures and a different strategy for selecting features. [10] introduced a fuzzy-based transformation approach that was combined with an SVM classifier to achieve a 93.47 percent accuracy. For successful classification, it is critical to practise feature selection to select the most important attributes[11].

Aim of this paper is to develop an optimised Deep Neural Network Model for classification of PD. We proposed , an optimal DNN-model including PCA for attribute selection. Rest of the paper is organised as follows: various aspects and results achieved by other authors is discussed in Section 2. Then we presented our Proposed methodology in Section 3 along with metrics and Section 4 deals with experimental set-up , results, and discussions . The next section includes future scope and conclusions.

II. LITERATURE SURVEY

The analysis for Parkinson's disease diagnosis using voice dataset is discussed in [1]. The speech dataset is analysed using a variety of machine learning algorithms. The speech dataset includes the voice frequencies of 31 Parkinson's disease patients. NN shows highest accuracy of all algorithms, while random forest has a decent accuracy and Naive Bayes has the lowest accuracy for disease detection.

The author proposed a hybrid intelligent framework for predicting disease progression in the paper [2], which used unique methods to eliminate noise, a clustering method to define class labels, and prediction methods to predict disease progression. PCA is used to determine which dimensions are the most important. Later on, support vector regression approaches and neuro fuzzy interface systems are used. This hybrid intelligent system significantly improved the accuracy of Parkinson's disease prediction. Using deep neural networks on speech datasets, the severity of the disease can be predicted [3]. Tensor flow is a deep learning library that is used to implement artificial neural networks to predict the state of Parkinson's disease.

The experiment was evaluated using standard methods for separating a healthy person from a person with Parkinson's disease by detecting dysphonia in this paper[4]. PPE (Pitch Period Entropy), a new measure of dysphonia, is added. This procedure has been found to be reliable and has

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Facial emotion recognition methods, datasets and technologies: A literature survey

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Recommended System for wellness of Autistic Children Using Data Analytics and Machine Learning

Recommended System For Wellness Of Autistic Children Using Data Analytics and Machine Learning

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Abstract: Autism is a mental condition which hinders social and communication skills. It's a lifelong disability which makes the child's day to day life very difficult. But in most of the cases early intervention has helped the children to develop the skills which are needed to the fullest to overcome autism. As early the intervention, better the development of the child. Most of the research has been carried out to detect the autism using various machine learning algorithms which consider autistic diagnostic tools such as ADI-R, ADOS or CARS. Once autism is detected, different areas which need to be developed are considered and recommendations are given to the child. In this paper, a system is proposed which uses multi dimensional data collected from facp, DST and Diet to perform analytics using machine learning and provide recommendations to the child.

Keywords: Autism, Functional Assessment Checklist for Programming (facp), Developmental Screening Test (DST), Diet.

1. Introduction

Autism is a spectrum condition which hinders with the daily activities. The child will not be able to communicate properly, lack of fine motor skills and poor eye contact. They will be more interested in rotating objects such as fans, wheels etc. It's a lifelong disability but the early intervention plays a major role. If the disease is detected early, the child can develop the skills required and overcome the symptoms of autism. Most of the research has been carried out to detect autism is in the direction of developing machine learning algorithms which uses autistic diagnostic tools such as ADI-R,ADOS and CARS to check the accuracy of the machine. But there can be other factors which can be the cause for the existing condition. So, In this paper we are considering multi-dimensional data collected from facp, DST and Diet to do the analysis. The rest of the paper is organized as follows: Autism, Machine learning in autism, facp, DST, Diet, Recommended system, Conclusion and Future scope.

2. Autism

Autism is a spectrum condition which causes different disabilities such as lack of communication skills, social skills and fine motor skills. The symptoms include unable to utter a word by the age of 2, not responding to name calling, strict compulsion of daily routine, repetitive movements like head banging, spinning, and hand flapping, no sitting tolerance, not aware of danger, and echolia. The child will be assessed by the pediatrician during their regular visit and if any of the symptoms are found will be referred to the experts. The psychologists will examine the child behavior and use various screening tools like Ages and Stages Questionnaires (ASQ)(1 month to5.6 years),Communication and Symbolic Behavior Scales (CSBS)(6 months and 24 months),Parents' Evaluation of Developmental Status (PEDS)(birth to 8 years),Modified Checklist for Autism in Toddlers (MCHAT)(16 to 30 months of age),Screening Tool for Autism in Toddlers and Young Children (STAT) (24 and 36 months of age) to initially check for the

An Applied Modular Approach to Build Scalable Mobile Robots

2021 International Conference on Computing, Communication, and Intelligent Systems (ICCCIS)

AN APPLIED MODULAR APPROACH TO BUILD SCALABLE MOBILE ROBOTS

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***Abstract*—This application-oriented paper presents vital components that are essential for building a scalable mobile robot. With a plethora of resources available at hand and on the internet, it is very important to choose the right materials, design, and build procedures so that there is no wastage of resources during the build process and that the mobile robot works efficiently. Moreover, this task becomes more complicated when we are dealing with large scale human-sized mobile robots. This is because all the electronic components that we use for building small hobby robots are unfit because of their low current and voltage handling capacity, thus enabling us to adopt more power-hungry electronics capable of handling large voltage and current. As a result, the risk posed by these electronic components also increases since we are now dealing with large current and power devices, sometimes taking power directly from the sockets. At the same time, design constraints placed by their large size along with which the right motors and motor-drivers are to be chosen, their autonomy, the processing power of the boards, their inter-process communication, and computer intelligence are to be taken into consideration, involving various sub-fields of computer, electrical and mechanical engineering, etc. This paper, therefore, addresses all these concerns and provides a viable solution that involves minimalistic use of components.**

***Index Terms*—autonomous robot, planetary geared motors, angle grinding, CNC machine, wheel encoders, speech synthesis, lidar, data-logging.**

I. Introduction

Robot building incorporates knowledge from different fields of engineering. Therefore, in a realistic scenario, it might be tricky and difficult to build these types of robots. One can get lost in loads of information available to them which will be complete chaos. Thus to simplify the decision making process, and to build large intelligent and autonomous mobile robots from scratch, the following are the things one has to consider, and which will also be discussed in this paper with an experimental and statistical study: i) viability of materials with regard to the cost, weight, and hardness ii) locomotion in various conditions iii) on-board or off-board power supply iv) performance of a development board in terms of space and speed v) degree of interaction with the user vi) the control mechanism, etc.

Although a large amount of research has been put into building mobile robots [1-16], the novice roboticist is always left in a state of dilemma over the selection of components and best practices to choose from. Therefore, this paper provides a unified solution once for all.

II. Mechanical Design

A. Choice of materials

During the selection of the robot's build material, the density of the material, its associated costs, its strength, and the intended utility of the robot, play a prominent role. This is because the density of the material will contribute to the robot's overall weight, which will decide the motor's torque and RPM. The next factor is the cost associated with the material. Besides being less dense, it must be affordable enough to build a large robot. For example, carbon fiber with a density of 1.93 g/cm^3 costs about Rs.800-1000/kg, whereas aluminium with a density of 2.7 g/cm^3 costs about Rs.150-250/kg. Furthermore, aramid fiber like Kevlar with a density of 1.4 g/cm^3 costs anywhere from Rs.1200-2200/kg and can be used as a covering material if the robot has to sustain very high temperatures.

TABLE I
Materials used for the construction of mobile-robots with their density and cost

Material	Density (g/cm^3)	Cost (in rupees per kg)
Steel	8.05	100-200
Aluminium	2.7	150-250
Carbon Fiber	1.93	800-1000
ABS Filament (Plastic)	1.05	1000
PLA Filament (Plastic)	1.24	1000
Bronze	8.73	500-700
Brass	8.4-8.73	150-450

Thus, we can say that aluminium is typically the best choice for the construction of mobile-robots given its density and cost per kilogram. In addition to that, aluminium does not rust like some metals do. However, it corrodes in wet or damp conditions, which can be prevented by adding a protective coating. If the weight of the robot does not matter, steel is a good alternative. Whereas for much lighter robots, carbon fiber can be used, though it is expensive. Plastics like ABS and PLA generally cost about Rs.100/kg. But their filaments for 3D printing cost Rs.1000/kg. This is due to the complexity involved in their manufacturing.

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An Efficient Criminal Segregation Technique Using Computer Vision

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AN EFFICIENT CRIMINAL SEGREGATION TECHNIQUE USING COMPUTER VISION

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***Abstract*—In the contemporary world, where the population has been growing rapidly, it has become difficult to identify suspicious persons. Given the abundance of population in public places, it is difficult to identify a culprit post-crime activity because one (in general, the investigator) has to go through the entire CCTV footage to track and pin down people who seem suspicious for further investigation. These traditional methods are very time-consuming and laborious since such footage can be at least hours long. This proposed method takes advantage of the fact that the culprit tries to hide their identity by either evading the camera or by masking themselves. In places like shopping malls, movie theaters, restaurants, etc. these cameras are placed at the entrance and at security checks. Hence, it is not plausible for them to completely evade the cameras. This shifts our concentration to the latter idea that they hide their identity by masking themselves. We build our model on this flaw and combine video surveillance with machine intelligence to provide an efficient interface than unprocessed video feed. Furthermore, this system is not only useful for post-crime scenarios but can also be deployed for real-time analysis.**

***Index Terms*—Optical flow, Modified YOLO, Haar-cascade, Transfer learning, Security and Monitoring, AdaBoost, Real-time, Semi-automatic.**

I. Introduction

Many security systems that exploit video feed from CCTV cameras have come into existence recently with the growth in computer vision. The diversity of criminal activities that can be performed in an ATM and the difficulties involved in surveillance [1] are well known. Also, a study highlighting various crime scenes and instances where computer vision fails [2] to classify a crime scene correctly is shown, which calls for a human operator to take over. Some techniques also took advantage of person localization and tracking [3] to produce a more robust system for abnormal situation detection but failed to address criminal identification. Finally, a novel approach using optical flow [4-5] for motion detection is used, which can be put into use for developing a more intelligent way of criminal segregation (in cases where only flow of objects is detected). Therefore, the accuracy of such systems, which entirely depend on computer vision is not quite guaranteed. And given a place like shopping malls or movie theaters, many scenes from the camera are recorded, which might turn into false-positive suspicious activities when predicted. Thus, human intervention is definitely required for identifying such activities. This proposed system simplifies human effort rather than completely avoiding it by providing a way to segregate these suspicious video snippets into a separate database that could be used later for analysis.

II. Methodology

In this, we use a combination of optical flow, modified YOLO, and Haar-cascades to separate suspicious people from normal ones. The modified YOLO is based on transfer learning and is person-specific.

First, the optical flow is detected in the video stream. Then the region in which the flow has occurred will be captured. In the capture, the image in the bounding box of people in the scope of the camera is extracted. Then pre-processing is done to the image so that all the unwanted noise is removed as well as flattened vertically and horizontally, if necessary. This image is now passed onto the next stage where facial specific Haar-cascade tries to extract the face of the person. This allows the system to find if a person has their face covered or not. Now there will be 3 cases arising from this holistic system's prediction. They are as follows:

1) Person detected, face detected
2) Person detected, face not detected
3) Flow detected, person not detected

Now a "database of these video stream snippets," which belong to the second and third category is created along with the "timestamp of their occurrence in the original video feed". These video feed snippets then can be made a priority to point out suspicious people, which saves a lot of time and resources by not watching the entire video footage. This technique is computationally light and can also provide live feed analytics.

III. Pose of the Camera

The pose of the camera for surveillance plays a very prominent role. This is because, instead of relying on heavy and sophisticated image processing software to remove any distortion from the image due to an improper position or orientation of the camera, it is best that we decide an optimal pose for camera placement. We have worked out where to place the camera to get a quality video with less distortion. The camera has to be placed on the side walls rather than the ceiling of the walkway. This is because when the camera is

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Review on Neuralink: A Fully Implanted Wireless Invasive Brain Machine Interface

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A Review on Neuralink: A Fully Implanted Wireless Invasive Brain Machine Interface

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Abstract: Advancements in artificial intelligence, Neurosciences affects every aspect of society. Brain Machine Interfaces (BMIs) are rapidly growing with the increasing pace of advancements in Neurosciences, Neurotechnology, and Artificial Intelligence. BMIs have the potential to restore the sensory and motor functions in various clinical disorders. For an instance, BMI can help a paralyzedindividual in controlling the artificial limb to operate with more natural activity. With the advancements in microfabrication, machine learning approaches there is rapid neuraldevelopments in Invasive BMIs. We candesignthe chips and electrodes at submicronresolution and predict the neural activity with enhanced adaptive decoding algorithms. Combination of neuroscience with modern engineering has risen unprecedented developments in the BMI field.

Keywords: BMI, Neuroscience, Electrodes, Neural Decoding, Neurosurgical Robot

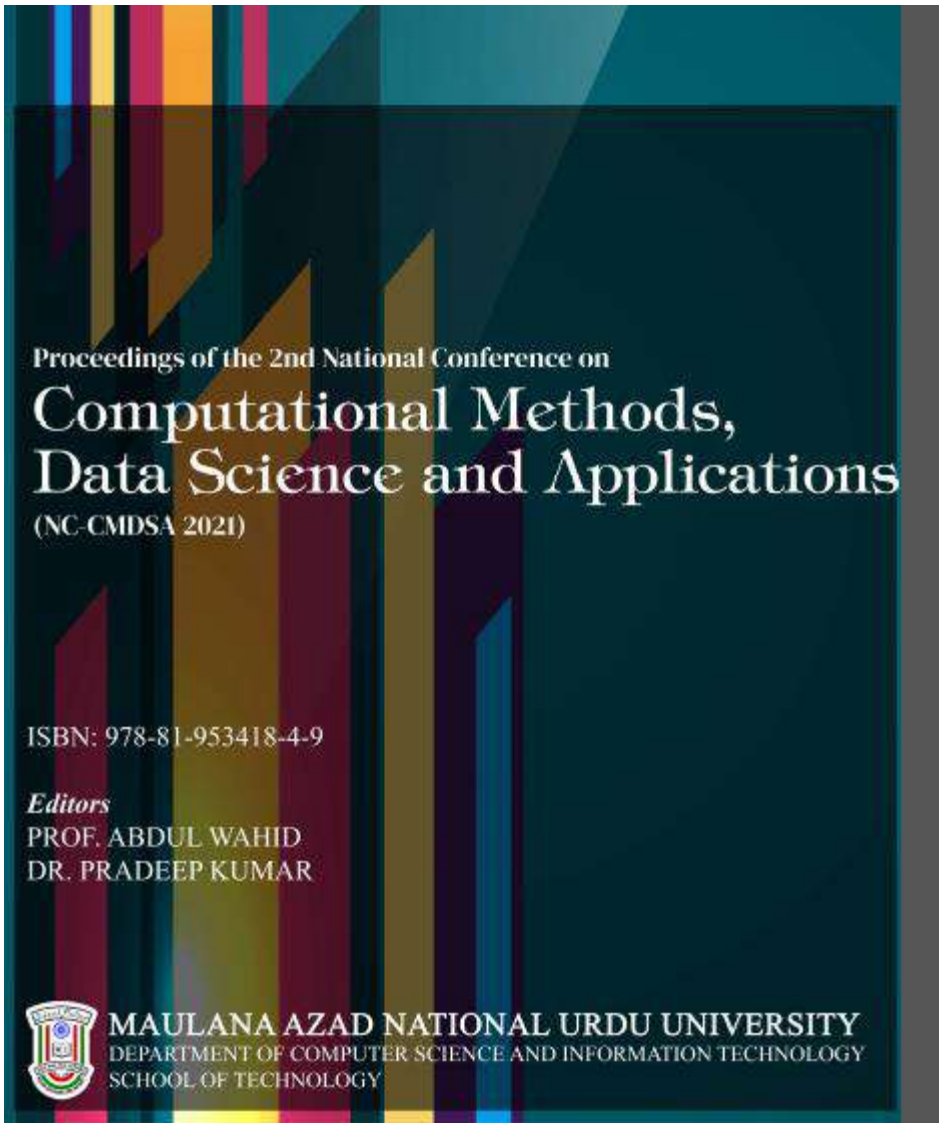
1. Introduction

Individuals with severe spinal cord injuries andparalysis require continuous care to performs daily routines, some have lost the ability to communicate. Discoveries in Neuroscience, advancements in AI and evolution of hardwareopened the bounds for restoring the motor [1] and speech abilities in people with above nervous disorders. Neuroscience proposed the use of Brain Machine Interfaces (BMIs) for disabled persons to interact with the external environment by translating the brain signals into commands to control the machines [2].

2. Related Work

Decades of research paved the path for buildinga Brain Machine Interface. Hans Berger is the first man to detect the Neuroelectrical Activity.To record the electrical activity in the brain he invented electroencephalography (EEG) in 1924. In 1970 USA's Defense Advanced Research Projects Agency started a program toexplore the brain signals and communications inside brain using EEG.

In 1976 UCLA's Laboratory for Brain Computer Interface outlined the systematic attempt to control a cursor with brain decisionsand reactions. UCLA's Professor Jacques J. Vidal coined the term BCI.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Network Flow Analysis Using Machine Learning

CMDSA-003

Network Flow Analysis using Machine Learning

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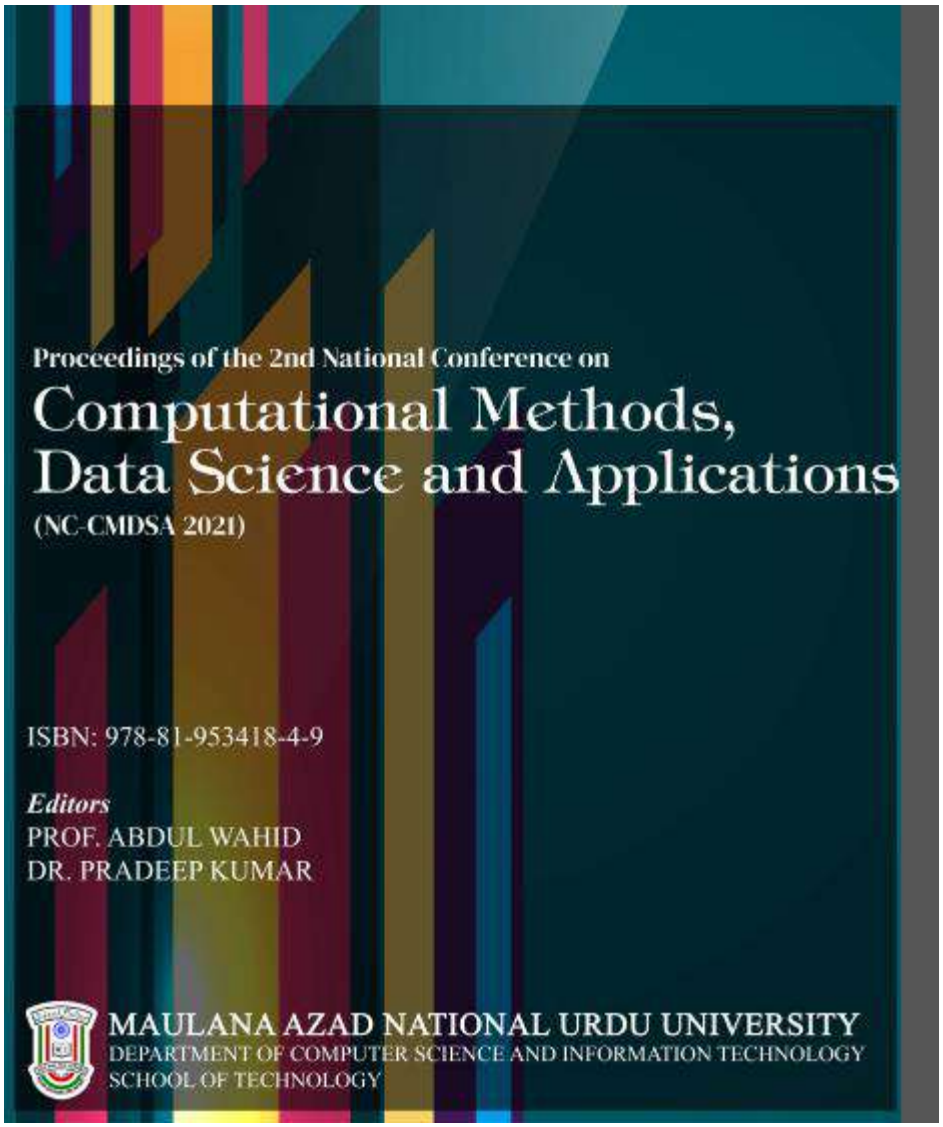
Abstract: *During the past few years, network analysis and anomaly detection have become a critical process in cyber security. The tremendous growth in the networks, the analysis of the traffic is become a crucial problem. The analysis of the network traffic requires intelligent methods like machine learning approaches. Many organizations are using advanced modern methodologies to detect anomalies and preventing cyber-attacks. The aim of this work is to identify the destructive behavior in the data congestion. To identify the pattern/characteristic in malicious flow in the network need a dataset for training of our model. The result of the analysis can help and tune the rules to detect the network anomaly.*

Keywords: *machine learning, linear regression, network flow, anomaly detection.*

1. Introduction

There has been an incredible rise in Cyberspace congestion in the recent past. A study finds the growth of 35% is observed in network traffic per annum. The enormous growth is leading to a constant bandwidth encounter between various web applications and instantaneously contributing to an increase in the number of refugee attacks. Thus, efficient web congestion management and analysis is required for the various security applications and its operations. It helps in finding the sudden traffic rises and shows any anomaly or malicious performance over the Internet by categorizing information from patterns obtained during the analysis. To identify the difference from malicious traffic to normal congestion, first we have to identify the difference between the flow and strange congestion. The differentiation helps to make the decision among the normal and anomaly of the traffic.

The data streams transferred in between a specified source and destination is called the flow, it is crucial for the identification of abnormal flow in the network in the analysis of anomaly detection. Generally, a flow includes complete data regarding the n number of packet and n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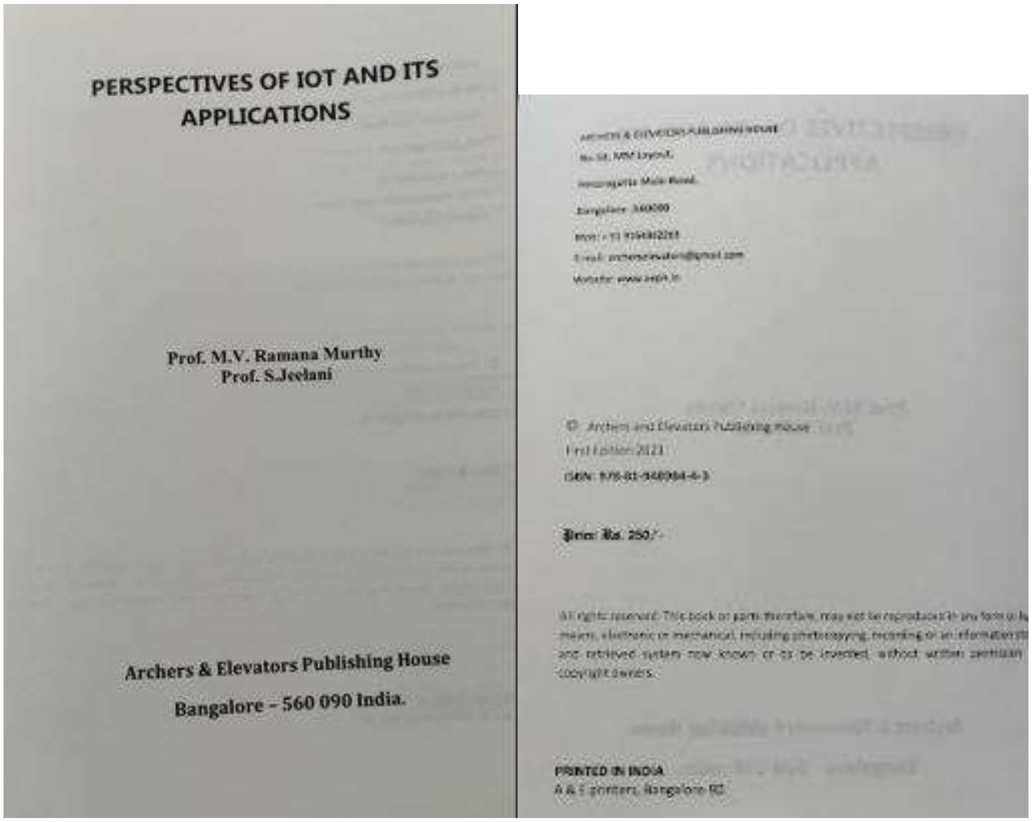

PERSPECTIVES OF IOT AND ITS APPLICATIONS

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Chapter - 2
Analysis of Low Power VLSI Design of Static Recovery Full Adder Cells

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Hybrid Secure Cloud Storage data based on improved Encryption Scheme

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Hybrid Secure Cloud Storage data based on improved Encryption Scheme

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***Abstract* – Cloud computing is a utility for data storage. Data storage security has become a primary challenge. The users can access, share &transacts the data as the cloud offers services based on the user demand. The Cloud data is originated from various sources, how secure the data is? Data security issues are increasing rapidly as data is flowing across the internet. To protect sensitive information there are many encryption techniques to hide the data from unauthenticated users. To secure the data encryption and decryption methods are used by which only authorized users can only retrieve the data. But sometimes Brute force method can recognize the hidden data. To enrich data confidentiality and authentication problems, a proposed method is used in which combination of AES and proxy re-encryption with Honey encryption is used. The system improves the data security for outsourced data. Honey encryption with hybrid cryptography can make unauthorized users to access only plausible looking messages.**

Keywords* – *Cryptography, Honey Encryption, AES, Proxy Re-encryption.

I. INTRODUCTION

Cloud computing proved to storage information with many users like organizations, government bodies and enterprises. As data consists of sensitive data security and privacy acts as a crucial role for hiding sensitive data with unauthorized parties. Many existing methods adopted for securing data in cloud but still there are many limitations. Researchers had developed algorithms to protect sensitive data such as posing with Access control and fine-grained like attribute-based encryption, identity-based encryption, homomorphic encryption, role-based encryption, proxy re-encryption, searchable encryption algorithms.[1&]

As data is growing every user is storing the data in cloud storage. In which data consists of all personal sensitive data. Cloud providers should secure the sensitive data. For securing the data from unauthorized user's data should be encrypted before uploading into the cloud the data and the secret key will be only given to an authorized user.[6] Encryption methods are used to hide sensitive information from unauthorized users. Protecting private data by encrypting them and retrieve them only when a user has its key to decrypt it.[2]

In this paper, Honey Encryption is combined with AES and proxy Re-Encryption algorithm by which more security is provided to the sensitive data and improves data confidentiality and integrity. Combining two algorithms which give better security.

Honey Encryption is a way in which encrypted data is stored under a password using DTE. When an attacker tries to open with a wrong password doesn't allow him to open the correct data. It gives fake Honey terms looks like a real data. Thus, users who tries for guessing password to open the file will not be able to recognize whether given output data is correct or wrong data.[3]

II. RELATED WORK

To protect data from unauthorized users the common method used to hide data is used to encrypt the data before uploading into the cloud storage.[6] Many symmetric and asymmetric encryption algorithms are used for encryption. In which symmetric encryption is used with only on key at senders and receiver's side. Asymmetric keys are used with two keys one for encrypting with public key and another secret key I used for decrypting it.

For cloud storage proposed a combination of ABE and secret key with fine grained access control [15]ABE and proxy re-encryption provide more security to cloud data. PRE is a third-party server to re-encrypt the file again when the files are uploaded in encrypted format.[6]

To overcome the brute force attack from protecting sensitive information used Honey encryption. With the other encryption techniques, it has limitation with brute force method. Thanda. W et.al [4]. To find unauthorized users in online banking applications used Honey encryption SooF. T, et.al [3]. The proposed system explained about the hybrid encryption with fully homomorphic with additive RSA encryption. Zainab. H. M et.al [6]

According to symmetric encryption cloud storage is used by adopting multiple keys and file partition techniques Li et al. [16]. Proposed a method of "combined encryption with ABE and fine-grained access control in cloud storage data" [4]. In health applications ABE and PRE is used for securing sensitive information of a patient. In this method all health-related data is encrypted and re-encrypted using PRE [9]

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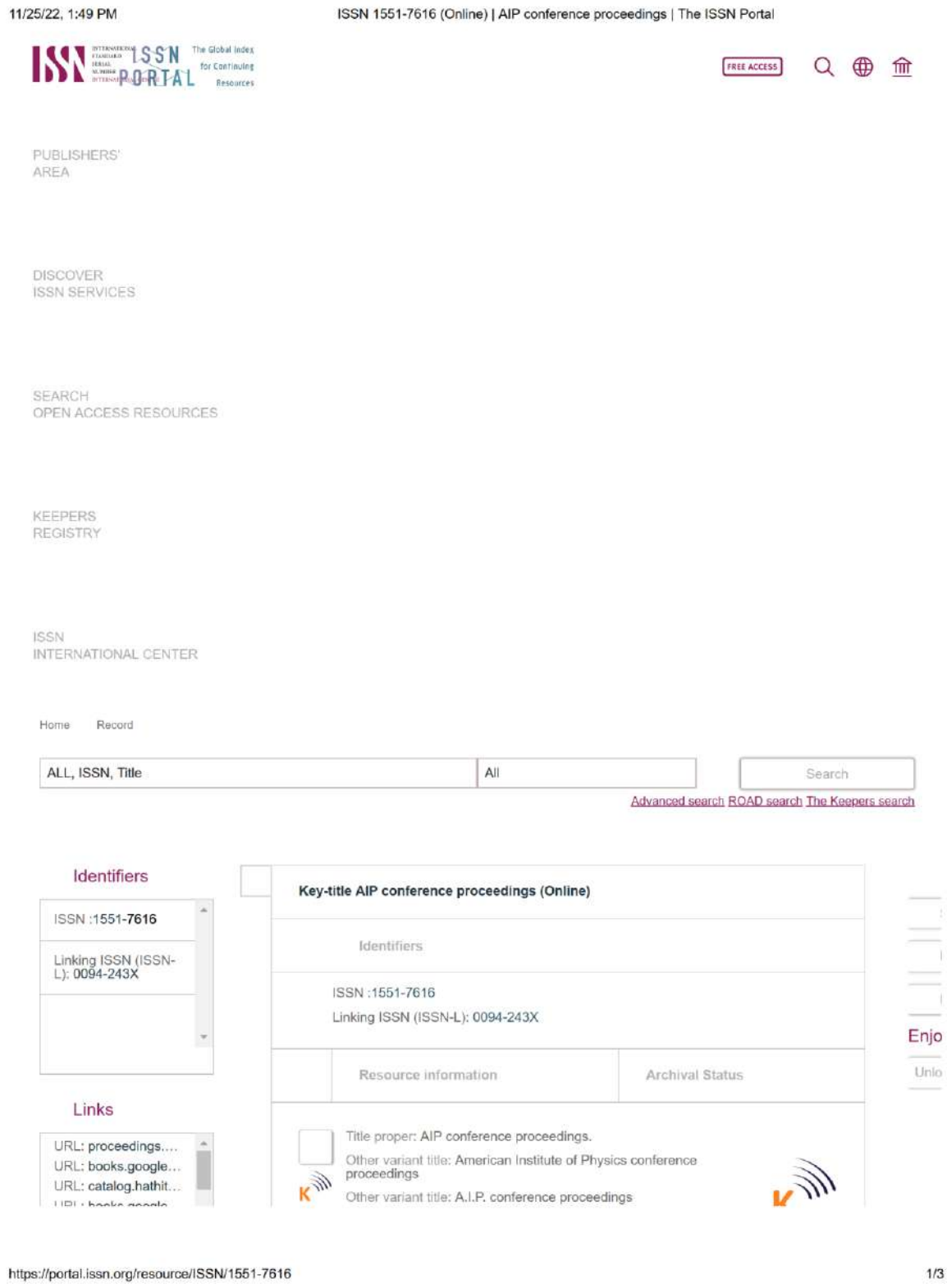
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Design and Analysis of Impeller using Corrosion Resistant Materials

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Abstract. An impeller a rotating component used to increases or decreases the flow and pressure of fluids, which has wide spread applications in aircraft sector, automobile industry, medical field and power plant technology. In real time applications bronze and hardened steel impellers quickly erode when presented to destructive mediums, for example, waste water, seawater, sewage,, chlorine, bromine, and numerous chemicals. They are dependent upon cavitation and electrolysis (galvanic erosion) which rashly demolishes the impeller drastically. The corrosion is the major problem of the impeller that increases pump operating and maintenance expenses which obligated the industries to search for alternative materials. The main criterion is to select the appropriate selection of material for the impeller to resist corrosion. Materials such as Caprolone (Nylon) and ABS (Acrylonitrile Butadiene Styrene) have been consider for the study considered which has chemical, thermal stability along with toughness and strength. The design and analysis of impeller is designed, analyzed using commercially available simulation tools.

Keywords: bronze and hardened steel impellers, ABS (Acrylonitrile Butadiene Styrene), Caprolone (Nylon)

INTRODUCTION

A centrifugalpump impeller is a rotating object in which energy transfers from the motor that operates the pump to the fluid is pumped by speed up the water outwards from the middle of rotation, these are used in many real time industrial uses like compressors, pumps, water jets and so on. In general in actual applications impellers made up off by stainlesssteel and bronze like conventional materials corrodes in faster rate when exposed to destructive mediums such as seawater, sewage, waste water chemicals like chloride, bromide, and many dissolved salt chemicals. impellers are more prone to plaque cavitations and electrolysis known as galvanic eroding which knock down the impeller considerably and there by improves the pump maintenance and operating expenditures. The corrosion of the impeller can be tackled by using Caprolone called Nylon, Acrylonitrile Butadiene Styrene formally known as ABS, and Polymer Nano Composites other than conventional stainless steel material.

Material Selection (ABS)

The superiority of ABS (Acrylonitrile Butadiene Styrene) over Caprolone (Nylon) in terms of mechanical properties made it easy for us in the selection of material for the impeller.

- Acrylonitrile Butadiene Styrene (ABS):

ABS is a terpolymer, or a polymer made out of three distinct monomers. This indistinct mix is comprised of acrylonitrile, butadiene, and styrene in shifting extents. Every last one of these monomers serve to give a bit of

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Evaluation of water quality index at Gandipet lake surroundings

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EVALUATION OF WATER QUALITY INDEX IN GANDIPET LAKE SURROUNDINGS

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ABSTRACT

To assess water quality of Gandipet Lake (Osmansagar reservoir) and its surroundings whether it is fit for consumption, Water Quality Index (WQI) technique proposed by Ramakrishnaiah (2009) was adopted. A water quality index provides a single numeral that signifies water quality holistically at a certain location and time based on several water quality parameters. The purpose of an index is to convert complex water quality data into information that is well understood by the community. Eight most important parameters related to water quality such as pH, total dissolved solids (TDS), total hardness, total alkalinity, dissolved oxygen (DO) and electrical conductivity (EC) were taken for the calculation of WQI. The WQI values for the Gandipet Lake ranged from 77-91. The values of WQI showed that the water was free of any impurities at the sampling site. Owing to anthropogenic activities such as dam operations, water may get polluted to some extent, resulting in the decrease of water quality index. Also, WQI can be used as a tool in comparing the water quality of different sources. It gives the community a general idea of the possible problems with water in a particular region. Water Quality Index is one of the most effective ways to communicate the information on water quality trends to the public or to the policy makers and water quality management.

Keywords: Drinking, WQI, Gandipet lake, Osmansagar, Ramakrishnaiah (2009).

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Experimental assessment of coir geotextile to improve the strength of weak subgrade at different load conditions

D. Harinder [a], P. Yugendar [b], S. Shankar [c]

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https://doi.org/10.1016/j.matpr.2021.12.351

Abstract

The stabilization of weak subgrade soil with natural geotextile fiber is a cost-effective to improve the stability of the low-volume roads (LVRs). The coir geotextile is naturally available eco-friendly and biodegradable material having the high strength and durability compared to the other natural material. The present study, the test were conducted to determine the effectiveness of coir fiber and coir geotextile mats under the static and dynamic loading condition by using the CBR and WTT respectively. The inclusion of the coir geotextile fiber to the BC soil subgrade improved the load bearing capacity in soaked and un-soaked condition. The study was also conducted with two types of the coir mats under the repeated loading condition with help of the fabricated mould. It has two layer flexible pavement system like subgrade and sub-base are prepared according to CBR Standard. From the results, it was concluded that the provided coir geotextile mats helps in the slow settlement, reduce the permanent deformation/rut improved the performance of the roads. The placement of coir geotextile in both the test (CBR and WTT) showed the significant improved in reinforced section improved the service life of the flexible pavement structure with lower cost of maintenance.

Previous Next

Keywords

Coir fiber; Coir mats; Reinforcement; Separation; California bearing ration test (CBR); Wheel tracking test (WTT)

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Experimental study on mechanical and durability properties of recycled aggregate based geopolymer concrete

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Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 649-654

Experimental study on mechanical and durability properties of recycled aggregate based geo-polymer concrete

R. Swami Ranga Reddy, B. Anand Sagar

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https://doi.org/10.1016/j.matpr.2021.10.053

Abstract

To reduce the carbon foot print from the production of Portland cement, there is requirement of creating other bond produced materials to make concrete. In this connection several efforts are put forward to develop binders with pozzolanic materials without cement, for this addition of chemicals is unavoidable to cause reactive, this work involves the use of fly ash, Recycled aggregate, alkaline activated fluids. Alkaline to binder ratio is 0.55 with exchange of 100% cement with fly ash and determine the strengths for 24hrs oven curing at temperature 60 °C and 28 days atmospheric curing. In this work waste materials fly ash and GGBFS are taken in the proportion of 70:30. The proportion of Sodium Silicate and Sodium Hydroxide is taken as 2.5 and the alkaline liquid to binder ratio is taken as 0.5. The molarity of the alkaline solution is taken as 8 M and 10 M. In this work, the coarse aggregates have been replaced by recycled aggregates for different proportions i.e. 0%, 25%, 50% and 100% the mechanical properties such as compressive strength, Split Tensile and Flexural Strength are evaluated.

Previous Next

Keywords

Fly-ash; GGBFS (Ground Granulated Blast Furnace Slag); Portland cement; Alkaline Solution; Workability; Durability

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Crushed Stone Dust as a Replacement for River Sand in Self Compacting Repair Mortars - A Sustainable Solution

ScienceDirect

Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 1168-1174

Crushed stone dust as a replacement for river sand in self compacting repair mortars – A sustainable solution

V Krishna Rao Mupparisetty [a] [1], Faeq Ahmed Mohammed [b]

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https://doi.org/10.1016/j.matpr.2021.11.021 Get rights and content

Abstract

Rapid growth in the infrastructure to cater to the demands of increasing population is forcing engineers to think the route of sustainability even for repairs of critical infrastructure. Self-Compacting Mortar (SCM) is one such repair material with tremendous advantages in terms of ease in application and mechanical properties. The present paper reports the effect of use of alternate materials for river sand on the fresh state behavior (based on mini V-funnel and mini slump flow tests) and mechanical properties of SCM's (based on 28-day compressive, split tensile and flexural strengths) to ascertain the mechanical behavior, while to understand the ingress of moisture and harmful chemicals through the repair material to the substrate, sorptivity test (for durability) was performed. The parameters of investigation include, type of aggregate (River sand, crushed stone dust and foundry sand), mix proportion (1:1 and 1:2), size of fine aggregate (4.75 mm down, 2.36 mm down, and 1.18 mm down), and age of curing (28 days). A total of 225 specimens were cast and tested in this study. The results are of the evidence that crushed stone dust as fine aggregate showed superior performance and can be a suitable alternative to the scarce river sand.

Previous Next

Keywords

Sustainable materials; Self compacting mortar (SCM); Mechanical properties; Sorptivity; Natural sand (NS); Crushed stone dust (CSD); Foundry sand (FS)

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A review on the influence of copper slag as a natural fine aggregate replacement on the mechanical properties of concrete

2022, Materials Today: Proceedings

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Mode Shape Modification of Irregular Buildings

ScienceDirect

Materials Today: Proceedings

Volume 62, Part 4, 2022, Pages 1790-1795

Mode shape modification of irregular design of buildings

A. Balaji Rao, P.Srinivas Reddy, Ch. Meghana Shaly

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https://doi.org/10.1016/j.matpr.2021.12.374 Get rights and content

Abstract

Earthquakes are the most unpredictable and devastating of all natural disasters. In view of the extensive damage it can cause, it is very much necessary to understand the seismic response of buildings under various conditions. One such situation is buildings with plan irregularity, and poses a challenge to structural engineers because of the damage it can cause. These torsional irregular buildings are subjected to large rotations about the vertical axis due to the eccentricity between centre of mass and with centre of rigidity. Table 5 of IS 1893(Part-1):2016 mentions re-entrant corners, large cut outs in the slabs, non-parallel lateral force system are some of the causes of torsional irregularity. These buildings will have torsional mode as the fundamental mode and will be subjected to extensive damage during seismic activity. In situations where the irregular shape is inevitable because of architectural and functional demands, the structural engineer has to find means to transform the fundamental mode shape from torsional mode to translational mode. Adding structural walls, bracings at the appropriate locations are a few of the viable solutions. In the present study, an attempt is made to investigate the appropriate location and geometry of structural walls for few torsional irregular buildings. Three-dimensional dynamic analysis (Response Spectrum Method) of 15 storied L and C- shape buildings is carried out as per IS 1893 (part 1) using ETABS. Response quantities like Time Periods, Base Shear, Storey Moments, Modal Participation factors, Joint displacements, Storey Drifts are evaluated. A comparative study is made to arrive at the optimum location of shear walls with minimum torsion displacement and where translational mode becomes the fundamental mode.

Previous Next

Keywords

Seismic response; Torsional irregularity; Shear walls; Response spectrum method; Translational mode

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Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 873-881

Towards sustainable construction through the application of low carbon footprint products

K. Ranjetha [a], LL Johnson Alengaram [a], Ahmed Mahmoud Alnahhal [a], S. Karthick [a], W.J. Wan Zurina [a], K.J. Rao [b]

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https://doi.org/10.1016/j.matpr.2021.10.275

Abstract

The production of cement generates a large amount of greenhouse gas emissions; in addition, the scarcity of natural resources used in the development of building materials and products has propelled many governments, non-government organizations, construction and cement industries, and researchers around the globe to invest their time and energy towards reducing the dependency of the natural materials; one possible way of achieving sustainability is through the utilization of the locally available waste or industrial by-products as a partial or whole replacement for the conventional materials. University of Malaya (UM) has made a meaningful contribution in the development of sustainable building materials and demonstration projects. UM is the first university in Malaysia to build a cement-free house on its campus. Two single-storey houses, namely Low-Cost Model House (LCMH) and Geopolymer Concrete House (GPCH) have been built using environmentally friendly materials within the university campus. Locally available agricultural and industrial waste and by-products such as palm oil fuel ash (POFA), palm oil clinker (POC), manufactured sand (M-sand), and steel slag aggregate (SSA), were used in the development and construction of these houses. Apart from the materials, environmentally friendly methods of construction were also adopted. This article mainly evaluates the system of construction and the application of sustainable building materials used in the LCMH & GPCH along with its advantages in terms of environment, economy and the social aspects. Overall, it can be concluded that adopting green technology and incorporating waste by-products in concrete has numerous advantages. The revision in the concrete mixes by using alternative substitute materials from waste products would pave the way for reducing environmental problems, harmful effects of waste due to improper disposal methods, reliance on non-renewable substances and promotion of sustainable construction. The prime idea of building the LCMH and GPCH in University of Malaya campus is to raise awareness on the utilization of waste and industrial by-product materials; further, the dissemination of the information is to expand the use of these materials and construction practice not only in Malaysia, but also in other countries.

Previous Next

Keywords

Industrial by-products; Lightweight concrete; Demonstration project; Low-cost model green house; Geopolymer concrete house; Dissemination

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A study on mechanical properties of high strength concrete with partially replacement of cement

ScienceDirect

Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 1201-1210

A study on mechanical properties of high strength concrete with alccofine as partial replacement of cement

Bhotla Harish [a], N.R. Dakshinamurthy [b], Malegam Sridhar [c], K. Jagannadha Rao [d]

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https://doi.org/10.1016/j.matpr.2021.11.037

Abstract

Concrete is considered as a strong and durable construction material lasting over a century. Reinforced concrete is one among the most popular materials used for construction around the world. Reinforced concrete is subjected to deterioration in harsh environments like in coastal regions. Therefore, several researchers are striving hard with their efforts towards developing a new material to overcome this problem. Invention of large construction plants and equipment around the world added to the enlarged use of construction materials which has raised the curtain to the use of additive mineral by product admixtures to improve the quality of concrete. As an outcome of the experiments and researches, cement-based concrete which meets special performance with respect to strength, durability and workability known as "HIGH PERFORMANCE CONCRETE" (HPC) is being developed. This concrete can be designed to give optimized performance characteristics for a given set of load, usage and exposure conditions consistent with the requirements of cost, service life and durability. The high-performance concrete does not require special equipment but only needs careful design and production. HPC has many advantages like lesser micro cracking than conventional concrete and improved durability characteristics. HPC is the concrete designed to give optimized performance characteristics for the given set of materials, usage and exposure conditions, consistent with requirement of cost, service life and durability.

In this paper, concrete with different grades were tested (M30 to M70) and cement is partially replaced with the ALCCOFINE at different proportions 0, 5%, 10% 15% and 20% to reduce the heat of hydration, so as to develop a durable concrete with the addition of said mineral admixture. Compression, Split tensile and Flexural tests were performed on concrete of different grades with Alccofine as admixture. Chemical admixtures were used in concretes of higher grades (beyond M50 grade) where the W/B ratio is very low (in the range of 0.28–0.35) to overcome the problem of workability. The concrete with Alccofine has shown encouraging results compared to conventional concrete.

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Keywords

Alccofine; Mineral admixture; HPC; High strength concrete; Mechanical properties

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Dynamic performance of soft storey structures with gap elements at beam-column joints

ScienceDirect

Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 622-631

Dynamic performance of soft-storey structures with gap elements at beam-column joints

Mrudula Chanumolu [a], Dr.Vimala Anthugari [b]

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https://doi.org/10.1016/j.matpr.2021.10.049

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Abstract

Soft-storey structures are more susceptible to failure for seismic vibrations, which is well-known to the world. But, in multi-storey apartments, it is a practice to provide a parking place at the ground storey, inducing soft-storey effects. In the present study, an effort is made to reduce the soft-storey effect on the structure's dynamic performance by introducing an arrangement of gap elements at beam-column joints. To that context, a numerical assessment is carried out to check the performance of the RC structure. The gap element is modelled as a spring either in a beam or in a column or both.

The research has been performed in two parts; the first part of the analysis is focused on optimizing the gap element pattern. Diagonal compressive struts replace the infill walls, and the ground storey is modelled as an open ground storey without infill walls, which is considered a soft-storey. From the first part, an optimal gap element pattern from five different arbitrary patterns is obtained from the results of linear dynamic response spectrum analysis, depending upon the comparison of various seismic parameters. The second part of the analysis involves checking the effect of the gap element's optimized pattern for four levels of structures with vertically varied aspect ratios. Response spectrum analysis is performed, and a study is conducted to compare the seismic parameters for the four levels. The models with gap elements have shown an apparent reduction in storey displacements, inter-storey drift ratios, over-turning moments, and increment in storey stiffness when compared to the conventional models, thus exhibiting constructive outcomes.

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Keywords

Soft-storey; Gap element; Response spectrum; Storey displacement; Inter-storey drift ratio; Over-turning moments

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Optimization of location of outrigger system in tall buildings of different aspect ratios

ScienceDirect

Materials Today: Proceedings

Volume 52, Part 3, 2022, Pages 588-598

Optimization of location of outrigger system in tall buildings of different aspect ratios

Pradeep Gunda [a], Vimala Anthugari [b]

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https://doi.org/10.1016/j.matpr.2021.10.034 Get rights and content

Abstract

The dynamic behavior of tall building structures is unpredictable under lateral loads. The key concern of tall building design is controlling deflections under lateral loads like earthquake loads or wind loads. There are many structural forms to resist lateral loads; the outrigger system is one of the best structural forms for effective lateral load resistance in tall buildings. Since the location of the outrigger enormously influences the dynamic behavior of tall structures, the present research focused on finding the optimum location of the outrigger along with the height of the structures. For this contest, a numerical study is carried out with five structural models of different aspect ratios. The aspect ratio of the models considered is 0.91, 0.61, 0.45, 0.36 and 0.30. All five models are designed as per Indian codes, IS456, and IS1893. For the observation of the dynamic performance of the five models, the outrigger truss without any belt truss is placed at different heights of the building. For each position, the dynamic performance of the 3D structure is observed. The study is made to compare the reductions in displacements, inter-story drifts, and overturning moments for the buildings with and without outriggers. This study focus on the change of the position of the outrigger for greater resistance to lateral loads depending upon the aspect ratio of the buildings. The analytical results have been studied to find out the optimum location of the outrigger, along with the height of the structures with different aspect ratios. It was concluded that the optimum position of outrigger truss without belt truss is at 65 to 80% of the height of the building for aspect ratios between 0.45 and 0.95.

Previous Next

Keywords

Outriggersystem; Inter-storydrift; Roof displacements; Overturning moments; Response spectrum

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Cited by (1)

Interrelations of slenderness ratio and main design criteria in supertall buildings

2022, International Journal of Building Pathology and Adaptation

Recent Advances in Structural Engineering pp 21–28

Studies on Infiltration Rate of Pervious Concrete

Nune Srikanth & N. R. Dakshina Murthy

Conference paper | First Online: 01 April 2021

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 135)

Abstract

Concrete is the only material in the construction engineering for which the usage has been multifold over the last decade. Owing to rapid urbanization, there has been an increase in the consumption of construction materials by which the natural resources are depleting day by day. Porous concrete or no fines concrete or permeable concrete is known as special type of concrete which allows the water to penetrate through the concrete, thereby reducing the external runoff and boosting the ground water table. As pervious concrete has little to no fine aggregate, the

India

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Recent Advances in Structural Engineering, Volume 1

Select Proceedings of SEC 2016

Editors: A. Rama Mohan Rao, K. Ramanjaneyulu

Covers a wide range of research areas in structural engineering, making it a useful reference resource for researchers, academicians, and practicing engineers

Presents recent advances in structural engineering along with contributions from top experts in the field

Includes articles on applications like structural health monitoring, vibration control, nanomaterials, machine learning and artificial intelligence

Part of the book series: Lecture Notes in Civil Engineering (LNCE, volume 11)

Conference series link(s): StEnCo: Structural Engineering Convention

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of reinforced concrete plate and shell structures; and structural health assessment and management of bridges. He has published over 80 papers in refereed national/international journals, and over 100 papers at international and national conferences/seminars.

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Recent Advances in Structural Engineering, Volume 1	Select Proceedings of SEC 2016	A. Rama Mohan Rao, K. Ramanjaneyulu
Series Title	**DOI**	**Publisher**
Lecture Notes in Civil Engineering	https://doi.org/10.1007/978-981-13-0362-3	Springer Singapore
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Engineering, Engineering (R0)	Springer Nature Singapore Pte Ltd. 2019	978-981-13-0361-6
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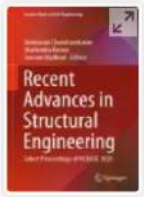

Recent Advances in Structural Engineering pp 51–59

Stress–Strain Behaviour of Self-consolidated Processed Recycled Aggregate Concrete

Nune Srikanth, N. R. Dakshina Murthy ✉ & M. V. Seshagiri Rao

Conference paper | First Online: 01 April 2021

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 135)

Abstract

Self-consolidating concrete (SCC) is considered as a special concrete that streams and strengthens by its self-weight and passes through the congested reinforcement without any segregation and mechanical vibration. In the recent era, a bombastic amount of construction and demolition (C&D) scrap produced from deteriorated structures and ready mix concrete plants is creating a severe environmental pollution. This has encouraged the reuse of C&D scrap as aggregates in concrete. Utmost investigation

Department of Civil Engineering
3RD INTERNATIONAL CONFERENCE ON "ADVANCES IN CIVIL ENGINEERING" (ICACE - 2021)
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Green fields, Vaddeswaram, Guntur District, A.P., India - 522502. Phone: +91 - 864 - 5350200

Paper ID - 53

IDENTIFICATION OF CRITICAL CONSTRUCTION DELAY FACTORS: AN INDIAN PERCEPTION

M.V. Krishna Rao, Abdul Rafae Syed, L. Amogh Reddy D, and Sudarshanam Abhilash

Department of Civil Engineering, Chaitanya Bharathi Institute of Technology(A), Hyderabad (TS), India.

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Abstract: Construction delays are a general phenomenon that persists in most of the construction projects and thus requires an extensive analysis in order to identify the potential delay factors. To identify the critical delay factors, a questionnaire was developed to conduct an industry survey aimed to obtain a collective opinion of professionals in the Indian construction industry. The questionnaire was distributed to 175 construction professionals at Hyderabad, India who have at least 10 years of experience in the construction industry and the rate of return was 78.2%. Most of the survey was performed physically via paper and by online means with 39 site engineers, 35 contractors, 23 consultants, 21 private clients, and 19 public clients. The objective of this paper is to identify the most critical delay factors that contribute to delays in the construction projects and rank them using the Relative Importance Index (RII). The individual group of factors is subjected to the Cronbach's alpha (Cα) test to assess their reliability or internal consistency. Spearmen's rank correlation coefficient, r. was also used to observe the existence of correlation between the interpreted choices made by the different paired groups of respondents (contractors, consultants, clients) so as to report any significant differences in their opinion. The results of the analysis show varying opinions among the respondents based on their work experience, designation, and the scale of construction projects they have worked upon. This paper accentuates the importance of identifying the critical delay factors that aid in delay analysis and in creating awareness to minimize their effects during the course of the construction project.

Keywords: Construction delays; critical delay factors; Industry survey; Cronbach's alpha (Cα); Relative Importance Index (RII); Spearmen's rank correlation coefficient.

Macroscopic analysis of traffic flow behavior on multi-lane highways under heterogeneous traffic conditions

Recent Advancements in Civil Engineering pp 633–643

Macroscopic Analysis of Traffic Flow Behaviour on Multilane Highways Under Heterogeneous Traffic Conditions

Kanchumurty Anusha, Poojari Yugendar & S. Moses Santhakumar

Conference paper | First Online: 15 December 2021

461 Accesses

Part of the Lecture Notes in Civil Engineering book series (LNCE,volume 172)

Abstract

Traffic flow behaviour is a complex phenomenon and needs better understanding and concepts for its analysis. The highways in India normally operate under mixed traffic conditions, and the driving behaviour varies from one place to another. Macroscopic models which are quite suitable for describing the behaviour of entire stream and further accepted worldwide for estimation of capacity. The present study demonstrates the dynamic nature of

Maharashtra, India

Dr. Abhay Tawalare

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An Experimental study on durabilty of pervious concrete

Department of Civil Engineering
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25th - 26th June 2021
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Paper ID - 70

AN EXPERIMENTAL STUDY ON DURABILTY OF PERVIOUS CONCRETE

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Abstract: Pervious concrete is a special high porosity concrete used for flatwork applications that allows water from precipitation and other source to pass through there by Reducing the Runoff from a site and Recharging Ground Water Levels. Durability and Water Absorption are important properties of Pervious Concrete. This paper represents the experimental methodology and experimental results related to durability and water absorption. Cylinders of size 100 mm Ø and 200 mm height are prepared to investigate both these properties. This investigation should be carried out at the end of 28 days for water absorption and 56 days for durability in which cylinders are immersed in Sodium Chloride (NaCl) Solution after 28 days of casting. Different concrete mix proportion such as 1:5, 1:7 and 1:9 with different size of gravel such as 18.75 mm and 9.375 mm should be used to check both these properties of pervious concrete. Test results indicates that pervious concrete made by 1:6 concrete mix proportion has more durability and less water absorption and pervious concrete made by 1:10 mix proportion has more water absorption and less durability that`s why durability and water absorption are inversely proportional to each other.

Keywords: Pervious concrete, porosity, durability, Porosity

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Studies on Impact Resistance of Self-Compacting Concrete with mechanically treated Recycled Coarse Aggregate

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Abstract. Self-compacting concrete (SCC) is an extraordinary type of concrete that is extremely flowable and spreads into the formwork without the need of external vibration. In order to attain self-compatibility SCC obliges extensively surplus quantity of fine particles as compared to conventional concrete. Recycled Coarse Aggregate (RCA) obtained by crushing of old concrete is used in the investigational analysis. Nan-Su method is used to design the SCC mixes A and B (M35 and M45). The current experimental study aims to evaluate the impact energy of Recycled Coarse Aggregate (RCA) based self- compacting concrete by replacing with Natural Coarse Aggregate (NCA) (25%, 50%, 75%, and 100%) in unprocessed and processed states for various number of revolutions (500R, 1000R, 1500R, 2000R). Tests were carried out with a constant mass of hammer (16.38 kg). The impact energy determined for the Mixes A and B is compared with respect to replacement level and processing of RCA. The impact energy calculated is maximum for mix-A (1500 and 2000 revolutions) and mix-B (2000 revolutions) at 75% and 100% replacement of RCA respectively. From the experimental results of obtained Coefficient of Variation (CoV) with respect to processing of aggregate, in both the mixes it is observed that RCA in unprocessed state and processed state (1500R) has good Coefficient of Variation. Comparing the results of Coefficient of Variation with respect to replacement level of aggregate it has a very good CoV at 25% replacement level of RCA for both the mixes.

Keywords: Self-Compacting Concrete, Natural Coarse Aggregate, Processed recycled coarse aggregate, unprocessed recycled coarse aggregate, Impact resistance.

1. Introduction

One of the current trending challenge for a Civil engineer is to plan, design and built the construction projects with the minimal use of natural resources and also to make use of alternate construction materials to maintain ecological balance. [1] Enormous amount of demolition waste generated is creating a huge pressure on the environment thereby increasing land pollution. [2] To minimize the impact of demolition waste it can be recycled and used in construction projects. [3] There is an urgent need for improving the standards of using alternate construction materials to make a sustainable development.

A virtuous volume of research has been carried out on the static behaviour of concretes but there is a lag in the behaviour of impact resistance of special concretes using recycled materials. [4] RCC structures are subjected to dynamic loads for a very short duration. [5] The various dynamic loads coming on the structures are like machine vibration, seismic forces, wind

Time Impact Analysis (TIA) and the Window Analysis (WA) Techniques in Construction Delay Assessment (Paper ID: 55)

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TIME IMPACT ANALYSIS (TIA) AND THE WINDOW ANALYSIS (WA) TECHNIQUES IN CONSTRUCTION DELAY ASSESSMENT

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Abstract: The growing scale and complexity of present-day construction projects resulted in significant volumes of delay, thus making it rather imperative to assess and analyze the same. Construction projects being bound to extensive contractual agreements leading to legal disputes among different parties, in case of deviations, has rendered the delay analysis an integral part of the construction process. Researchers and practitioners undergo a dilemma on the choice of an appropriate Delay Analysis Technique (DAT). Though Time Impact Analysis (TIA) and the Window Analysis (WA) techniques are widely accepted, many a practitioner in the Indian construction industry does not apply them due to mere lack of awareness. These techniques along with providing an accurate analysis of the delay enable management of time and cost overruns, aid in resolving legal disputes due to various factors that result in the deviation from the baseline schedule of the construction project. This paper considers a real case of a high-rise building project situated in Hyderabad, Telangana (India) for the analysis of construction delay, employing Time Impact Analysis (TIA) and the Window Analysis (WA) techniques and to draw a comparison between TIA and WA techniques elucidating their accuracy and utility in the construction Industry. PRIMAVERA® P6 V20. 12 software has been used in analyzing the as-planned and as-built schedules of the chosen project case. This paper alongside emphasizing the benefits of performing delay analysis and allocation of justified delay claims illustrates the usefulness of the above-mentioned Delay Analysis Techniques for project delay assessments.

Keywords: Delay Analysis Technique (DAT), Time Impact Analysis (TIA), Window Analysis (WA)Technique, Construction Industry, Disputes.

Performance of different grades of Self Compacting Concrete (SCC) with Recycled Concrete Aggregates (RCA)

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Chapter 8

PERFORMANCE OF DIFFERENT GRADES OF SELF COMPACTING CONCRETE (SCC) WITH RECYCLED CONCRETE AGGREGATES (RCA)

K. Jagannadha Rao[1] and Srinivas Vasam[2]
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ABSTRACT

This chapter describes the investigations on the consumption of recycled concrete aggregates (RCA) in the production of self compacting concrete (SCC). It has been described as the most revolutionary development in concrete construction in the recent past. It has many advantages like rapid construction, a decrease in manpower, improved surface finishes, easier placing, enhanced durability, reduced noise levels due to the absence of vibration, and a safe working environment. Further, the dismantling of old structures to construct high-rise buildings is

Bypass Diodes Configurations for Mismatch Losses Mitigation in Solar PV Modules

Innovation in Electrical Power Engineering, Communication, and Computing Technology pp 197–208

Bypass Diodes Configurations for Mismatch Losses Mitigation in Solar PV Modules

Priya Ranjan Satpathy, Pritam Bhowmik, Thanikanti Sudhakar Babu, Renu Sharma & Chiranjit Sain

Conference paper | First Online: 16 December 2021

200 Accesses | **1** Citations

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 814)

Abstract

Partial shading among the photovoltaic modules is the most commonly observed scenario that can permanently damage the modules by creating mismatch among cells, hotspot, and unexpected losses in the system. Basically, modules are provided with bypass diodes for

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Different Control Mechanisms of a PMSM Drive for Electrified Transportation—A Survey

Communication and Control for Robotic Systems pp 395–405

Different Control Mechanisms of a PMSM Drive for Electrified Transportation—A Survey

Chiranjit Sain, Atanu Banerjee, Pabitra Kumar Biswas, Sudhakar Babu Thanikanti & Karthik Balasubramanian

Chapter | First Online: 03 August 2021

500 Accesses

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 229)

Abstract

With the availability of permanent magnet materials, the concept of modern industrial electronics with some integrated signal processing applications Permanent Magnet Synchronous Motor Drive (PMSM) is an

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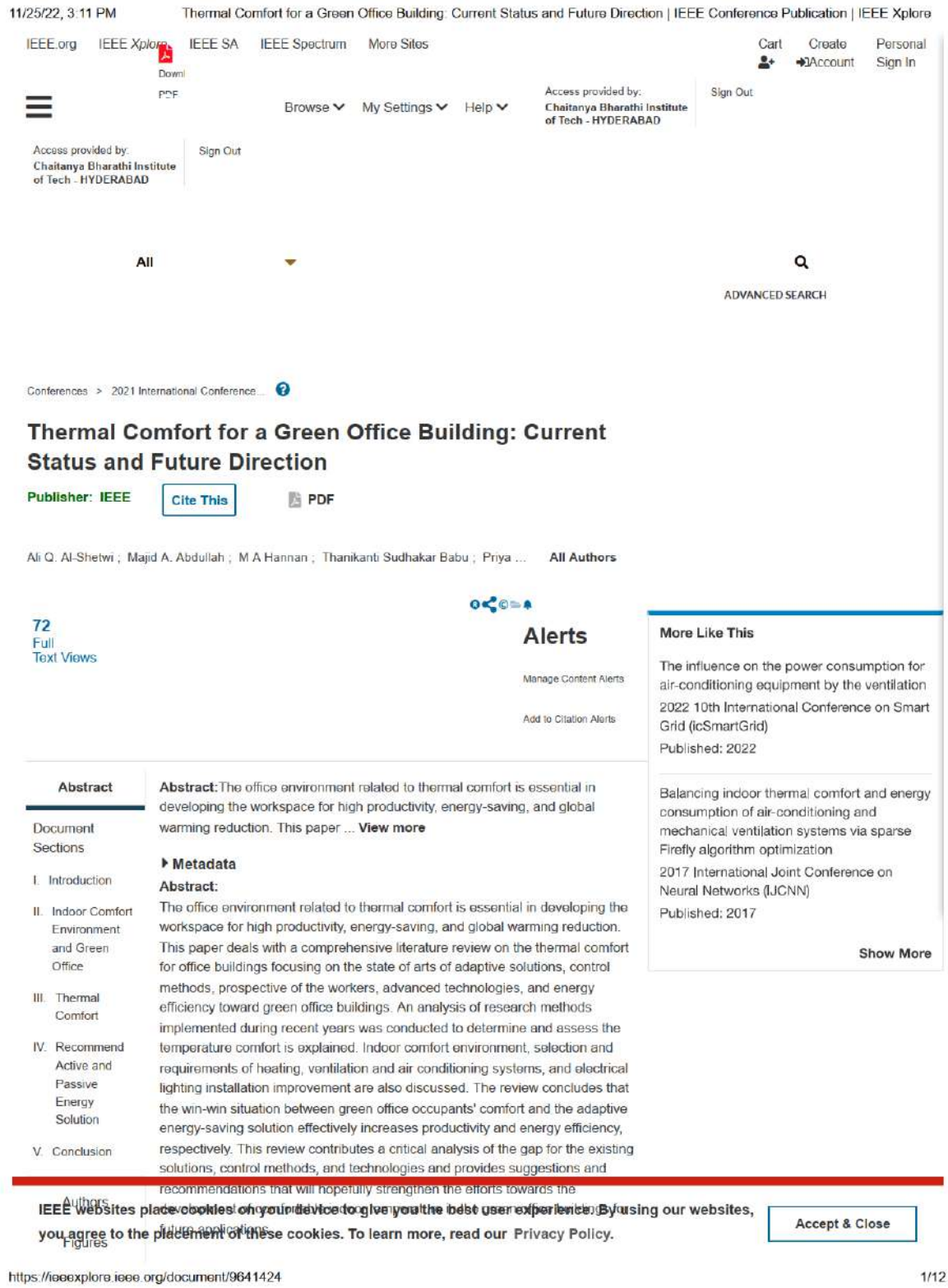
Thermal Comfort for a Green Office Building: Current Status and Future Direction



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Contents

SECTION I.
Introduction

Buildings represent approximately 40% of the worldwide energy usage and add over 30% of CO_2 emissions. A big part of this energy is used for thermal comfort and lighting. The fact of the situation is that the majority of individuals presently spend around 90% of their daily life indoors and rely on mechanical heating, air-conditioning, and noisy lights [1]. Based on the study conducted in the north of Europe [2], commercial buildings and main offices are the most energy consumption buildings. Total annual electricity use in office buildings is estimated between 100–1000 kWhlm^2 per year depending on location, usage and type of office facilities, schedules of operation, usage of heat ventilation air conditioning (HVAC) systems, lights, etc.

Increased urbanization has attracted extra attention from the public and society to environmental and energy problems. Recently, the global economic transition from the industrial sector to the information and services sectors led to most people living and working in urban areas and office environments [3]. Therefore, understanding the indoor office setting and its impact on occupant comfort is becoming essential as the office environment strongly impacts the productivity of its occupants [4]. Previous studies of sustainable buildings suggested that green design techniques can improve indoor workplace comfort [5]. Previous studies of sustainable buildings suggested that green design techniques improve indoor workplace comfort [3], [4]. The promotion and execution of the idea of green buildings have thus become the main theme for modern buildings because it promotes buildings that are healthy, secure, comfortable and environmentally sound [5]. Because of the various rates of economic development, the geographical location, the accessibility of resources and other variables, no standard definition in literature has been made of green buildings [6]. However, some researchers have often described green buildings

Thermal Comfort for a Green Office Building: Current Status and Future Direction

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***Abstract*— The office environment related to thermal comfort is essential in developing the workspace for high productivity, energy-saving, and global warming reduction. This paper deals with a comprehensive literature review on the thermal comfort for office buildings focusing on the state of arts of adaptive solutions, control methods, prospective of the workers, advanced technologies, and energy efficiency toward green office buildings. An analysis of research methods implemented during recent years was conducted to determine and assess the temperature comfort is explained. Indoor comfort environment, selection and requirements of heating, ventilation and air conditioning systems, and electrical lighting installation improvement are also discussed. The review concludes that the win-win situation between green office occupants' comfort and the adaptive energy-saving solution effectively increases productivity and energy efficiency, respectively. This review contributes a critical analysis of the gap for the existing solutions, control methods, and technologies and provides suggestions and recommendations that will hopefully strengthen the efforts towards the development of comfortable indoor temperature in the green office buildings for future applications.**

Keywords— Thermal comfort, Office building, HVAC, building energy, Air conditioning system, Energy efficiency

I. Introduction

Buildings represent approximately 40% of the worldwide energy usage and add over 30% of CO_2 emissions. A big part of this energy is used for thermal comfort and lighting. The fact of the situation is that the majority of individuals presently spend around 90% of their daily life indoors and rely on mechanical heating, air-conditioning, and noisy lights [1]. Based on the study conducted in the north of Europe [2], commercial buildings and main offices are the most energy consumption buildings. Total annual electricity use in office buildings is estimated between 100–1000 kWh/m^2 per year depending on location, usage and type of office facilities, schedules of operation, usage of heat ventilation air conditioning (HVAC) systems, lights, etc.

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Over the last decade, multiple attempts have been made to study the effects of acoustic quality [8], visual comfort [9], thermal comfort [10], HVAC [11], and quality of indoor air [12] on office buildings occupants' comfort, safety, and productivity. However, the field of thermal comfort studies has drawn the attention of many researchers worldwide, perhaps partly due to the enhanced government debate on climate change and energy saving.

Several review articles studied the office building have been published throughout the years, focusing on visual convenience and providing periodic updates on trends [13]. However, limited review on the thermal comfort and especially for office building is conducted. In this context, the authors in [14] have conducted a review on the effect of demand response on the occupant thermal comfort in the air-conditioned commercial building. The impact of volume and level of thermal degree on occupant comfort in tropical regions were reviewed in [15]. Fan-use rates and their impacts on thermal comfort, conservation of energy and human productivity were highlighted in [16]. Different other studies were focused on the impact of indoor thermal comfort on the outdoor environment [17]. Furthermore,

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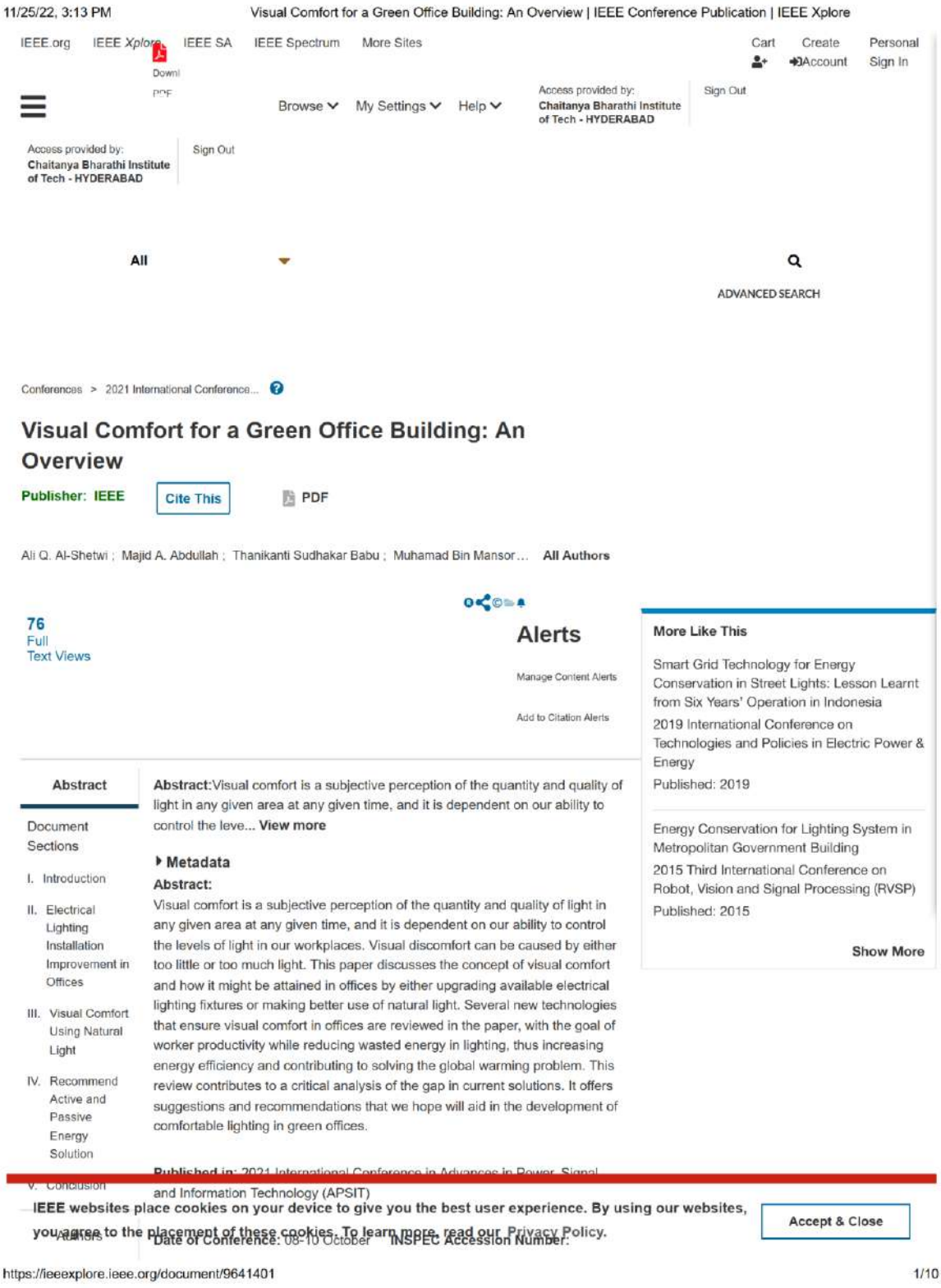

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Contents

SECTION I.
Introduction

Visual comfort is a subjective response to the quantity and quality of light in a specific space at a given time. Achieving visual comfort is based on regulating the light concentrations around us, as too little or too much light can cause visual discomfort. The human eye constantly adapts to light levels, and changes in light concentrations or sharp contrasts can lead to stress and tiredness [1]. Even under the right lighting conditions, working in an office without windows and working in an office with a view are entirely different experiences and directly impact the occupant performance. Studies have shown that working from a well-viewed office has beneficial effects on job satisfaction, mood, productivity, health, alertness, etc. [2]. In general, light directly affects the regulation of many biological functions of humans, including sleep, mood, and wakefulness; thus, regulating light directly affects our health, well-being, and awareness of the environment [3], [4].

Several previous studies have analyzed the impact of visual comfort on employee performance, productivity, convenience, and satisfaction. According to the studies, visual comfort at the workspace is indicated by the views and lighting conditions. The study [5] showed that office landscapes, including trees, flowers, and other natural elements, reduce the negative impact of work stress on employees and enhance general well-being. Similarly, architectural design affects office lighting, as the lighting levels in the work environment can be influenced by window geometry, surface light gauge, amount of glass, etc. [5], [6]. This has a direct impact on luxury and productivity. In contrast, poor lighting can affect work quality, especially when accuracy and overall productivity are required. Poor lighting can be a health hazard by straining the eyes, causing a burning sensation, and causing a headache [7].

Relying on natural light is very important to keep artificial lighting minimum, especially if natural lighting is unavailable or in the evening. Natural light is one of the main ways to save energy as it reduces the required amount of artificial light and thus reduces electricity costs. Besides, the heat produced by electric lighting necessitates frequent use of air conditioners,

Visual Comfort for a Green Office Building: An Overview

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***Abstract*— Visual comfort is a subjective perception of the quantity and quality of light in any given area at any given time, and it is dependent on our ability to control the levels of light in our workplaces. Visual discomfort can be caused by either too little or too much light. This paper discusses the concept of visual comfort and how it might be attained in offices by either upgrading available electrical lighting fixtures or making better use of natural light. Several new technologies that ensure visual comfort in offices are reviewed in the paper, with the goal of worker productivity while reducing wasted energy in lighting, thus increasing energy efficiency and contributing to solving the global warming problem. This review contributes to a critical analysis of the gap in current solutions. It offers suggestions and recommendations that we hope will aid in the development of comfortable lighting in green offices.**

Keywords*—*Visual comfort, green building, green office, energy efficiency.

I. Introduction

Visual comfort is a subjective response to the quantity and quality of light in a specific space at a given time. Achieving visual comfort is based on regulating the light concentrations around us, as too little or too much light can cause visual discomfort. The human eye constantly adapts to light levels, and changes in light concentrations or sharp contrasts can lead to stress and tiredness [1]. Even under the right lighting conditions, working in an office without windows and working in an office with a view are entirely different experiences and directly impact the occupant performance. Studies have shown that working from a well-viewed office has beneficial effects on job satisfaction, mood, productivity, health, alertness, etc. [2]. In general, light directly affects the regulation of many biological functions of humans, including sleep, mood, and wakefulness; thus, regulating light directly affects our health, well-being, and awareness of the environment [3, 4].

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Relying on natural light is very important to keep artificial lighting minimum, especially if natural lighting is unavailable or in the evening. Natural light is one of the main ways to save energy as it reduces the required amount of artificial light and thus reduces electricity costs. Besides, the heat produced by electric lighting necessitates frequent use of air conditioners, raising the bill further. Some studies indicate that using natural light can save up to 75% of the energy used to illuminate buildings and reduce cooling costs [8]. To optimize energy savings, a so-called smart lighting system has recently emerged [9]. Smart lighting systems are defined as systems that generate the necessary lighting intensity at the right time at the right place [10]. The most common types of these systems take advantage of motion sensors [11], occupancy sensors [12], and optical sensors. Sensors of motion and occupancy detect activity within the defined area; it then turns on lights automatically as soon as someone enters and stays in that area and turns off the lights when that person leaves the defined area. Doing so saves a significant amount of wasted energy used in lighting unoccupied areas. Optical sensors are used to stop lights from being on when it is bright outside and controls the indoor lights' operation by monitoring light levels [13]. There has been a lot of research done on evaluating some specific aspects of visual comfort that characterize the relationship between human needs and the lighting environment. These include available light, light uniformity, color rendering quality, and predicting the risk of glare for space occupants. These aspects have been thoroughly reviewed in reference [6], and some studies on them are summarized in Table I.

These studies, as shown in the table, were conducted in different countries. They came to different conclusions explaining the extent of variation in assessing visual comfort and the lack of a specific criterion for judging the degree of visual comfort availability in a particular location. This paper will look at how to increase visual comfort in offices by upgrading existing electrical installations and ensuring that natural light is utilized to its full potential.

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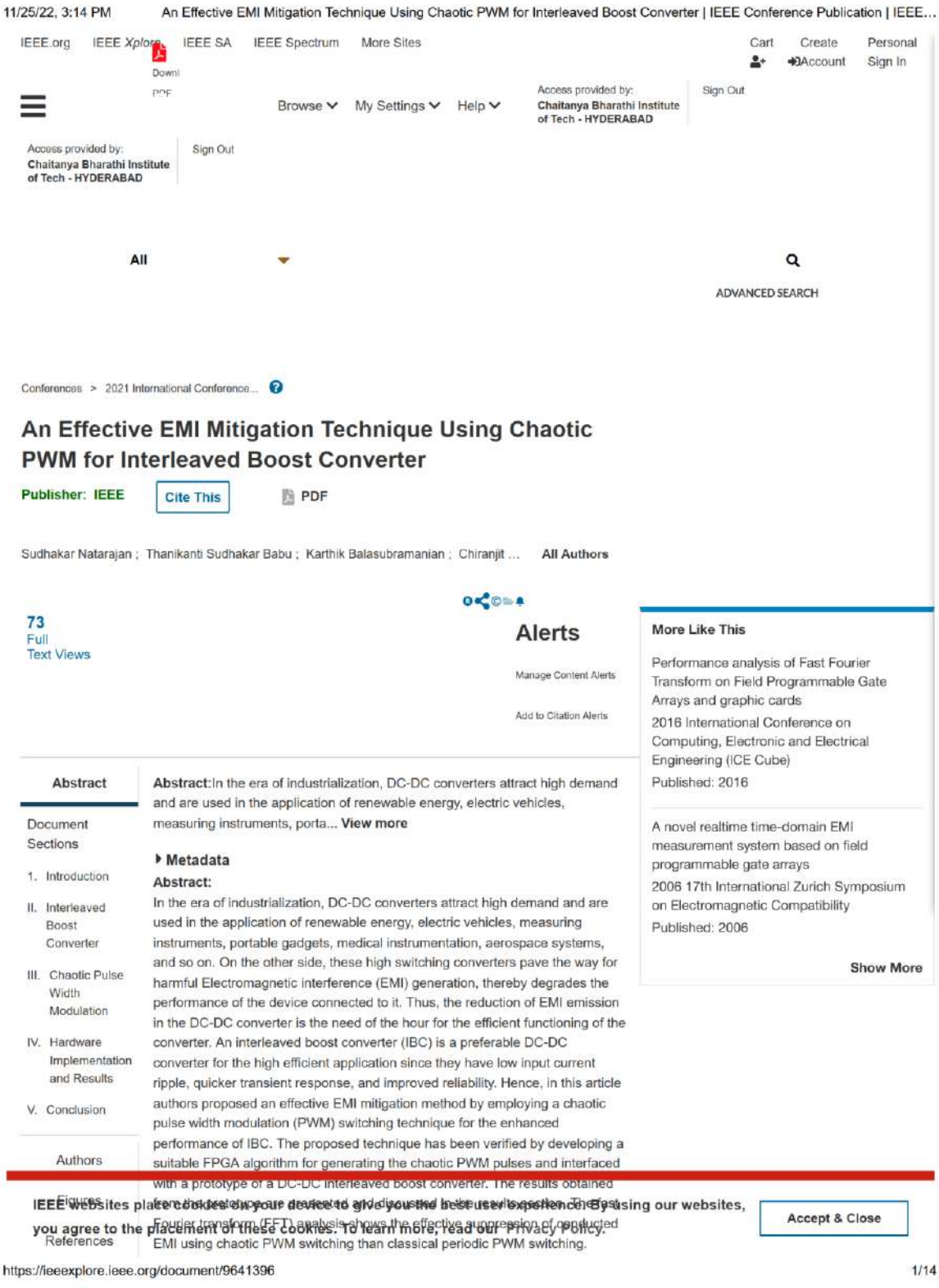
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Abstract:
In the era of industrialization, DC-DC converters attract high demand and are used in the application of renewable energy, electric vehicles, measuring instruments, portable gadgets, medical instrumentation, aerospace systems, and so on. On the other side, these high switching converters pave the way for harmful Electromagnetic interference (EMI) generation, thereby degrades the performance of the device connected to it. Thus, the reduction of EMI emission in the DC-DC converter is the need of the hour for the efficient functioning of the converter. An interleaved boost converter (IBC) is a preferable DC-DC converter for the high efficient application since they have low input current ripple, quicker transient response, and improved reliability. Hence, in this article authors proposed an effective EMI mitigation method by employing a chaotic pulse width modulation (PWM) switching technique for the enhanced performance of IBC. The proposed technique has been verified by developing a suitable FPGA algorithm for generating the chaotic PWM pulses and interfaced with a prototype of a DC-DC interleaved boost converter. The results obtained from the prototype are presented and discussed in the results section. The Fast Fourier transform (FFT) analysis shows the effective suppression of conducted EMI using chaotic PWM switching than classical periodic PWM switching.
Document Sections
1. Introduction
II. Interleaved Boost Converter
III. Chaotic Pulse Width Modulation
IV. Hardware Implementation and Results
V. Conclusion
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Thereby, the proposed technique proves the superiority of FPGA based chaotic EMI mitigation technique.

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Contents

SECTION 1.
Introduction

The DC-DC converters are being used in almost every sector of the industrial world [1], [2]. It has a wide variety of applications such as battery chargers, communication systems, audio applications, measuring instruments, medical devices, and so on [3]. In addition, in most renewable energy-based applications, DC-DC converters play a major role in transferring power from one level to anomilarly, a detailed comparative analysis on different converter topologies used for the application of energy storage systems was given in [5]. But they are affected by EMI noise which is a very serious issue in the present world. The EMI is generated by a DC-DC converter because of the elevated switching frequency which affects its performance as well as the performance of the device connected to it. During switching it is very important to suppress Electromagnetic interference, which could either be an artificial or a natural signal of disturbance that can result in an undesired response and malfunction of the device [6]. When connected to a laptop, there can be a loss of data due to interference; in addition, it gives a huge impact on healthcare devices. The other major problem occurs in the communication system where the interference causes the receiver to acquire the inappropriate signal. So, the EMI noise has to be mitigated or at least be limited to a certain amount. The permissible amount of electromagnetic interference emitted by a device is decided by some standard bodies such as IEC, CISPR, FCC, etc. The EMI governing bodies vary from nation to nation; some nations may have more than one, depending on the type of products that are emitting EMI noise. EMI or electromagnetic interference, which is defined as the high change in voltage or current (dV/dt or dI/dt) occurring in multiples of the switching frequency. The power density spectrum reflects the EMI production from the o/p voltage. The main aim is to meet the

An Effective EMI Mitigation Technique Using Chaotic PWM for Interleaved Boost Converter

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***Abstract*—In the era of industrialization, DC-DC converters attract high demand and are used in the application of renewable energy, electric vehicles, measuring instruments, portable gadgets, medical instrumentation, aerospace systems, and so on. On the other side, these high switching converters pave the way for harmful Electromagnetic interference (EMI) generation, thereby degrades the performance of the device connected to it. Thus, the reduction of EMI emission in the DC-DC converter is the need of the hour for the efficient functioning of the converter. An interleaved boost converter (IBC) is a preferable DC-DC converter for the high efficient application since they have low input current ripple, quicker transient response, and improved reliability. Hence, in this article authors proposed an effective EMI mitigation method by employing a chaotic pulse width modulation (PWM) switching technique for the enhanced performance of IBC. The proposed technique has been verified by developing a suitable FPGA algorithm for generating the chaotic PWM pulses and interfaced with a prototype of a DC-DC interleaved boost converter. The results obtained from the prototype are presented and discussed in the results section. The fast Fourier transform (FFT) analysis shows the effective suppression of conducted EMI using chaotic PWM switching than classical periodic PWM switching. Thereby, the proposed technique proves the superiority of FPGA based chaotic EMI mitigation technique.**

Keywords-EMI, Interleaved Boost Converter, Chaotic PWM, RCFMFD, FPGA.

I. INTRODUCTION

The DC-DC converters are being used in almost every sector of the industrial world [1,2]. It has a wide variety of applications such as battery chargers, communication systems, audio applications, measuring instruments, medical devices, and so on [3]. In addition, in most renewable energy-based applications, DC-DC converters play a major role in transferring power from one level to anomilarly, a detailed comparative analysis on different converter topologies used for the application of energy storage systems was given in [5]. But they are affected by EMI noise which is a very serious issue in the present world. The EMI is generated by a DC-DC converter because of the elevated switching frequency which affects its performance as well as the performance of the device connected to it. During switching it is very important to suppress Electromagnetic interference, which could either be an artificial or a natural signal of disturbance that can result in an undesired response and malfunction of the device [6]. When connected to a laptop, there can be a loss of data due to interference; in addition, it gives a huge impact on healthcare devices. The other major problem occurs in the communication system where the interference causes the receiver to acquire the inappropriate signal. So, the EMI noise has to be mitigated or at least be limited to a certain amount. The permissible amount of electromagnetic interference emitted by a device is decided by some standard bodies such as IEC, CISPR, FCC, etc. The EMI governing bodies vary from nation to nation; some nations may have more than one, depending on the type of products that are emitting EMI noise. EMI or electromagnetic interference, which is defined as the high change in voltage or current (dV/dt or dI/dt) occurring in multiples of the switching frequency. The power density spectrum reflects the EMI production from the o/p voltage. The main aim is to meet the EMI regulation and to make sure the neighbouring devices are not hampered.

The proposed design is a boost converter [1] which consists of two inductors, two diodes, and two switches, other elements remain the same. This is advantageous compared to the original design as the i/p current is divided among two parallel-connected inductors to reduce the stress on a single inductor. The two switches are driven by complementary gate pulses one being ON, the other switch being OFF during that instant. It produces an output voltage greater than the voltage supplied to it. The benefits to be highlighted for interleaving mainly are modularity, high power capability, and high reliability. The use of a coupled inductor over multiple inductors is more suitable as the inductor is the most frequented and heaviest component in most power-boost converters. Other advantages of using coupled inductors include reduced winding and core. [1]

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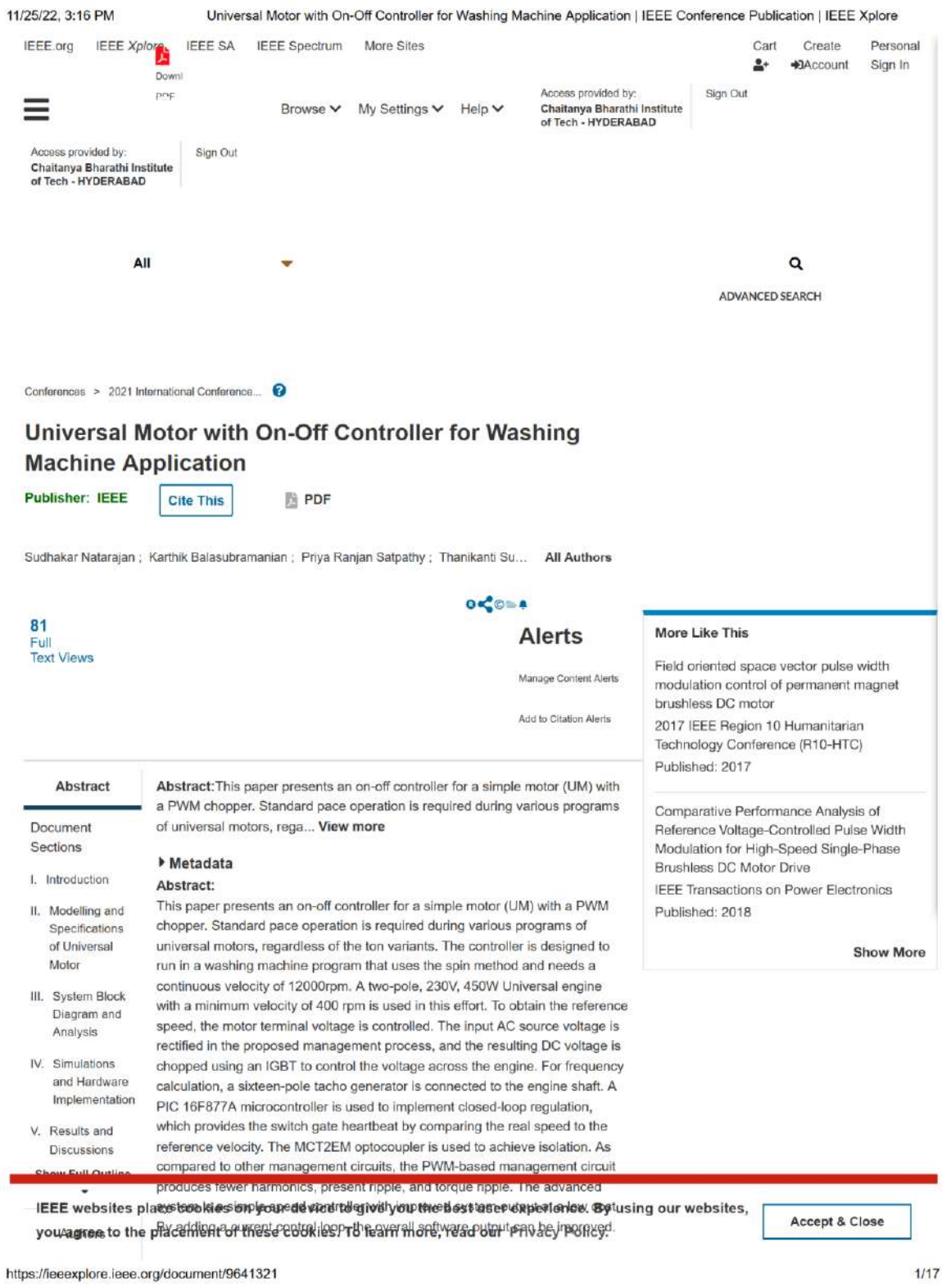
Universal Motor with On-Off Controller for Washing Machine Application



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Contents

SECTION I. Introduction

In today's world, universal motors have a varied range of use such as washing machines, electric shavers, food mixers, vacuum cleaners, and boilers. The voltage range for these devices is 1.5V to 250V, with a power rating of up to 0.75 HP and speeds ranging from 3600 to 25000 rpm. Due to the high utilization of washing machines worldwide, the ownership rate is increased around 70% [1].

The required motor speed for washing machine programs is 12000 rpm with load and 18000 rpm without a load in the spin mode if the regular motor is used. Under normal conditions, these motors cannot operate at a constant speed due to their rapidly decreasing speed of torque. This runs at high speeds under moderate loads as well as at lower speeds under very heavy loads. Therefore, the goal is to build a controller for a common motor, which can sustain a 12000rpm speed with an IGBT attached in a sequence with the motor.

Considering the connection type between the winding of armature and the winding of the area, universal motors are akin to the DC sequence motors. When a DC series engine is connected to AC, it will work poorly. It's because the armature's windings have a high inductive reactance. Since the DC sequence engines' area poles are solid metallic materials, significant amounts of eddy current must be induced in the area poles. The DC sequence engine connected to AC suffers from high eddy losses. This particular issue does not exist in universal motors with laminated cores. Compensating windings are installed around the stator to reduce the armature's reaction. In comparison to a dc sequence engine, the armature of a common engine has more coils. Furthermore, the universal motor has a much higher number of commutator segments than the dc sequence engine. The fact that higher torques are present at lower speeds is one of Universal motors key characteristics.

Universal Motor with On-Off Controller for Washing Machine Application

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Abstract— **This paper presents an on-off controller for a simple motor (UM) with a PWM chopper. Standard pace operation is required during various programs of universal motors, regardless of the ton variants. The controller is designed to run in a washing machine program that uses the spin method and needs a continuous velocity of 12000rpm. A two-pole, 230V, 450W Universal engine with a minimum velocity of 400 rpm is used in this effort. To obtain the reference speed, the motor terminal voltage is controlled. The input AC source voltage is rectified in the proposed management process, and the resulting DC voltage is chopped using an IGBT to control the voltage across the engine. For frequency calculation, a sixteen-pole tacho generator is connected to the engine shaft. A PIC 16F877A microcontroller is used to implement closed-loop regulation, which provides the switch gate heartbeat by comparing the real speed to the reference velocity. The MCT2EM optocoupler is used to achieve isolation. As compared to other management circuits, the PWM-based management circuit produces fewer harmonics, present ripple, and torque ripple. The advanced system is a simple speed controller with improved system output at a low cost. By adding a current control loop, the overall software output can be improved.**

Keywords- Washing machine, universal motors, closed-loop systems, frequency measurements, Micro-controllers.

I. INTRODUCTION

In today's world, universal motors have a varied range of use such as washing machines, electric shavers, food mixers, vacuum cleaners, and boilers. The voltage range for these devices is 1.5V to 250V, with a power rating of up to 0.75 HP and speeds ranging from 3600 to 25000 rpm. Due to the high utilization of washing machines worldwide, the ownership rate is increased around 70% [1].

The required motor speed for washing machine programs is 12000 rpm with load and 18000 rpm without a load in the spin mode if the regular motor is used. Under normal conditions, these motors cannot operate at a constant speed due to their rapidly decreasing speed of torque. This runs at high speeds under moderate loads as well as at lower speeds under very heavy loads. Therefore, the goal is to build a controller for a common motor, which can sustain a 12000rpm speed with an IGBT attached in a sequence with the motor.

Considering the connection type between the winding of armature and the winding of the area, universal motors are akin to the DC sequence motors. When a DC series engine is connected to AC, it will work poorly. It's because the armature's windings have a high inductive reactance. Since the DC sequence engines' area poles are solid metallic materials, significant amounts of eddy current must be induced in the area poles. The DC sequence engine connected to AC suffers from high eddy losses. This particular issue does not exist in universal motors with laminated cores. Compensating windings are installed around the stator to reduce the armature's reaction. In comparison to a dc sequence engine, the armature of a common engine has more coils. Furthermore, the universal motor has a much higher number of commutator segments than the dc sequence engine. The fact that higher torques are present at lower speeds is one of Universal motors key characteristics. Furthermore, of all-electric motors, the universal motor has the highest HP/weight ratio. Analysis evaluation of motors for washing machines is reported in [2]. As the usage of the washing machine is increasing in these days finding a suitable motor to enhance the efficiency is challenging task. With this target, authors in [3] presented a comparative study between PMSM and universal motor for the application of washing machines is presented.

The organizational characteristics of Universal motor are discussed in [4]. The universal motor gets a high starting torque and no-load speed. Mechanical equilibrium and switching problems are the main issues in UM. In [5], UM is directly fed from a three-phase cyclo-converter to one phase. The functionality of UM is studied at various frequencies. At lower frequencies, a smooth starting current was obtained. A different cyclo-converter frequency was also used to adjust the engine rpm. A basic MOSFET-based UM speed management. The hysteresis method is commonly used to monitor its speed is discussed in the literature [6]. In reality, [7] provides a popular CUK converter engine with a power component correction circuit. The UM impact will be altered by this circuit. Sinusoidal feedback is produced by this circuit. A common CUK converter engine with a power component correction circuit is provided in [7]. This circuit will alter UM effect. This circuit generates sinusoidal feedback. However, an additional power storage part is required. The difference between UM's working conditions under AC, DC sources is specified in [8]. The reactance of UM in AC function must consider both the resistance and the

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Power Quality Concerns in Implementing Smart Distribution Grid Applications

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Abstract: Now a day the power demand increasing every passing day. The main duty of the power system is to supply their consumers with an Uninterruptable power supply but in practice, it is not happening. In the grid-like stability problem or Power Quality issues that need to be resolved. Investigation of Power Quality may be performed for each stage of the facility system at an occasional voltage level square measure principally originated from nonlinear. In the case of high voltage level, the disturbances are originated from load Variabilities in the grid.

In this project, we use renewable energy sources for better energy saving. Lots of projects are being undertaken which are able to harness power from renewable energy sources like sun and wind are considered in this paper. The compensating devices such as Distribution Static Compensator (DSTATCOM) and Dynamic Voltage Restorer (DVR) are used in this project for improving the Power Quality in Smart Grid. DSTATCOM and DVR are the devices that are a fast, flexible and efficient solution for Power Quality problems.

Keywords: Bi-directional dc-dc converter, smart grid, Battery, DSTATCOM

I. Introduction

A Smart Grid is defined as the electric grid which uses the Technology of information as well as Technology of communication to collect the data and function on information about behavior of the suppliers and the consumers in an mechanized fashion [1]. Smart Grids will provide more electricity to meet rising demand, increase the reliability, availability, and efficiency of the power grid and also able to integrate carbon-free energy sources into power networks. A grid uses computer technology in order to

Fig 1: Block Diagram Of Smart Grid

improve communication and automation by connecting various components to the networks [3]. As an example of bulk transmission of power gathered from different generation plants shown below fig(1).

Brilliant conveyance network applications can possibly improve the exhibition of the electric force framework and furthermore offer a similar presentation for existing

So as to improve the productivity of the framework and furthermore vitality which is requested by the heap, the Smart Grid comprises of in excess of two vitality sources [5]. Photovoltaic exhibit combined with a breeze Generator is considered as one of the instances of Hybrid vitality framework. At the hour of winter, wind turbine makes more vitality, during summer the sun-based board delivers a high measure of vitality. The Energy framework (Hybrid) utilizes the corresponding idea of every one of these sources.

Wide Area Power Systems Stability, Protection, and Security pp 127–166

Optimal Selection of Phasor Measurement Units

N. V. Phanendrababu

Chapter | First Online: 22 September 2020

Part of the Power Systems book series (POWSYS)

Abstract

Phasor Measurement Unit **(**PMU) is an important device for the power system operation as it provides the synchronized data required for the monitoring, protection, and control of the power system. So, to deploy the PMUs for the power system, their optimal locations are needed to be identified. This paper presents the optimal selection of PMU set from the available sets of PMUs. Firstly, it obtains all possible sets of PMUs required for the complete observability of the power system. Then, it defines four criteria such as System Observability Index (*SOI*), Restorable Islands Observability Index (*RIOI*), Critical Bus

Cite this chapter

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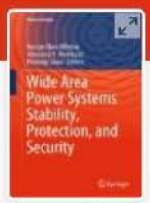

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Optimal distributed generator and shunt capacitor in radial distribution system using particle swarm optimization

Optimal Shunt Capacitor and Distributed Generator in Radial Distribution System Using Particle Swarm Optimization

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Abstract: This paper provides a novel technique in order to allocate the shunt capacitor(SC) banks and distributed generators(DG) optimally in radial distribution system(RDS) to decrease power losses,improve voltage profile,increase the voltage stability index, and acquire great energy savings .To find the optimal size and site of DG and SC banks,Particle swarm optimization (PSO) technique is modified with constriction factor and is applied to IEEE 33-bus system.The result shows the efficiency of the proposed method.

Keywords: Constriction factor particle swarm optimization, Distributed Generation, Radial distribution system, Shunt Capacitors bank, Voltage Profile, Voltage stability index.

I. Introduction

The sizing and siting of distributed generations(DG) units in distribution network is very crucial because optimally and strategically placed DG reduces system losses . Distributed generations may be positioned directly to shrink both real power(Ploss) and reactive power loss (QT),improve the voltage stability index(VSI),diminish the total voltage deviation (TVD) and revamp the consistency of the network.For optimal sizing and siting of DG in distribution systems different methods are proposed in the literature.PSO is a robust stochastic optimization technique which is based on movement and intelligence of swarm. A significant amount of power loss in the system is presented , in order to that of 10-13% of the output is also generated. High distribution loss implies system voltage inefficiency and poor control occurs. Locally mounted distributed generations and bypass shunt capacitor (SC) banks added to the network can increase network capacity and power quality . Small production units ranging from 1KW to 50MW are connected near the user side in DG technology[1]. Distributed generation can be conventional and non- conventional energy sources[2]. Due to the restriction of fossil fuels, non-conventional distributed generation has become a major option. To use the advantages of the distributed generation technology it is necessary to know the optimal site and size of the distributed generations in distribution system otherwise it may cause some unfavorable effects, such as increase in losses, low voltage profile and increase costs. The implementation of the distributed generation into the distributed systems is a great choice. as it provides more accuracy, reliability, better power quality and green house gas emission reduction[3]. Since the last decade, researchers have shown interest in finding the proper size and site of shunt capacitors and distributed generator in the radial distribution distribution system.A thorough review of number of state of art literatures which have been focused on best choice of size and site of DGs and SC banks radial distribution system is presented in Table1 for reference.

Table1: Upper and lower limits of DGs and SC bank

CASES	DG_{MIN}	DG_{MAX}	SC_{MIN}	SC_{MAX}
I	0.5	1.5	0.2	1.5
II	0.5	1.5	0.2	1.5

The PSO algorithm for particle swarm optimization often agonizes over the issue of premature convergence. The constriction factor was introduced into the PSO algorithm by clerc[6] and called as the PSO constriction factor to circumvent this problem. In relation to the rapid change of position, this aspect regulates the speed of the particles. Thus, steady and stable convergence is acquired. The Cf-PSO algorithm is used for transmission system problems, congestion management and economic load dispatch, and the results obtained shows advantage over the other algorithms [4,14 5]. From the survey it is clear that Cf-PSO algorithm has not been employed so far for allocation of shunt capacitor banks and distributed generator in radial distribution system. In view of this main contributions are,

a. To achieve the optimal size and site of distributed generation and shunt capacitor banks, to include the credibility of the constriction factor-PSO algorithm.

b. To analyze the impact of the allocation of distributed generation and shunt capacitor banks to justify the efficiency of the adopted IEEE 33-bus system with regard to Ploss, Qloss, TVD and VSI.

c. To scrutinize the effect on operational cost and net savings.

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AI based Cyber-attack Resistant Microgrid System with IRNSS Synchronization

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Abstract: smart grid is next-generation power infrastructure that is being used to remodel the traditional grid in order to increase its security and performance. Unfortunately, malicious cyber-attacks on the smart grid will cause serious economic, social, technological, and control issues in power system operations. This proposal examines the cyber-security of micro grid systems and makes recommendations. To combat cyber-attacks, new cyber resilient control strategies are being created. A new AI-based approach for detecting cyber-attacks in micro grids and identifying the distributed energy resource (DER) device that was attacked is demonstrated. The approach is time series based analysis and neural network called nonlinear auto-regressive exogenous (NARX) model. To calculate the DC voltage output, use the formula below. We need to train NARX neural networks to understand distributed energy resources and currents.

A prototype will be built to verify the experimental findings presented during the grid connected and isolated modes. The DGs are synchronized using an IRNSS-based scheme. The use of a GPS-based synchronization system to create a standard time reference for synchronizing distributed generation modules is demonstrated. For optimum output and consumption, Deep Learning Optimization Technique is used.

Keywords: DC micro grid, DERs, cyber-attacks, cyber-security, power flow control strategy.

I. Introduction

In order for the country to develop, the electric sector must plays significant role in various sector such as healthcare, industry, irrigation, and communication. Continuous power is an essential component of any nation's growth. Recent cyber-attacks have pushed energy sector resilience in the forefront of national research priorities. The report published by a private cyber security firm in United States, months after the Galwan valley clash in June, in which soldiers from both countries were killed, has indicated at Chinese cyber operation targeted India's power grid. The firm's report raises questions about whether, outage of power in Mumbai last year is caused by a Chinese party.

In 2005, the EU proposed smart power networks based on business demands and environmental protection [1]. Our society is so dependent of electric power. During blackouts areas no emergency stand by generation, communication systems failed to operate [2]. India was in the third place at electricity producing across the world and even though it is facing power deficiency in the upcoming years power demand increases with the economy as there is a very strong relation between them [3]. A design topology and the technical specifications are discussed below of PV power plant [4]. To handle with the requirement of peak watt of zone all the time inverter should be large enough. Inverter size must be 25–30% larger than total wattage of machines and load appliances [5].

II. Synchronization Technique with IRNSS

IRNSS receiver is have the ability of tracking and obtaining of L5, S and GPS L1 signals. Under an MoU, an IRNSS receiver is installed at Navigation and Communication Research Centre (NCRC) laboratory of CBIT Hyderabad in the dept. Of ECE. The IRNSS User Receiver (IRNSS UR) obtains, changes and demodulates obtained satellite signals combined at L5 (1176.45MHz) and S1 (2492.028MHz) band frequencies. The receiver is also capable of processing GPS (L1 C/A) signals centered at 1575.42MHz and generates the computations with reference to the internal or external trigger. The receiver position can be computed using any of the seven modes i) IRNSS L5 only ii) IRNSS S1 only iii) GPS L1 only iv) IRNSS L5 and S1 dual frequency only v) Combined IRNSS

Power quality conditioning by UPQC using dq theory

Power Quality Conditioning By UPQC Using DQ Theory

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Abstract: the people are utilizing power for many works to be finished in a day and the electricity has become a major part in our daily life due to this there is a rapid increase in power demand. This lead to the problem of supplying quality power to the purchasers. As a solution to this problem here we proposed a unified power quality conditioner (UPQC) to satisfy consumers by providing them harmonic free and quality in the power supply. The UPQC is combining series and shunt active filter. This is generally placed near to the source and before the load. It solves all the power quality problems that are related to current and voltage, and provides the consumers a harmonics-free power supply. Here we need sensed source voltage and current, load voltage and current which can be obtained by sensing them through sensors. To obtain the reference signals synchronous reference frame dq theory (DQ theory) is used. Compensating voltage to be injected in line is obtained from the reference signals and the sensed signals. The nonlinear loads that are connected at the consumer side injects voltage swell, voltage sag, flicker, voltage imbalances into the line which does not allow for providing quality power supply. Here we proposed solution for the problem of voltage swell and sag by using UPQC with DQ theory.

Keywords: unified power quality conditioner, voltage sag and harmonics, active filters, power quality.

I. Introduction

Unified power quality conditioner (UPQC) was proposed to increase the power system working and had went through various modifications to increase the performance[1]. generally, UPQC had been implemented successfully for mitigating or to compress the many power quality (PQ) problems like voltage sag/swell, flicker, harmonics, fluctuations, unbalanced voltages, poor power factor and currents, load current harmonics, neutral and reactive current[2-3]. The Research on the UPQC has improved tremendously over last decade in the areas like type of converter in UPQC (CSC or VSC), the supply system (single-phase and three-phase), and the configuration of the UPQC topologies [4-5]. All the above power quality issues cannot be solved in one topology configuration, but based each issue priority, they can be dealt accordingly.

The APFs (active power filters), like series APF, shunt APF and hybrid APFs are widely used to mitigate the power quality related problems .The decreasing quality of the power is mainly due to voltage and current harmonics mainly because of wide spread of application the power electronics converters static negative and zero sequence components obtained by utilizing the single phase and unbalanced loads. Therefore, it's very important to maintain high standard of power quality [6].

The unified power quality conditioner (UPQC), also known as hybrid filter, is the most precise hybrid filter design. UPQC is a multi-role power conditioner which is shunt and series active filter combination that is connected in cascade through DC link capacitor that is utilized to eliminate many disturbances in power supply, to clear fluctuations in voltage, and to check load current harmonics entering into the power system[7],[8].

This is the traditional and widely acceptable power device utilized to suppress the disturbances that affect the bbehavior of critical and sensitive loads. The UPQC has series and shunt compensation abilities for reactive power, harmonics, and power-flow control and voltage disturbances. The UPQC consists of the two voltage-source converters connected through DC link designed in three-phase three-wire, single phase or three-phase four-wire topologies.

One of the converters is combined through a transformer in series between nonlinear load and source at PCC and functions as voltage-source inverter. One more inverter is connected through a transformer in shunt at PCC and operates as current-source inverter. Series active inverter performs harmonic isolation, compensates the voltage supply disturbances and eliminates harmonic oscillations. Shunt active inverter eliminates the reactive power,load current distortions and performs the DC link voltage regulation.

The series converter of UPQC acts as the voltage source controller that it performs as the series APF, whereas the PWM shunt converter acts like the current source controller that it performs as the shunt APF. The Power supply is been not connected at the common DC link. It just contains only the small DC capacitor the Energy storage element.

Investigation on routing methods in low power VLSI Scenario

Back

Investigation on Routing Methods in Low power VLSI Scenario

A proved contribution for integrated circuits

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The ever-increasing demand in new applications and compact devices resulted in developing new technologies in the integration level. Very large scale integration (VLSI) has given the advantage of integrating large density applications into a compact platform achieving the objective of obtaining high-end applications onto a single platform.With the increase in developing the integration density, this technology has evolved to Nanoscale designing, which gives a significant leap into the VLSI domain. With the achievement of large integration density, the constraints of power, speed and throughput are also increasing. As the transistor density increase, the power consumption too increases. This is a bottleneck for VLSI design for critical applications. Hence the need for lower power consumption is a major objective in the VLSI design environment. Power optimization is developed via multiple means, where researchers have an outcome with various approaches in composition level or integration level to reduce power dissipation. The processing power utilization is considered a useful consumption, however, power losses due to IR losses and electromagnetic interference (EMI) are investigated.

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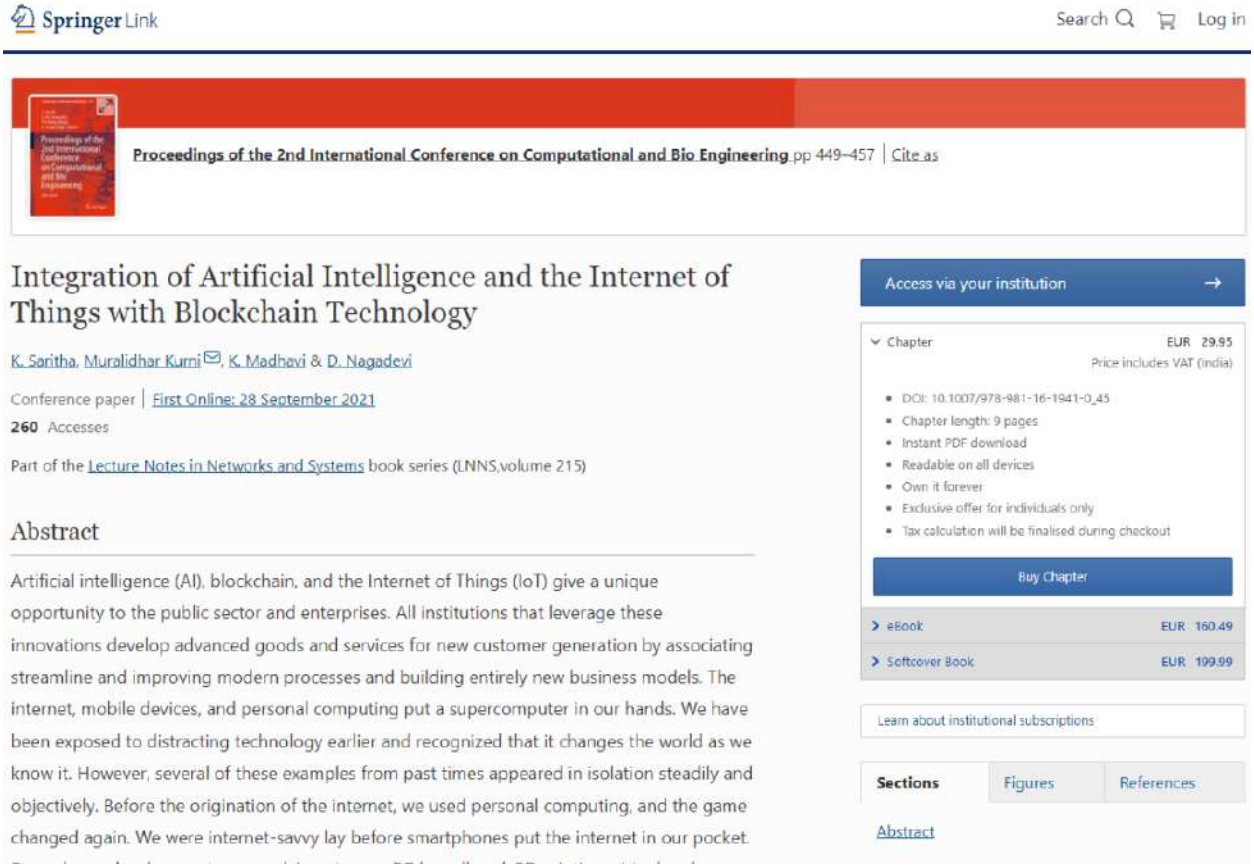
“Integration of Artificial Intelligence And Internet of Things with Blockchain Technology”



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K. Saritha, Muralidhar Kurni, K. Madhavi & D. Nagadevi

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260 Accesses

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Abstract

Artificial intelligence (AI), blockchain, and the Internet of Things (IoT) give a unique opportunity to the public sector and enterprises. All institutions that leverage these innovations develop advanced goods and services for new customer generation by associating streamline and improving modern processes and building entirely new business models. The internet, mobile devices, and personal computing put a supercomputer in our hands. We have been exposed to distracting technology earlier and recognized that it changes the world as we know it. However, several of these examples from past times appeared in isolation steadily and objectively. Before the origination of the internet, we used personal computing, and the game changed again. We were internet-savvy lay before smartphones put the internet in our pocket.

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Abstract

"Design and Analysis of PTL based Basic gates and Adder with Improved Performance,"

Design and Analysis of PTL based Basic gates and Adder with Improved Performance

Publisher: IEEE

Neeraja Bandi ; Rajkumar Ramavath ; Sathish Kumar Meda All Authors

Abstract:
The advancement of portable electronic devices leads to the requirement of digital circuits which are fast, small in size and consume minimal power.High speed addition has always been a primary requirement for high-performance processors.Conventionally, CMOS logic is used to design adder topologies but as the transistor count decreases the threshold loss problems seem to creep in. To eliminate this problem, optimized values of aspect ratios (W/L) with body bias voltage are choosen and a suitable combination is selected to design 2T AND, 2T OR and 3T XOR cells based on the Pass Transistor Logic (PTL).The modified area efficient PTL structures give better performance in terms of speed with a reasonable threshold loss. The design is carried out in Cadence Virtuoso tool for 180nm.Further, 3T XOR and 8T FA and circuits have been designed and analyzed in 45nm technology.PTL based designs in 45nm with proper body bias voltage are showing improved results in terms of power, speed, area and giving strong 1(0.994V) and strong 0(0V) values with reduction in threshold loss. Finally, a comparative study is also made with the fast adder circuits already available in the literature.

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Statistical Characterization of IRNSS Satellite Clock Error for Receiver Autonomous Integrity

D. Sony, D. Krishna Reddy & P. Naveen Kumar

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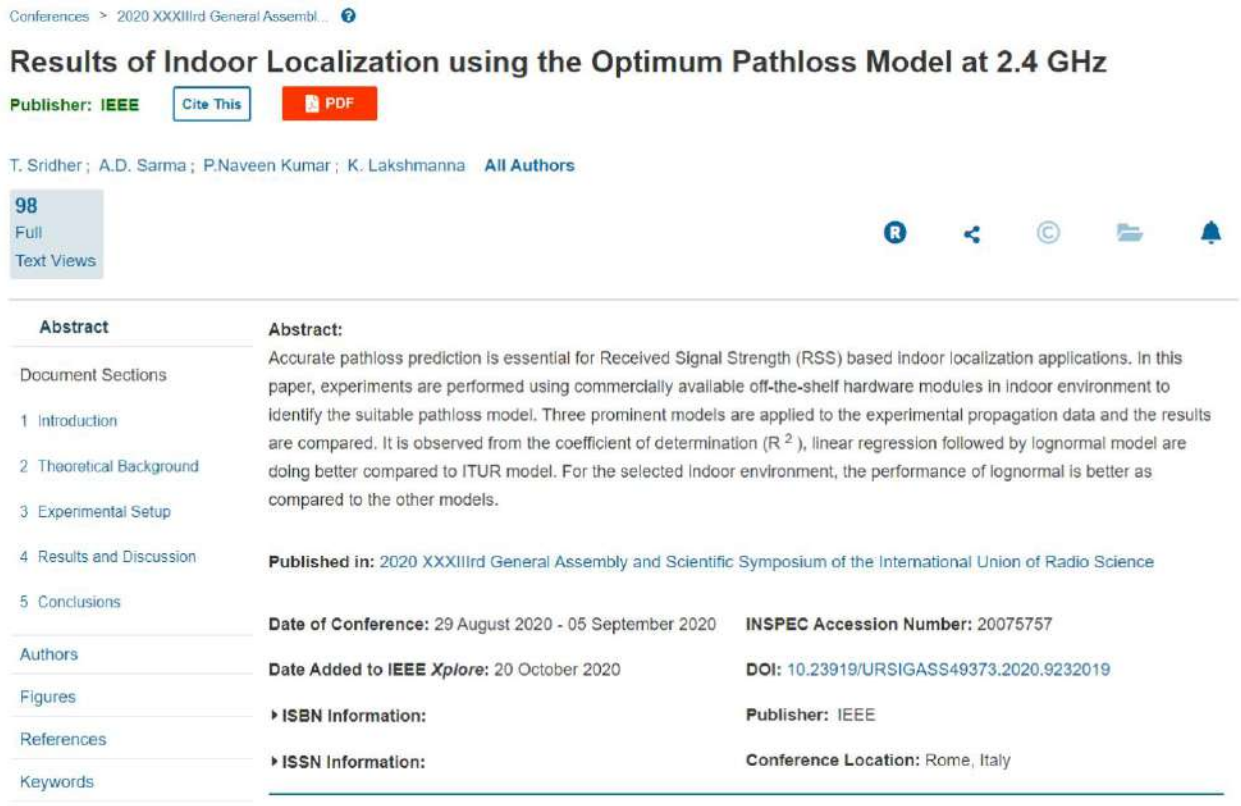
Abstract

IRNSS is a satellite system developed by ISRO to provide accurate timing information to the users. Some of the IRNSS applications include terrestrial navigation, aviation sector, disaster management, etc. Receiver autonomous integrity is technology developed to measure out the integrity of GNSS signals in a receiver system. Civil aviation is one among the widely dependent sectors on IRNSS satellites. Safety critical applications mostly depend on the parameters integrity and accuracy. Integrity mainly relies on signal-in-space errors (SIS Error).SIS errors mainly constitute broadcast ephemeris, orbital errors, and satellite clock error. The integrity predominately depends on the investigation of satellite clock error and becomes a key factor for advanced receiver autonomous integrity monitoring (ARAIM). This paper projects on statistical characterization of clock error for various IRNSS satellites. This paper

"Results of Indoor Localization using the Optimum Pathloss Model at 2.4 GHz"



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Results of Indoor Localization using the Optimum Pathloss Model at 2.4 GHz

Publisher: IEEE | Cite This | PDF

T. Sridher ; A.D. Sarma ; P.Naveen Kumar ; K. Lakshmanna All Authors

98 Full Text Views

Abstract

Document Sections

1 Introduction

2 Theoretical Background

3 Experimental Setup

4 Results and Discussion

5 Conclusions

Authors

Figures

References

Keywords

Abstract:

Accurate pathloss prediction is essential for Received Signal Strength (RSS) based indoor localization applications. In this paper, experiments are performed using commercially available off-the-shelf hardware modules in indoor environment to identify the suitable pathloss model. Three prominent models are applied to the experimental propagation data and the results are compared. It is observed from the coefficient of determination (R^2), linear regression followed by lognormal model are doing better compared to ITUR model. For the selected indoor environment, the performance of lognormal is better as compared to the other models.

Published in: 2020 XXXIIIrd General Assembly and Scientific Symposium of the International Union of Radio Science

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"Simplistic Spoofinf of GPS Enabled Smartphone"

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Simplistic Spoofing of GPS Enabled Smartphone

Publisher: IEEE | Cite This | PDF

Komal Kumar Songala ; Supraja Reddy Ammana ; Hari Chandana Ramachandruni ; Dattatreya Sarma Achanta All Authors

1 Paper Citation | 323 Full Text Views

Abstract

Document Sections

I. Introduction

II. Theoritical Background

III. Methodology

IV. Results and Discussion

V. Conclusion

Authors

Figures

References

Citations

Abstract:
Intentional interference such as spoofing is an emerging threat to GPS receivers used in both civilian and defense applications. With the majority of smartphones relying on GPS for positioning and navigation, the vulnerability of these phones to spoofing attacks is an issue of security concern. In this paper, it is demonstrated that is easy to successfully spoof a smartphone using a simplistic spoofing technique. A spoofing signal is generated using open-source signal simulator and transmitted using a low-cost SDR. In view of the tremendously increasing usage of GPS enabled smartphones, it is necessary to develop suitable countermeasures for spoofing. This work carries significance as it would help in understanding the effects of spoofing at various levels of signal processing in the receiver and develop advanced spoofing detection and mitigation techniques.

Published in: 2020 IEEE International Women in Engineering (WIE) Conference on Electrical and Computer Engineering (WIECON-ECE)

Date of Conference: 26-27 December 2020

INSPEC Accession Number: 20650484

Date Added to IEEE *Xplore*: 12 April 2021

DOI: 10.1109/WIECON-ECE52138.2020.9397980

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An Insight into the Women Academicians' Problems in the COVID-19 Pandemic

Dr. K. Saritha[1], Dr. K. Madhavi[2], D. Nagadevi[3]

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Abstract: *COVID-19 experience is changing the way research is conducted, particularly in some sectors: the new processes of rapid peer review, the increased quantity and pace of available data, and the distribution of funding across sectors are changing the equilibria of the academic environment, and we will need to pay attention to the impact this has on inequalities. This paper describes the experiences of the women academicians in the course of the COVID-19 pandemic and the general view of women's actual situation. It also presents the past and present scenario of women in research and steps to be implemented to expertise.*

Keywords: *Women academicians, COVID-19, Research, Funding, Scenario.*

1. Introduction

Women make up 70 % of the world's health staff and more than 50% of medical graduates in many countries. Despite this, the medical leadership of women and gender minorities remains underrepresented. Women are just 22% of full professors in American medical schools [1] and 23% in Europe [2]. In particular, women of color are under-represented; Black women are just 0.5 percent of full professors in American medical schools [1]. Career progression includes scholarly publishing. The first authorship of women in major medical journals rose from 27% to 37% (1994–2014) [3]. However, COVID-19 challenges change by rising current gender inequalities.

2. Analysis

Early data indicate that COVID-19 has an important effect on the publication of women. Andersen and colleagues [4] compared authorship of the 1179 medical COVID-19 papers with 37,531 papers from the same journals in 2019. At 30%, 28%, and 22%, women's total, first, and last authorship share in COVID-19 documents decreased respectively by 16%, 23%, and 16%. Frederickson [5] found in a GitHub review of ArXiv and bioRxiv submissions that, while pre-print submissions overall increase, the number of male writers is growing faster than the number of females [6]. The study of the COVID 19 articles in the Lancet (n=159) [7], excluding editorials, World Studies, and Perspectives, reveals that, in the first, final, and corresponding women's authorship, the total number of writers was 30.8%, 24.4%, 25.8%, and 22.9%, respectively. Moreover, the majority (61.3%) of authorships have been associated with high-income countries in Europe and Central Asia (40% · 2%). Figure 1 shows the distribution of authorship by gender.

Overall female authorship of COVID-19 research papers (32.9 percent) is close to previously reported authorship (29 percent, 2016–17), but overall female authorship of COVID-19 comments (30.6 percent) is lower than previously reported (39 percent, 2018) [9].

Comprehensive study on Content Based Medical Image Retrieval”

Comprehensive Study on Content Based Medical Image Retrieval

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Abstract: ***Content-Based Image Retrieval (CBIR) is the technique applied for the retrieval of query related images from a large database with different kinds of images. Databases are available in different patterns such as text, image, audio, video, etc. Retrieval of a query image from a huge volume of database is a common issue because it uses the visual information of image such as shape, text, and color for representation of an image. For an effective CBIR system, there is a need to develop different kinds of retrieval methods using feature extraction, similarity matching, etc. Text-Based Image Retrieval systems are used in many applications, but for large databases these are incapable. To solve this, CBMIR systems are proposed to retrieve matching images from the database using an automated feature extraction method. At present, the medical imaging field finds extensive growth in the generation and evaluation of various types of medical images. Various methods are used for different kinds of medical images. CBMIR approaches should be selected according to the modality which uses query image as input and it retrieves the images, which are similar to the query more efficiently and effectively. This paper provides a comprehensive study of the CBIR system and major applications in the medical domain.***

Keywords: CBIR (Content Based Image Retrieval), CBMIR (Content Based Medical Image Retrieval), Semantic gap, Features Extraction, Dimensionality Reduction, Performance measures, Datasets.

1. INTRODUCTION

The semantic gap is a gap between high level human perception and low level machines description which limits the retrieval efficiency. Systems like Query by image content (QBIC) [1], VisualSeek [2], SIMPLicity [3], and Blobworld [4] use low-level features like shape, texture, and color to represent its semantics. Other systems like Webseek [5] and Image Rover [6] have applied the image search based on submitted query key-words, and then performed user classification by providing category browsing and search-by-example facilities. After the success of these systems, research directions towards different disciplines such as machine learning, computer vision, Pattern recognition and artificial intelligence.

This study aims at addressing the main issues in CBMIR system are,

- To reduce the semantic gap should the features used to represent the image contents should be single or combined.
- The capability of new proposed methods in reducing the 'curse of dimensionality' problem when compared with traditional methods.
- The ability of CBIR systems to effectively exploit the expected breakthrough by using deep neural networks for learning CBIR tasks.
- How much the achieved advancements can be modeled and propagated to boost real-time retrieval applications; especially over the web?
- The exigent need for robust measures to evaluate the performance of image retrieval systems in terms of accuracy, computation complexity, memory usage, and rank among other systems in the CBIR scope.

Advanced Aspects of Engineering Research Vol. 16

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This book covers key areas of engineering research. The contributions by the authors include Faraday rotation, optical activity, excitons, exchange interaction, induced gyrotropy, elliptical birefringence, torsional moment, isotropic point, solidification, binary alloy, dual-phase region, macro segregation, convection, heat-mass transfer, modeling, the columnar-to-equiaxed transition, Space Vector PWM, SPWM, three-level inverter, diode clamped inverter, capacitor balance, total harmonic distortion, rice plant disease, machine learning, solid state drives, NAND Flash, Security, ATA Security, d*ata hiding, cryptography, steganography, image processing, crimping, hydraulic jack, hose crimping, physical properties, mechanical properties, merit*

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Determination of Information Security Using Cryptography and Image Steganography

G. Mallikharjuna Rao

Advanced Aspects of Engineering Research Vol. 16, 28 June 2021, Page 75-94

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Published: 2021-06-28

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Abstract

Hackers are usually prepared to hack confidential documents for their vested interests. The most difficult task is to establish a secure link between the secret message and image quality. The proposed scheme combines cryptography and Image steganography techniques to avoid illegal attacks by an unknown person. This scheme will enable image security and message security. The International Data Encryption Algorithm (IDEA) cryptographic algorithms and Discrete Cosine Transform (DCT) based steganography algorithms based functional approach. The purpose of cryptography is to encrypt and decrypt the document. Steganography is the technique of hiding documents within an image with increasing payload for the secure transmission of confidential data over the internet. In this paper, we present a single application to hide the information by the sender, which is an essential document and secret file. The form will be invisible to an unauthorized person. PSNR of 90.06 dB with a payload of 52,400 bytes of information in an image.

Keywords: Data hiding; cryptography; steganography; image processing; DCT; IDEA

Current Topics on Mathematics and Computer Science Vol. 1

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This book covers key areas of mathematics and computer science. The contributions by the authors include operating System, framework visualization, *Subordination, super ordination, parallel code phase search algorithm, serial search acquisition, algorithm, Cooley-Tukey FFT, multisemi group, complementary, duality, benders decomposition, cesaro averages, power-bounded operator, Kriess resolvent condition, Ritt resolvent condition, weighted shift operator, Cosmology, Timaeus, epinomis, justice, equality, division in extreme and mean, golden proportion, Pingala's M?tr?meru, the one and the indefinite dyad, Software scope verification, scope management, scope definition, inspection, word sense Disambiguation, concept drift, natural language*

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(https://stm.bookpi.org/CTMCS-V1/issue/view/135) Performance Analysis of Algorithms for NavIC Signal Acquisition

N. Alivelu Manga

Current Topics on Mathematics and Computer Science Vol. 1, 26 May 2021, Page 17-27
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Abstract

Abstract

Indian Space Research Organization (ISRO) developed and designed the Indian Regional Navigation Satellite System (IRNSS), an indigenous navigation system.It is named as NavIC, Navigation with Indian Constellation by Indian Prime Minister. NavIC is a seven-satellite constellation that will offer India with accurate positioning, navigation, and timing services. The focal modules of NavIC receiver are acquisition, tracking and navigation unit. The data processing unit for recognising satellite signals and their related code phase and carrier frequency is called acquisition. Various acquisition strategies, such as Serial search and Parallel Code Phase search algorithms, are explored and contrasted with Cooley-Tukey FFT and sub-sampled Fast Fourier transform techniques in this chapter (ssFFT). The acquisition computation time for a ssFFT based NavIC receiver is faster than parallel FFT acquisition, and the Cooley-Tukey FFT IRNSS acquisition algorithm is faster and offers better code phase and carrier frequency values than the serial search acquisition approach, according to the results obtained in MATLAB. Reduction in the acquisition time and computation complexity is observed by the exploitation of properties of sparse FFT, Fourier transform and decimator and by the use of sub sampled FFT.

Keywords: IRNSS; NavIC; acquisition; parallel code phase search algorithm; serial search acquisition algorithm; ssFFT; Cooley-Tukey FFT

New Approaches in Engineering Research Vol. 8

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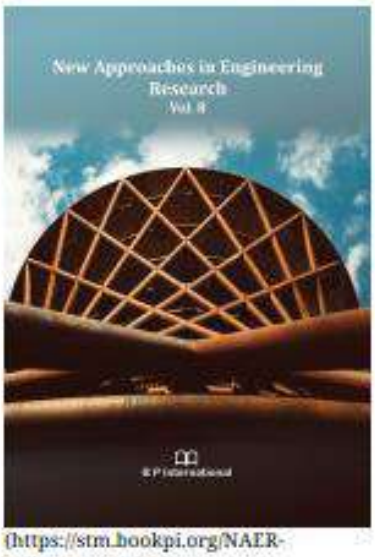

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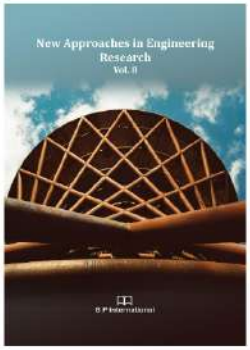
This book covers key areas of engineering research. The contributions by the authors include heating capacity, solar water heater, paraffin, thermal storage material, metal-oxide-semiconductor, vector matrix multiplication, neuromorphic computing, real-time data, hardness, steel surface wear, plastics with glass fibers, dry friction linear contact, contact temperature, plastic material transfer, steel surface wear, plastics with glass fibers, linear contact, dry friction hardness of steel, railroad crossing, hazard information, operation center, soil-structure interaction in piles and piers, ultimate lateral resistance of piles and piers, lateral bearing capacity of piles and piers, piles subjected to lateral loads, analysis of piles, micro/nano



The Design of a Static CMOS 16 Bit High Speed and Low Power Consumption Hybrid Adder Circuit Using Brent Kung Adder: A Recent Study

M. Ramana Reddy

New Approaches in Engineering Research Vol. 8, 10 July 2021, Page 101-122
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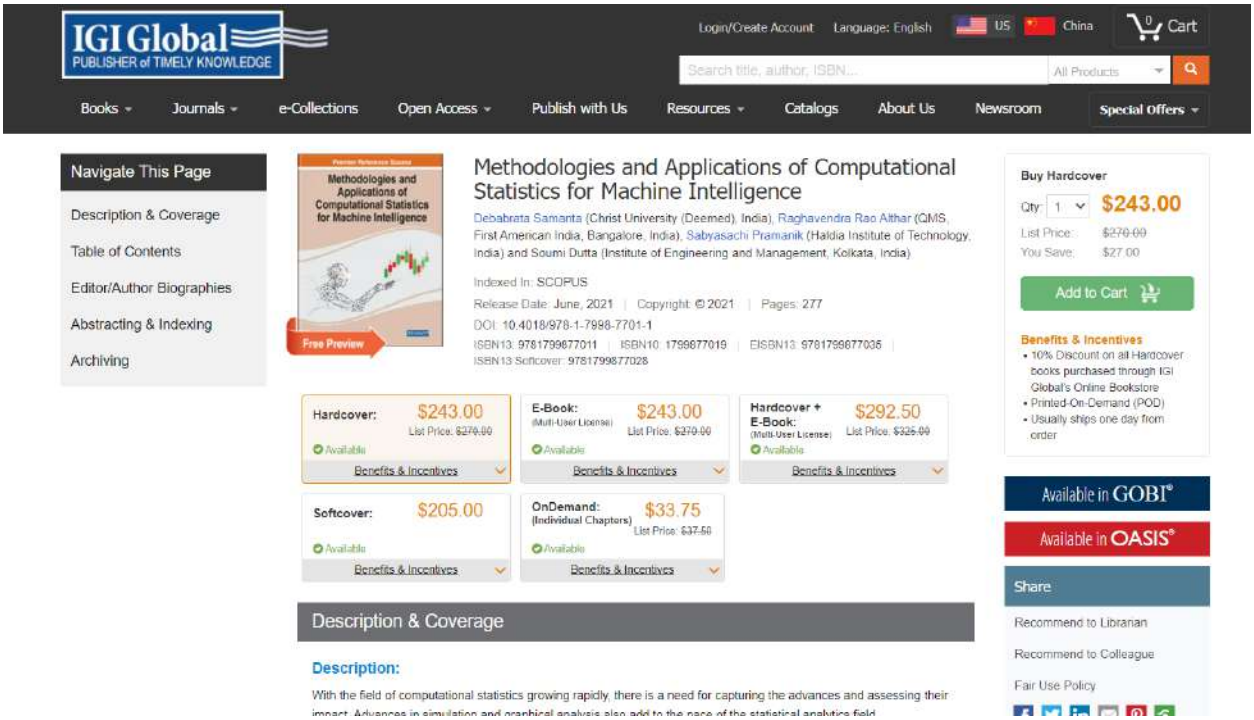
Published: 2021-07-10

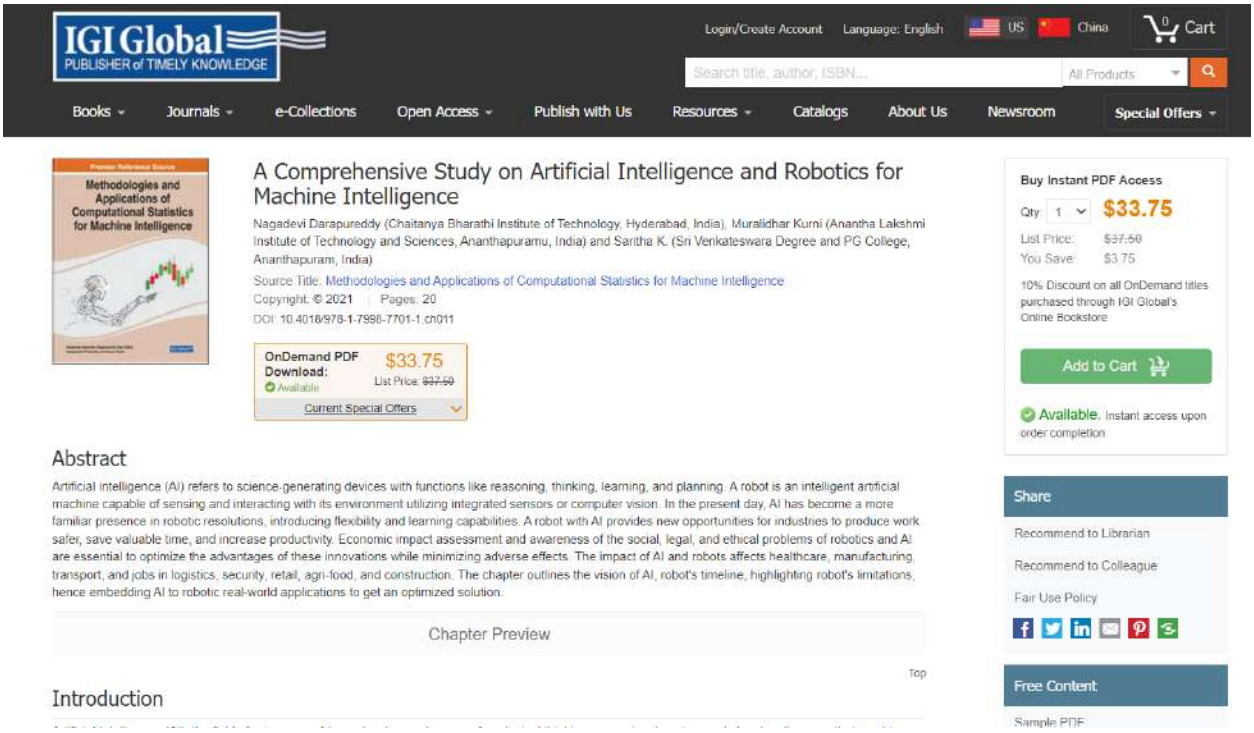
Abstract

In this research, a static sixteen Bit CMOS Brent kung adder structure was invented, which boasted a higher speed and reduced power consumption when compared to ripple deliver adders. The speed was improved by altering the shape and adding a Brent Kung adder, which uses (28 transistor, Boolean precise judgement) and is a lot faster than a ripple supply adder. These speed adders will help DSP processors grow. With the use of a 180nm Cadence device, time delays and power consumption are significantly reduced with unique adders.

Keywords: Brent Kung adder; full adders; CADENCE; time delay; power consumptions

A Comprehensive study on Artificial Intelligence and Robotics for Machine Intelligence





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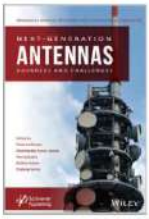

Next-Generation Antennas: Advances and Challenges

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DESCRIPTION

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12

Reconfigurable Antennas

Dr. K Suman

Department of ECE, CBIT, Hyderabad, Telangana

Abstract

In the technologies, the Radio Frequency front end should be conceptual in a natural scenario; reconfigurable antennas have become crucial for the coming generation of wireless communication and systems that are sensible because of their ability to change the radiation characteristics dynamically. They have many advantages such as good isolation, out of band rejection, multifunctional capabilities, low volume, low front end processing efforts without the need for filtering element which made them useful in wireless communications applications such as fourth-generation (4G) and fifth-generation (5G) mobile terminals. Reconfigurable antennas threw a novel challenge to antenna designers and researchers as they can be tuned to any frequency of operation without changing the radiation pattern. For the past thirty years, a lot of improvement was done in the advancement of reconfigurable antennas. This chapter emphasizes the advancements of reconfigurable antennas with basic concepts and gives a few guidelines for future research.

Keywords: Reconfigurable antennas, frequency reconfigurable antennas, polarization reconfigurable antennas, pattern reconfigurable antennas, leaky wave antennas, phase shifters, arrays

12.1 Introduction

Wireless communication systems are moving towards multiple functions of wireless services for different applications. These are used at different times and for different purposes like defense, naval, or domestic purposes. The congestion of the electromagnetic spectrum became one of the reasons for enhancement. To take up this challenge, the upcoming wireless

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Prashant Ranjan, Dharmendra Kumar Jhariya, Manoj Gupta, Krishna Kumar, and Pradeep Kumar (eds.) Next-Generation Antennas: Advances and Challenges, (203–220)

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Recent Developments in Engineering Research Vol. 1

Dr. P. Elangovan, (Editor)

Associate Professor, Department of Electrical and Electronics Engineering, Sreenivasa Institute of Technology and Management Studies, Chittoor, Andhra Pradesh, India.

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About The Author / Editor

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Associate Professor & HOD, Department of Electrical and Electronics Engineering, SRM TRP Engineering College, Trichy, Tamil Nadu, India.

Description Reviews (0)

This book covers key areas of engineering and other related fields. The contributions by the authors includefiber reinforced soil, randomly distributed, coir fiber, cohesion, angle of internal friction, direct shear testing, aggregate function, clustered index,

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D. Parthiban

" Design of Vedic Mathematics based 16 bit MAC unit for Power and Delay Optimization"

2021 International Conference on Nascent Technologies in Engineering (ICNTE 2021)

Design of Vedic Mathematics based 16 bit MAC unit for Power and Delay Optimization

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Abstract—**Multiply and Accumulate unit is the essential component of any Digital signal processor. In designing such a unit, it is significant to consider various design parameters such as power, area, and delay for a given application. Also, an efficient multiplier and adder units play a vital role in deciding the performance of MAC unit and hence DSP. In this paper, the design of 16 bit MAC unit using 16 bit Vedic multiplier and a 32 bit spanning tree adder is presented. The Vedic multiplier, in turn, is designed utilizing carry save and spanning tree adders by applying the concept of Urdhva Tiryakbhyam sutra. This entire design is coded in Verilog HDL using the tool Xilinx Vivado 2018.3 simulator with a targeting Zedboard (xc7z020-3clg484) for synthesis and implementation. This proposed multiplier design is compared with design of the existing 16 bit Vedic multiplier which is made up of Carry Save Adders. The results showed that there is an improvement in delay and power by 30% and 21.1% respectively compared with the existing design.**

Keywords—*Vedic mathematics, high speed, spanning tree adder, MAC unit.*

I. Introduction

The fundamental block used in various complex signal processing applications is Multiply and Accumulate (MAC) unit. In the computational applications such as Discrete Fourier Transformation (DFT), Fast Fourier Transformation (FFT), Filtering, Convolution, Finite Impulse Response filters, etc. this unit plays a critical role in improving the efficieney and performance which makes the Digital Signal Processor (DSP) highly dependent on the MAC unit. As multiplier and adder are main parts of a MAC unit, they must be chosen wisely in order to achieve optimization both in power and delay.

Vedic mathematics is a practice retrieved from ancient Vedas of Hindu scriptures. According to Indian Monk Sri Bharati Krishna Tirthaji's research published in 1965, there are 16 Vedic mathematics sutras. These techniques reduce the complexity by cutting out excess steps while performing the operations. Hence, Vedic mathematics is one of the most efficient and refined mathematical systems. Among 16 sutras, Urdhva Tiryakbhyam (UT) sutra is widely used because of its faster calculative multiplication abilities. The Sanskrit word Urdhva Tiryakbhyam meaning vertically and crosswise and is preferred for smaller order numbers. This process of vertical and crosswise multiplication makes it easier to generate the partial product outputs. The traditional multiplication procedures generate outcomes consuming certain delay which is not suitable for current trends. To reduce the delay and improve effectiveness of the signal processing calculations, Vedic mathematics based multiplication is preferred.

The UT sutra is used in this design as it supports pipelined computing with lesser delay by making it a faster multiplier. In order to achieve low delay functioning, Spanning tree adder is used which is a modified version of the Carry look ahead adder [1]. For the addition of more than two partial products at a time with less power and less delay, Carry Save Adder (CSA) is used.

In this paper, 16 bit MAC unit built using Vedic multiplier is designed which uses CSA and spanning tree adder along with lower order multipliers. This design is then compared with an existing system that uses the same multiplier logic but comprising CSAs. The paper consists of related works described in Section II, further in Section III, the design of MAC unit is elaborated. Results are discussed in Section IV and conclusion is made in Section V.

II. Related Works

Various researchers used CSAs and carry select adders in the design of Vedic multiplier for MAC unit and disclosed development in either delay, power or area [2], [3], [4], [5]. The Vedic multiplier (UT sutra) comprising Kogge - stone adder is realized [6]. The system showed improvements in terms of speed as the adder generated a carry signal in O (logN) time. Nikhilam Sutra is analyzed in terms of total calculation time and multiplication for inputs of different bit lengths [7]. The design of a Vedic multiplier, which exploited 4:2 compressors instead of standard full adders showed improvements in performance [8].The MAC unit is built using modified Booth's algorithm and when related with the conservative algorithm resulted improvements in power and delay [9]. A 64 bit Vedic multiplier utilizing UT sutra and Han Carlson adder is related with conventional Booth and Array multiplier [10]. Pipelining technique is employed on Vedic multiplier (UT sutra) which resulted in usage of less power compared to non pipelined architectures [11]. A 32 bit multiplier is designed using booth and pipelined Wallace tree architectures along with the usage of carry select adder to reduce the delay [12]. The design of Wallace tree multiplier using 4:2 compressors and parallel prefix adders to reduce the number of stages to get the output for higher order multiplication is presented in [13]. From the research done,

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“Greek Handwritten Character Recognition using Inception V3”,

Smart Systems: Innovations in Computing pp 247–257 | Cite as

Greek Handwritten Character Recognition Using Inception V3

V. V. Satyanarayana Tallapragada, N. Alivelu Manga, M. V. Nagabhushanam & M. Venkatanaresh

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Abstract

Handwritten Greek character recognition is considered as one of the ways for genuine character recognition. In this paper, convolutional neural networks (CNNs) is applied on disconnected transcribed Greek character to identify and recognize properly. Inception V3 CNN model, with unique settings of the quantity of neurons in each layer is utilized and the interfacing route between certain layers. Yields of the CNN are set with modified adjusting codes, wherein CNN has the capacity to discard recognition along these lines. For preparing of the CNN, a mistake tests-based fortification learning methodology is created. Results show that the proposed system tend to achieve an accuracy of 99% and is far better when compared to the existing techniques.

"Satellite Selection Algorithm for RAIM Algorithms"

"Integrity Monitoring of GNSS using Ztest"

"Design and Development of NavIC and GPS based Geolocation System for CO2 Monitoring"

2021 International Conference on Innovative Practices in Technology and Management (ICIPTM)

Design and Development of NavIC and GPS based Geolocation System for CO_2 Monitoring

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***Abstract*—With the development and implementation of NavIC, India has joined the league of very few countries having its own satellite navigation system. NavIC when used together with GPS, provides improved positioning accuracy. Therefore, the design and development of indigenous NavIC+GPS based geolocation systems for mobiles, automotive, IoT services, tracking and monitoring systems, etc. have been gaining significance. In this paper, a NavIC+GPS based geolocation system for CO_2 level monitoring is designed using a low-cost NavIC + GAGAN/ GPS receiver module, Microcontrollers, and a CO_2 Sensor. This system measures the CO_2 level with respect to NavIC + GPS-based location and time. The proposed system is economical and is a step towards the adoption of NavIC in monitoring systems. Also, such systems carry significance in view of the increasing air pollution in major Indian cities. Further, this system can be extended to monitor major air pollutants such as PM_{10}, $PM_{2.5}$, dust etc.**

Keywords— NavIC, GPS, MQ-135 Sensor, LCD Display, PVT.

I. INTRODUCTION

The Indian Regional Navigation Satellite System (IRNSS), with an operational name of Navigation with Indian Constellation (NavIC), provides the users with continuous positioning and accurate timing information, within India and also extends to around 1500 Km from its boundary [1]. Earlier Global Positioning System (GPS) was widely used for positioning and time synchronization applications but now NavIC based and NavIC+GPS based applications are being developed to serve in various sectors like agriculture, aviation, marine, surveying, mapping, military and telecommunication etc. ISRO has given consultation to Qualcomm, for enabling NavIC in their Snapdragon mobile chipsets. These chipsets are being released by Qualcomm Technologies, Inc [2]. Hence miniaturization of NavIC chips is eventually making NavIC as a standard feature in the upcoming handsets, applications, processors, etc. Tracking and monitoring are widely used applications of satellite navigation. The availability of low-cost NavIC + GAGAN/ GPS chipsets such as the ones from Skytraq, will now facilitate design and development of low-cost tracking and monitoring systems. In this paper, the details of the design and development of a NavIC+GPS based geolocation system for CO_2 level monitoring system are presented.

The design carries significance as CO_2 is one of the important air pollutants to be monitored and air pollution is a major cause of death and disease globally. High concentrations of CO_2 in the environment contributes to 20 percent of Greenhouse effect [3]. Hence monitoring of CO_2 level in the environment with respect to time and location is must and preventive measures must be taken as required. Several GPS based pollution monitoring systems are available, but a specific NavIC+GPS based system is not yet reported [4, 5]. Moreover, NavIC+GPS position accuracy is better than that offered by standalone GPS or NavIC [6].

II. TECHNICAL APPROACH

The design of a NavIC+GPS based CO_2 level monitoring system consists of three subsystems, the receiver subsystem, the sensor subsystem and the microcontrollers subsystem (Fig. 1). The receiver subsystem is designed using a NavIC+GPS receiver chip (S2525F8-GI2), a Patch antenna (ST254-1A003) and a Max232 IC for communication between NavIC+GPS receiver module and microcontroller/Laptop. All the components are mounted on a PCB, with receiver chip and patch antenna mounted on opposite side to reduce possibility of interference. The IRNSS and GPS signals received by the antenna are processed to obtain Position, Velocity and Time (PVT) information from the receiver chip and are transferred to microcontroller subsystem via Universal Asynchronous Receiver/Transmitter (UART) using Max232 interface.

The design of sensor subsystem consists of a PCB with CO_2 sensor (MQ-135) and signal conditioning circuitry for proper filtering and linearization of sensor output. The CO_2 level detected by the sensor is sent to microcontroller subsystem after proper signal conditioning. Further, the microcontroller

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"Significance of Internet of Things (IoT) in Health Care with trending smart Application"

‘A Simple Model for Forecasting Confirmed COVID-19 Cases in a Given System’

A Review on E-waste: Fostering the Need for Green Electronics

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A Review on E-waste: Fostering the Need for Green Electronics

Publisher: IEEE Cite This PDF

Nisha Rani Misra ; Sandeep Kumar ; Arpit Jain All Authors

Abstract:
With rapid development in technology, electronic waste (e-waste) or Waste Electronic and Electrical Equipment (WEEE) is an arising threat, posing serious contamination problems to mankind and the environment. The fundamental reason behind uncontrolled electronic waste around the world is the fast advancement of innovation and low production cost. Due to this, very large amounts of e-waste have to be discarded every year whose disposal is a major concern. To tackle this problem of e-waste, e-waste management methods like reducing and recycling play a vital role. These techniques also help in the establishment of a circular economy. This paper summarizes the statistics of e-waste generated worldwide, along with focusing on the benefits of recycling. It highlights the impact e-waste has on the environment and mankind and how green electronics could be one of the viable remedies to this.

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“ Analysis of Doppler Collision using Supervised Machine Learning”

Analysis of Doppler Collision Prediction using Supervised Machine Learning

Publisher: IEEE Cite This PDF

K. Tarun ; N. Vinay Reddy ; T. Akhilesh ; P. Sathish All Authors

Abstract:
Navigation with Indian constellation (NavIC) has been developed by Indian Space Research Organization (ISRO). NavIC satellite constellation contains four geosynchronous satellites and three geostationary satellites. There are many factors which affect the navigation system. Doppler Collision is one such factor which leads to tracking errors due geostationary satellites. It occurs between geostationary satellite combination IRNSS 1C-1G, 1C-1F, 1F-1G. When the relative Doppler frequency of satellites is less than the code tracking loop bandwidth Doppler Collision (DC) period is observed. The positional accuracy of NavIC system is affected by DC. Due to DC, the more effected geostationary satellite pair is 1C-1G. To mitigate the DC, the prediction of DC using machine learning algorithms will be very much useful for improving positional accuracy. The parameters considered for prediction are relative Doppler, satellite position, satellite velocity, duration of occurrence and relative Doppler. Three supervised machine learning algorithms such as Linear regression, Random Forest regressor and K-Nearest Neighbors (KNN) regressor are used for prediction. Among these three algorithms, random forest regressor predicted the Doppler Collision accurately.

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"Preliminary Result of COVID-19 Detection through Chest X-Ray using Artificial Intelligence"

Preliminary Result of COVID-19 Detection through Chest X-Ray using Artificial Intelligence

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***Abstract*—The outbreak of the novel coronavirus disease, COVID-19, turned into a global pandemic. The standard test for diagnosis is the reverse transcription Polymerase chain reaction (RT-PCR) but it is a time consuming process. Chest X-Ray(CXR) imaging is a promising method which can be employed in the detection of COVID-19. This method is comparatively faster,low cost and available easily. A Residual Network (ResNet)-18 model is being used and trained on a COVID-19 radiography dataset. The designed Artificial Intelligence(AI) enabled framework can predict CXR scans and produce a result with a reasonably high accuracy.**

***Keywords*—Artificial Intelligence, ResNet-18, COVID-19, coronavirus, chest x-ray.**

I. INTRODUCTION

In December 2019, a novel coronavirus disease was identified in the capital city of Hubei province i.e., Wuhan, China. This infectious disease is named COVID-19. The symptoms can be characterized as fever, cough, difficulty in breathing, headache [1].

The disease began to spread widely in China and has been identified in other parts of the world by the end of the year. Laboratory tests were conducted on the confirmed cases and found a new type of coronavirus, novel coronavirus (nCov) and also other respiratory pathogens like adenovirus, influenza, avian influenza, Middle East Respiratory Syndrome (MERS), Severe Acute Respiratory Syndrome (SARS) were the cause of this syndrome [2].

The World Health Organization (WHO) received a detailed information from the National Health Commission on 11 and 12 January 2020. The reason for the outbreak is associated with the exposures in Huanan seafood market in Jianghan district, Wuhan[3], a major domestic and international transport hub. According to the preliminary epidemiological investigation, most of the COVID-19 confirmed patients worked at or were frequent visitors to this seafood market. So, that it indicates animal to human spread initially. The person-to-person spread was known when people who did not have any direct contact with a live animal markets were diagnosed with this disease.

The WHO declared it as a pandemic on March 11,2020 [4] because most people are not immune to its fast person-to-person spread. As of March 11, number of confirmed cases were 115,000 with more than 4000 deaths. As this viral disease continues to spread around the globe, strict measures have been taken by every country to slowdown the spread of corona virus. It began with travel restriction to other countries, quarantine of patients and then lockdown and city shutdown.

This pandemic has been a health crisis from the beginning but because of the lockdown , it became a financial crisis too. All the sectors of economy have been affected as manufacturing and buying has reduced drastically. Daily wage workers and small businesses had the most impact in every country.

The standard clinical confirmation test for COVID-19 is Reverse Transcription Polymerase Chain Reaction(RT-PCR) [5], which is manual, time consuming and complex. In developing and underdeveloped countries, there is a limited availability for testing kits because the financial cost for these laboratory kits is a significant issue and to afford the testing price by most people in those countries is not easy while fighting the disease. Rapid increase of infected patients requests for a screening system where the physicians can quickly identify the patients who need immediate clinical help. A published multinational consensus statement from the Fleischner society recommends to use chest radiography to manage the disease [6],[7].

Chest X-Ray(CXR) is a non-invasive clinical supplement in identification of pulmonary abnormalities. Chest X-Ray imaging is comparatively less cost and easily available for testing. Recent findings found that COVID-19 infected patients have distinct visual characteristics, like multi-focal,bilateral ground glass opacities in non-ICU patients and dense pulmonary consolidations in ICU patients, in the CXR images [8]. These subtle characteristics interpretation is quite challenging and can be done by expert radiologists. But the exponential increase in the confirmed patients makes it difficult for the limited expert radiologists to diagnose in time which leads to increasing mortality rate.

A Prototype Wi-Fi Controlled Car using NodeMCU

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Abstract—: **In this paper, we developed a remote-controlled car using the latest IoT modules. Low cost IoT modules are popular in terms of availability and re-programmability. This paper focused on hardware and software requirements for developing the remote-controlled car with low-cost modules. The developed prototype embedded car is useful for several research applications like data collection in long corridor or indoor/office smooth surface environments.**

Keywords—IoT, NodeMCU ESP8266, Wi-Fi Car

I. INTRODUCTION

In recent years, the applications of developing remote controlled cars are one of the popular toy products in the market[1]. To draw the research results from traditional remote-controlled cars like using single chip microcomputer is not possible. Because of not having storage capabilities and data computation facilities. In order to develop scientific attention, the remote-controlled car could be used for more realistic problems, such as distance measurement, data collection for indoor channel modeling, hospitals ventilation monitoring etc., Internet of Things is the latest emerging internet technology and has got its origin from home automation. The basic difference between standard home automation devices and IoT devices is that the IoT devices can transfer and share data over the existing network framework. Also, IoT devices are capable of being controlled remotely over the internet [2]. In the recent days, applications like developing Wi-Fi based smart car for toxic gas monitoring in large-scale petrochemical plants (Shu et al., 2015), and data collection of various environments plants in industries (Zhiqiang et al., 2015) are coming. In this paper,we used NodeMCU ESP8266 Wi-Fi transceiver for the purpose of distance measuring for data collection applications. Similar kind of prototype module is developed by wang et al., (2014) with Arduino microcontroller using Bluetooth system.

II. PROTOTYPE DESIGN AND DEVELOPMENT

The overall developed work consists of user with a smart phone, NodeMCU ESP 8266, L298N Motor Driver and Dual Shaft DC Motors and wheels. A program is developed in Arduino Integrated Development Environment (IDE) and is installed in Node Microcontroller Unit (Node MCU) to receive the controls from the smart phone. Later on, Node MCU sends corresponding digital signal to the motor driver module (L298N) for smooth functioning of the car in different directions. The technical specifications of NodeMCU and L298N Motor Driver are presented in Table I and II.

Table I. Specifications of NodeMCU

S. No	Parameter	Value
1.	Input Voltage	3.3V
2.	Digital Input/Output Pins	16
3.	ADC Pin	1
4.	Flash Memory	4MB

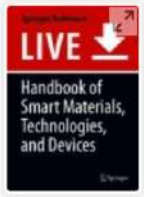
The required supply voltage for NodeMCU is 3.3V, giving from externally Lithium-Ion Batteries of 3 no's each one of rating 4V. Therefore, nearly the remote car could be operated up to 2 hours continuously. The pin configuration of NodeMCU is shown in Fig.1[5].

Fig.1. NodeMCU ESP8266 module

Table II. Specifications of L298N Motor Driver

S. No	Parameter	Value
1.	Motor Supply voltage	5V
2.	Motor Supply Current	2A
3.	Maximum Power	25W
4.	Logic Voltage	5V
5.	Logic Current	0-36mA

The L298N is a dual-channel H- Bridge motor driver capable of driving a pair of DC motors. It can control both speed and spinning direction of four tyres of car.



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Handbook of Smart Materials, Technologies, and Devices

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Establishes routes to real time utilization of Industry 4.0 at commercial scale manufacturing

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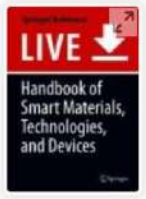

Handbook of Smart Materials, Technologies, and Devices pp 1–23

IoT-Based Smart Farming System Using MQTT Protocol and ML Algorithms

Sathish P & Alivelu Manga N

Living reference work entry
First Online: 30 November 2021

Abstract

Internet of Things (IoT) enables relations between separate data collection and exchange platforms. The Message Queuing Telemetry Transport (MQTT) protocol is light weighted protocol. The proposed system is designed using an ARM Cortex processor with the other supporting peripherals for monitoring and controlling environmental parameter values to achieve optimal growth and yield of the crop. The system parameters include temperature, humidity, soil moisture, air pressure, and fertilizer content sprayed. Further, the obtained data from the field trials are processed through the ThingSpeak cloud

Cite this entry

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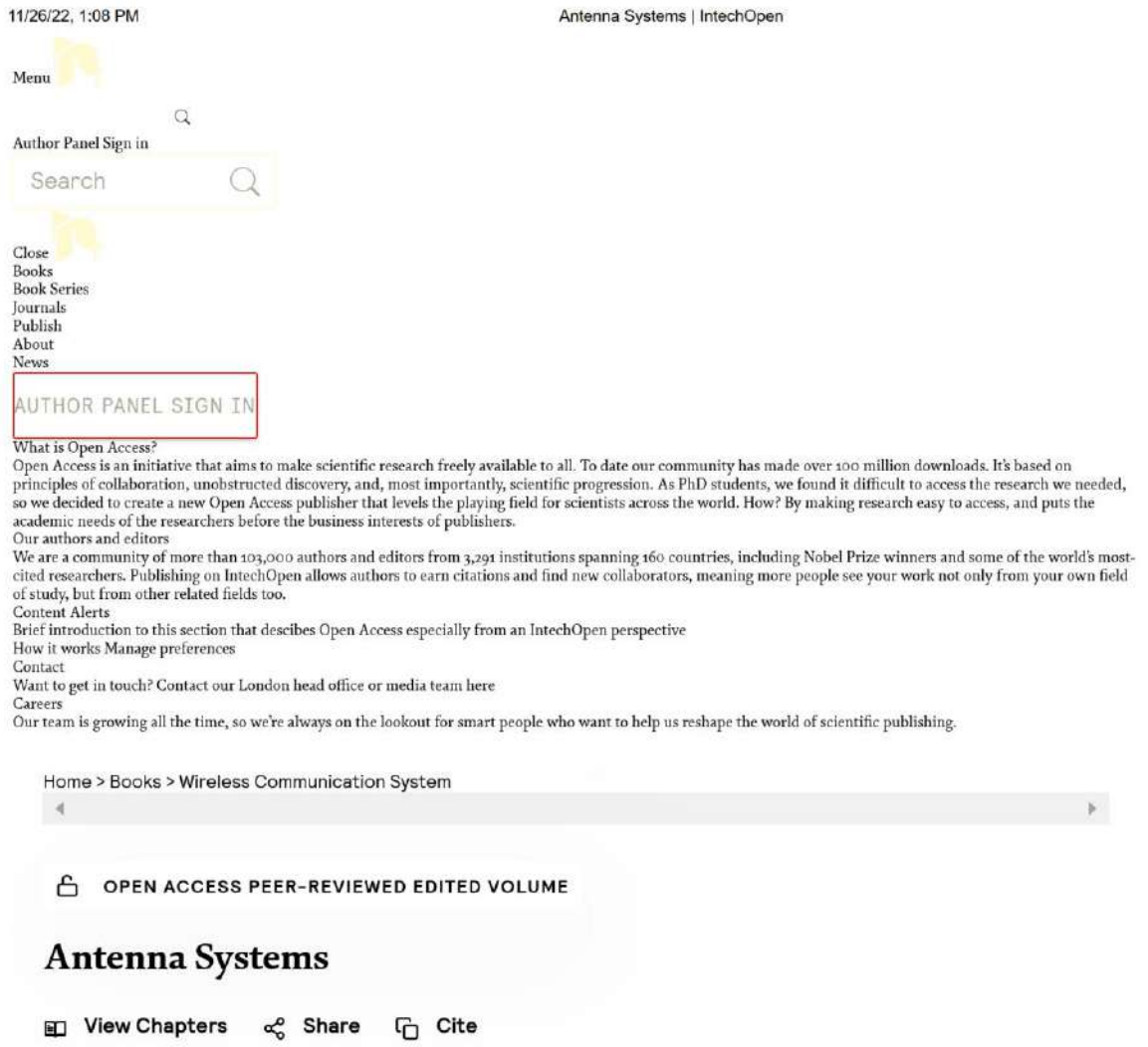
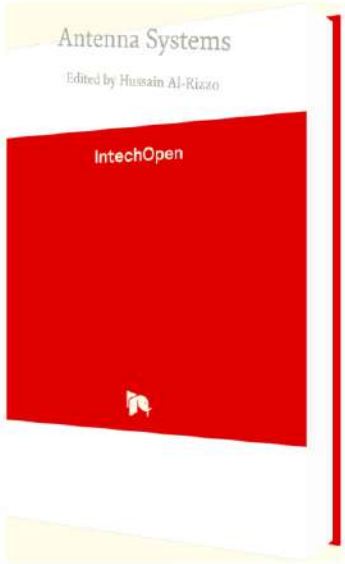
Performance analysis of Multiple Antenna Systems with New Capacity Improvement Algorithm for MIMO based 4G/5G Systems





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This book offers an up-to-date and comprehensive review of modern antenna systems and their applications in the fields of contemporary wireless systems. It constitutes a useful resource of new material, including stochastic versus ray tracing wireless channel modeling for 5G and V2X applications and implantable devices. Chapters discuss modern metalens antennas in microwaves, terahertz, and optica...

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Chapter

Performance Analysis of Multiple Antenna Systems with New Capacity Improvement Algorithm for MIMO Based 4G/5G Systems

Vinodh Kumar Minchula and Gottapu Sasibhushana Rao

Abstract

For a time varying channel, the channel capacity is determined by the Channel State Information (CSI) or its fading distribution at a transmitter or receiver. If CSI is perfectly known at both the transmitter and receiver, then the transmitter can adapt to its optimal transmission strategy (i.e., optimal antenna selection by power allocation scheme) relative to its instantaneous channel state for capacity enhancement. In the case where the channel information is not available at the transmitter (No CSIT), the transmitted power has to be distributed equally (i.e., uniform power allocation) between the transmitting antennas to improve the channel capacity. The IWFA (Iterative water filling allocation) strategy therefore allocates power to those spatial channels with positive non-zero singular values i.e. good quality channels and discards the lower eigenmodes channels resulting in maximum capacity in MIMO systems for perfect CSIT. In this chapter, the performance analysis of Multi Antenna systems under ICSIT/ICSIR, Perfect CSIT, No CSIT channel conditions have been implemented and a novel adaptive power allocation algorithm (SVD-based IWFAA) is considered to improve the spectral efficiency of next generation wireless MIMO communication (4G–5G). The algorithm considered is more efficient at high noise levels (low SNRs) under Perfect CSIT conditions because the strongest channel eigenmodes are allocated more power.

Keywords: MIMO, SVD, UPA, ICSIT, ICSIR, Perfect CSIT/CSIR, SNR, BER, Ergodic capacity

1. Introduction

Capacity is a maximal transmission rate that can be achieved by using higher order modulation schemes but these schemes are found to degrade the BER of wireless communication systems due to less separation between the constellation points. Another approach to increase the capacity is the use of multiple antennas at transmitter and receiver, which provides multiplexing gain. It also enhances the QoS by providing diversity gain, coverage and outage by array gain. Further increase in the capacity can be achieved with parallel decomposition of MIMO channels into r ('r' is rank of channel matrix) SISO channels by using SVD algorithm. MIMO system performance is closely related to allocation of optimal power with the help of CSI availability. Optimally allocating power to MIMO channels is

Generation and Evaluation of IRNSS Navigation data for Spoofing Applications

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Indian Regional Navigation Satellite System (IRNSS), India's own satellite navigation system is now finding its way into various civilian and defence applications. IRNSS signals like any other Global Navigation Satellite System (GNSS) signals are weak when received by receiver on earth and are vulnerable to spoofing. Spoofing refers to generation and transmission of false IRNSS signals to mislead the victim receiver to a false position. The spoofing attack is dangerous because the target receiver is not conscious of this menace and will provide false navigation solutions which seem to be reliable. GNSS signals can easily be spoofed by making significant modifications in GNSS navigation data. In this paper, IRNSS navigation data is generated and evaluated for spoofing applications. Initially IRNSS RINEX navigation data file is obtained from the IRNSS-GPS-SBAS (IGS) receiver located at Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad (lat. long) and ephemeris parameters are extracted. Ephemeris parameters are used in the computation of the satellite Position, Velocity and Time (PVT). The results show that the satellite PRN's (IRNSS 1B, IC,1D,1E, 1F, 1G & 1I) are acquired and their PVT are computed. Also, IRNSS navigation data message is constructed using the extracted ephemeris parameters. The constructed navigation message is validated. Satellite positions and desired spoofing location (MGIT, lat and long) are used to compute the pseudoranges. The pseudoranges and satellite positions are given as input to the Least Square Algorithm (LSA). The output obtained is desired/spoofed location (MGIT). Further, this work can be extended to develop advanced spoofing detection and mitigation techniques.

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Research Day-28 August 2021

Implementation of Deep Learning Architectures for Classification of Skin Lesions

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Skin cancer is the common type of cancer that is affecting people across the world every day. The major type of skin cancer that is found in people is Melanoma which has a high death rate. Because of the similarity in the different types of the skin lesions, it leads to inaccurate diagnosis. So, early detection of these lesions is necessary to save the life of patients. Hence models have to be developed that can classify the skin lesions accurately. This project deals with the classification of skin lesions using deep learning CNN architectures such as LeNet and ResNet. Transfer learning has been used for ResNet architecture by pre-training it on ImageNet dataset to boost the performance further. HAM10000 dataset is collected from the ISIC 2018 challenge to test the performance of the CNN models on the classification of different types of skin lesions. The CNN models are able to classify the seven different types of skin lesions i.e. melanocytic nevi, melanoma, benign keratosis-like lesions, Basal cell carcinoma, actinic keratosis, vascular lesions, dermatofibroma. Performance metrics such as Accuracy, Precision, Sensitivity and Specificity are measured for both models and they are compared to determine the best CNN model among them. LeNet has an accuracy of 73%. ResNet model achieved a better overall accuracy of 88% on the test images than LeNet.

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3rd Research Day-28 August 2021

Implementation of Deep Neural Networks for Multi-Classification of Brain Tumor Images

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Classification of brain tumor is the circular role to determine the tumors and make a treatment decision with respect to their classes. Many imaging techniques are used to detect the brain tumors. However, Magnetic Resonance Imaging(MRI) is used for this project. Because MRI provides better soft tissue than CT and MRI does not involve the radiation. This MRI uses a magnetic field and computer generated radio waves to create detailed images of the organs and tissues in our body. Deep Learning(DL) is the subset of Machine Learning(ML) and useful for the classification and segmentation problems. The Deep Learning algorithm is flexible to be adopted to new problems in the future. Segmentation plays a very important role in medical imaging, it is the division of an image into regions or categories. In this project uses two datasets, first one classifiers the tumor in to three categories (Meningioma, Glioma and Pituitary). Second one is to differentiate three glioma grades (Grade-II, Grade-III, Grade-IV). In this project first step is to perform the preprocessing with respect to the two datasets. Later it involves the detection and finally it will segment and classifies the tumor images by using convolution neural network algorithm. The proposed CNN achieves a significant performance with the best overall accuracy for the two datasets are 94.3% and 96.4% respectively. The final results represent the ability of the model for brain tumor.

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Implementation of Impatient Backoff Algorithm for wireless Adhoc networks

Implementation of Impatient Backoff Algorithm for wireless Adhoc networks

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Adhoc wireless network has become one of the main growth areas of wireless network and information technology. Adhoc network is a new paradigm of mobile host wireless network. Unlike traditional mobile wireless networks, adhoc networks do not rely on any fixed infrastructure. Instead, hosts rely on each other to maintain network connectivity. One of the main factors affecting adhoc communication is the multi-hop flow in the wireless adhoc network. In this type of network, it is difficult to achieve predictable Quality of Service (QoS) due to interference between links. The project task solves this problem by implementing two algorithms, Impatient Backoff Algorithm (IBA) and Adhoc Shortest Widest Path algorithm (ASWP). In order to improve the quality of service in wireless adhoc networks, this project involves implementation of both the algorithms. First Adhoc Shortest Widest Path Algorithm is implemented and from the ASWP the optimal path for data transmission is obtained. For the obtained Optimal path, we implement Impatient Backoff Algorithm. Impatient backoff algorithm reduces the backoff delay in the event of a collision to achieve a fairer allocation of available bandwidth, and the Adhoc Shortest Widest Path algorithm provides shorter and widest path. The road to the destination is wider. Evaluate the stability and fairness of different topologies with the least number of hops and the widest bandwidth to improve the fairness of the network. A comparison is done based on the obtained throughput of the network at the active nodes of the optimal path for Exponential Backoff Mechanism and IBA. The results show that IBA achieves comparatively better throughput than Exponential Backoff Mechanism.

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The basaltic analysis for safeguarding structures nearby CBIT premises

The basaltic analysis for safeguarding structures nearby CBIT premises

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In this swift developing world of 21st century, where the forests and farmlands are being subjected to deforestation to meet the demands of rapid population growth. In such scenario we bring forward our project basaltic analysis for safeguarding structures. As we all know before construction there are various factors the builders, developers take note such as they examine the land. If there are any hills and mountains located at the site of construction, then it's mandatory to eradicate such hills and mountains. In order to eradicate such hills, the developers make use of explosive blasts due to which the rocks present break and can be easily transported to other places. Now as the developers make use of explosives which not only causes the huge rocks to break but also weakens the structures of all nearby buildings and if this continues on a regular basis the building may also be subjected to collapse. In such a scenario we as a team have drafted an idea to measure and monitor the vibrations that occur with the use of explosive blasts. Seismic surveying requires placing a large number of sensors in a grid pattern, triggering aseismic event, and recording accelerometer readings at each sensor. Seismic surveying employs human labourers for sensor placement and retrieval. Use of explosives, harsh climatic conditions, we propose an autonomous heterogeneous sensor deployment system using drones to plant and recover sensors. We also tend to develop an android based application to directly take note of the sensor readings on our mobile phones. With the help of this seismic survey we can be able to determine the seismic vibrations and bring to the notice of developers that if this continues it will weaken the structure of other buildings. As a result, the necessary precautions are to be made while using certain explosives.

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Design and Simulation of Approximate Multiplier for Low Power Applications

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Multiplier is a fundamental subsystem used in digital signal processors, microprocessors and image processing applications. It is constituted by complex logic design and most power and area consuming digital blocks. In order to achieve low power and area efficient multiplier, approximate computing is used. Approximate computing is an emerging technique that trade off the accuracy which is acceptable to give a substantial improvement in power, speed and area. It can be applied in several error-resilient applications such as multimedia processing, image processing and machine learning, etc. In this paper, a rounded based approximate Wallace tree multiplier is designed and simulated using Xilinx tool. The impact of rounding technique is compared with the conventional Wallace tree accurate multiplier. The simulation results show that the approximate computing-based multiplier has significant improvement in power, area and speed.

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DESIGN OF AN ALL DIGITAL PHASE-LOCKED LOOP USING CORDIC ALGORITHM*

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Abstract. This paper presents a design of an all digital phase-locked loop (ADPLL) using Cordic Algorithm. In an ADPLL all the components are digital in nature. ADPLL are being used in a lot of different applications specially in the communication. Th ADPLL presented in this paper is built completely using all digital blocks i.e. Digital phase detector, Digital IIR filter and a digital algorithmic VCO. A CORDIC algorithm based phase detector and a CORDIC based VCO is used, which alters its operating frequency depending on the output of the loop filter to lock the output signal with the input signal. The proposed AD-PLL model is simulated using Simulink and then the HDL version of the same is simulated using ModelSim. It was found that the proposed system exhibit excellent locking behaviour.

Keywords: CORDIC · ADPLL · DDS.

1 Introduction

1.1 PLL

A phase locked loop, PLL, is basically a control system, used to get the desired phase/frequency. A PLL consists of three blocks namely, phase detector, LPF and VCO as shown in Fig. 1.

1.2 Classification of PLLs

There are several variations of PLLs. They can be differentiated based on different blocks used and also based on whether these blocks are analog or digital. Basically, the PLL can be differentiated into three types as follows:

Analog PLL(APLL): It uses all analog blocks.

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Hyperspectral Image Segmentation and Classification using Hybrid IB-CDA with Least Square Unmixing

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Hyperspectral Image Segmentation and Classification using Hybrid IB-CDA with Least Square Unmixing

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***Abstract*—The hyperspectral imagery (HSI) based satellite images are to be further processed for the usage with any applications. The Hyper-spectral images must be classified to map co-ordinates from the image co-ordinates which is the most important and unavoidable step. For this process, the ground control points (GCPs) to be extracted manually from the remotely sensed images based on the ground truth values which are a time-consuming process. But conventional approaches result in the improper classification. Hence, to overcome this problem the proposed method is functions based on the Hybrid iterative block-coordinated descent algorithm-least square un-mixing (HIB-CDA-LSU) for noise and un-certainties. This approach removes the various noises presented in the HSI without losing the actual information. Then, on this outcome feature entropy based super-pixel segmentation (FESPS) is applied to divide the image into multi-temporal segments. Thus, each classification region of HSI perfectly segmented. Followed by probabilistic pixel based principal component analysis (Probabilistic-PCA) is utilized for the extraction of Hyperspectral features. Thus, the detailed features of each segmented region perfectly extracted. Then, for classifying the multi-temporal HSI satellite imagery, Multi kernel-based support vector machine (MK-SVM) based supervised machine learning classification is used. The MK-SVM has the low computational complexity and capable of classifying the various classes in the Hyperspectral image. Thus, each individual class allotted to each kernel of SVM for classifying the region. The simulation results shows that the proposed Hybrid approach gives the maximum classification accuracy compared to the state of art approaches.**

Keywords*— *hyperspectral imagery; least square unmixing; super-pixel segmentation; principal component analysis; support vector machine

I. Introduction

The remotely sensed HSI data suffers from various distortions [1] due to the rotation of the satellite, rotation of the earth, sensor calibrations, atmospheric conditions, projection direction, etc. The natural images are two-dimensional representation of data, whereas the hyperspectral images consisting multi-spectral based multi-dimensional properties. Based on the capturing environment the number of Natural images presented in the HSI is varied. Normally, HSI consisting of 50 natural images in each spectrum. The raw data which is acquired through remote sensing satellites will have too much of errors, noises due to these distortions which will reduce the quality of the acquired image. Hence the satellite images which are directly acquired from the remote satellite are pre-processed for removing the distortions and noises [2]. Thus, to overcome this problem, the recent advances in Remote Sensing are towards analysis of the earth surface from time to time for the prediction of natural disasters. Apart from this, change detection also plays a major role in monitoring the environmental conditions. Most of the real time applications with respect to military, daily-life, etc. are based on the remotely sensed data. Remote sensing could be defined as the process by which the information about an object or place or area is acquired without physically having contact with the object or place or area. This is categorized into active remote sensing and passive remote sensing based on the data which is gathered. In passive remote sensing, there are sensors which are usually termed as passive sensors which collect radiation emitted or that is reflected by the object or the area. Usually, passive sensors are designed to measure the sunlight which is reflected. Few examples for passive remote sensing are film photography, infrared, charge-coupled devices [3], radiometers, etc. Active remote sensing is one where they emit energy for the purpose of scanning objects and areas and the sensor detects the amount of radiation that is reflected from the target. Some examples are RADAR [4], LiDAR [5], etc. Active remote sensing generally relates directly to the process of acquiring images via a satellite. In the Satellite Remote Sensing, the atmosphere plays a major role since the sensors look through this to capture the surface of earth. Hence, the effects of the atmosphere play a major role in degrading the quality of images acquired. The remotely sensed images are usually in the form of digital images. For extracting useful information from these images, image processing techniques are used to enhance the acquired image which helps in visual

Design and Development of Android Application for Virtual Birthday Present

Design of IoT Based Transmission Line Fault Monitoring System

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Abstract. Power is transmitted from the generation plants to end users at distant locations through the transmission lines. Due to various environmental conditions and faults may occur causing power interruption to end users, damage to the power system. The operators cannot know information about fault immediately. To classify the faults various methods have been developed such as transient analysis, phasor measurement units, artificial neural networks-based approaches, etc. The purpose of this project is to detect and classify the faults in transmission lines using IoT in addition with Fuzzy logic for fault classification. In this project we are designing a system to collect data from the transmission lines to detect and classify the faults and then data is transmitted to the cloud and SMS alert is sent to the operator. The project used MATLAB Simulink to simulate generally occurring faults and detecting them.

Keywords: IoT · MATLAB Simulink · Fuzzy Logic

1 Introduction

The transmission line serves as a critical link between the electrical power generation plants and all electricity users. Transmission lines with a length of several kilometres would be affected and service continuity is disturbed as there is a possibility that a fault will occur. Faults should be cleared at regular intervals to ensure stability. Transmission line faults cause equipment damage and instability [1]. As a result, fault protection for the electric power system is needed. Transient faults last for a short period of time, while permanent faults last for a longer period of time. Faults should be identified quickly for immediate isolation of the defective line from the device for effective defence[1]. Following that, fault classification and position must be carried out in order to restore and speed up the system's recovery. Faulty current and voltage signals are used in transmission networks to locate, detect, and classify faults [2]. The circuit breaker is used to disconnect the part of the transmission line where fault occurred from the remaining part after the relay detects an irregular signal[5].

These faults may be either open circuit or short circuit. Wearing of insulators on transmission lines, opening of conductor due to wearing, are examples of open circuit faults. A short circuit occurs when two or more lines carrying different voltages are

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Development of Simple Software Receiver For IRNSS L5 Signal

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Abstract*— With tremendous increase in various fields of science and technology, there is a requirement for replacement of the dedicated hardware components by means of software modules to make the systems cost effective and efficient. This paper aims to implement an IRNSS software receiver that is efficient for performing acquisition, code and carrier tracking, navigation bit extraction, navigation data decoding, pseudo range calculations and position computations. Three different types of acquisition techniques are implemented and their performance is compared based on the processing time. Tracking and navigation data extraction are carried out successfully and satellite position is estimated and validated. Two prominent algorithms are implemented to compute the user position. The simplified step by step procedure for developing Software Defined Radio (SDR) for IRNSS L5 Signal is presented. The results obtained are encouraging and would be helpful in designing the comprehensive SDR for IRNSS signals.

Keywords—IRNSS, Software Receiver, Signal acquisition, Signal tracking, User Position

I. INTRODUCTION

Indian Regional Navigation Satellite System (IRNSS) designated as Navigation with Indian Constellation (NavIC) is developed indigenously by Indian Space Research Organization (ISRO). It is developed to provide position, navigation and timing services across India and other intended regions. For the primary service area, IRNSS provides good position accuracy of better than 20 meters to users equipped with IRNSS receivers [1]. However, these receivers are susceptible to the effect of several errors including ionospheric and multipath errors [2,3].

Software receivers have proved to be more advantageous in terms of portability, flexibility, configurability and in many other aspects, including quick modification of signals, algorithms, rapid prototyping and testing of the new receiver architectures. GNSS Software receivers act as an aid to understand the complete system with less cost and ease and can be used as a research tool. The SDR technology has progressed and evolved over the decades since mid1980's [4]. However, the SDR for GNSS has evolved over the last fifteen years or so. This paper aims to implement a fully real time IRNSS Software receiver capable of processing the IRNSS L5 signal in MATLAB and provide navigation solution to the user.

II. THEORETICAL BACKGROUND

IRNSS signal software receiver can be successfully developed by implementing three crucial phases namely, Acquisition, Tracking and Navigation solution. The process of detecting a satellite signal associated with carrier frequency and code phase of the PRN code is known as signal acquisition. Before the signal acquisition process, the IRNSS receiver antenna receives the satellite signal. The receiver then processes the received data to identify the visible satellites. If a specific satellite is realized as visible, then the acquisition process spots the signal's frequency and coding phase. Generally, there are three conventional acquisition methods. They are: Serial search acquisition, Parallel frequency search acquisition, parallel code phase search acquisition. In this work acquisition is realized using Parallel code phase search

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utomatic Framework of Music Ringtone Extraction from Tollywood Songs

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AUTOMATIC FRAMEWORK OF MUSIC RINGTONE EXTRACTION FROM TOLLYWOOD SONGS

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Abstract: An automatic framework is used to extract the ringtones from music automatically. In this, song is considered as the grouping of segments of music such as intro, chorus, verse, bridge, outro. Mostly the ringtone will be the 'chorus' or 'intro' segments of music. The process of manually checking each song and cropping specific parts of the song is a tedious process. Western music and Bollywood songs are widely used for ringtone extraction. The accuracy is not stable for different genres of the songs such as hip-hop, ghazal etc work, for automatic extraction of ringtone, beat tracking is done by using Simon Dixon BeatRoot followed by feature extraction process as the audio data lies within beats. Songs from Tollywood (regional) were used for experimentation. SVM and Naïve Bayes classifiers are used for comparisons. The class labels are predicted based on training samples. The accuracy gained by SVM is 62.9% with 11093 beat data and the Naïve Bayes classifier gained 75% accuracy with the same beat data. In the two datasets of experimentation Naïve Bayes performed better than SVM.

Index Terms - BeatRoot, Feature Extraction, Classification, Segment Boundary Detection.

I. Introduction

Automatic music extraction is very useful in significant fields. In this a song is taken as input and divided into segments which are considered as meaningful regions such as verse or chorus. The structure of song is usually divided into intro, verse, chorus, outro, etc. Ringtone is an audio file played on mobile phones to indicate an incoming call. Ringtones are popular because in a crowd of people with cellular handsets it is easy to identify easy whose phone is ringing.

Ringtones and ring-music bring more fun when people make calls and it remains as labor intensive work, people need to listen each and every song to set the starting point and ending point for a clip with in audio file, then extract the segment [1]. In this paper our main goal is to extract the ringtone automatically by detecting the boundaries of segments correctly with good accuracy.

Song forms are made up of a number of sections that may or may not be repeated within the same song. Some of the popular song structures are strophic (AAA) form, AAB (12 bar blues) form, AABA song form, AB or verse/chorus song form, ABC song form or verse/chorus/bridge song form. South Indian music song forms are very similar to western music forms.

A. Genres of Telugu songs

In music genre refers to musical style. Some of the popular genres of Indian music are [2]:

- Classical: The composition of classical music is based on ragas, which are the scales of seven basic notes such as sa, re, ga, ma, pa, dha and ni. The commonly played musical instruments of this genre includes sitar, surbahar, sarod, sarangi, santoor, bansuri, pakhavaj and tabla.
- Ghazal: According to Arabic dictionary the word ghazal means 'talking about woman', it is generally a poem consisting of five to fifteen couplets known as 'shers'. The ghazals became a part of the Indian music with the invasion of Mughals.
- Pop- Indipop music is a hybrid of Indian and western musical traditions.
- Devotional: Bhakti or devotion, constitutes an important part of Hindu religious practice. The broad sweep of devotional music includes chants and readings of scriptures such as the Vishwasahasranam, Shivamahimmah stotra, Bhagavad Gita and holy mantras, such as Om Namah Shivaya.
- Folk: India folk music owes its origins to the villages, which represents the folklore and lives of the villagers
- Tribal: Indian tribal music is originated from the inhabitants of the hilly regions and they are composed among the tribals of northeast India and southern states.

Folk and tribal music was composed and performed in order to celebrate a particular festival or to deliver a message.

B. Structure of Indian song

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Predicting High Blood Pressure using Decision Tree Based Algorithm

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Technologies, California in 2017. He has been the Principal Investigator of many sponsored research and consultancy research projects in the field of neural networks and machine learning. He is also actively involved in teaching and project coordination for the Graduate and Post Graduate Program in Computer Science and Engineering Department at the National Institute of Technology Goa. He has authored a number of research papers published in reputed international journals in the area of neural networks, classification, and clustering.

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Predicting High Blood Pressure Using Decision Tree-Based Algorithm

Satyanarayana Nimmala, Y. Ramadevi, Srinivas Naik Nenavath and Ramalingaswamy Cheruku

Abstract High blood pressure, also called as hypertension, is a state developed in biological system of human beings by knowingly or unknowingly. It may occur due to varied biological and psychological reasons. If high blood pressure state is sustained for a longer cycle, then the person may be the victim of heart attack or brain stroke or kidney disease. This paper uses a decision tree-based J48 algorithm, to predict whether a person is prone to high blood pressure (HBP). In our experimental analysis, we have taken certain biological parameters such as age, obesity level, and total blood cholesterol level. We have taken the real-time data set of 1045 diagnostic records of patients in the age between 18 and 65. These are collected from a medical diagnosis center Doctor C, Hyderabad. Records (66%) are used to train the model, and remaining 34% records are used to test the model. Our results showed 88.45% accuracy.

Keywords Classification · Decision tree · Blood pressure monitoring

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Neural-Based Hit-Count Feature Extraction Method for Telugu Script Optical Character Recognition

M. Swamy Das, Kovvur Ram Mohan Rao and P. Balaji

Abstract The recognition accuracy and efficiency of any OCR system greatly depend on the feature extraction methods. There are several feature extraction methods each has its own characteristics. These methods differ in terms of the number features that they extract and the complexity. With less number of features, the recognition accuracy may be low, and with more number of features, the recognize time may be more. The features are to be selected in such a way that they could distinguish one character from other with minimum comparisons and gives less false positives and false negatives. The accuracy of an OCR can be improved by changing the feature extraction methods. Telugu is called Italian of the east. But it is surprising that there are not many OCRs that could detect Telugu characters with fairly good accuracy. The accuracy of OCRs available in the market are either highly objectionable or the price is very high. To address this issue, we took up this project. Other problems include the segmentation of overlapped characters and right feature extraction. We tried to solve these issues, by taking a segmented character from a word and check to find a correct match for it or tell that the character does not exist so that the particular character can be re segmented. In this work, a hit-count-based feature extraction method with neural networks is used for the fast recognition even though the training time is more. The experimental results show that the proposed hit-count-based feature method greatly reduces the time by maintaining the recognition accuracy.

Keywords OCR · Hit-count · Segmentation · Feature extraction
Blob · PyBrain · Neural network · Skeleton · Skew · Backpropagation

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CCLPA: A Clustering Coefficient based Label Propagation Algorithm for Unfolding Communities in Complex Networks

CCLPA: A clustering coefficient based label propagation algorithm for unfolding communities in complex networks

Publisher: IEEE

E. Raju ; Y. Rama Devi ; K. Sravanthi All Authors

Abstract: Identifying interconnected groups in complex networks such as social networks, biological networks, and communication networks is an ever important task in data analysis.... **View more**

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Abstract:
Identifying interconnected groups in complex networks such as social networks, biological networks, and communication networks is an ever important task in data analysis. These interconnected groups are termed as communities in social network analysis and plays an important role in understanding the structural and behavioral properties of complex networks. In this paper, we propose a novel label propagation algorithm, called CCLPA (A Clustering Coefficient based Label Propagation Algorithm) to address the randomness issue of label propagation algorithm. Our algorithm defines the function, clustering coefficient, to measure the neighborhood connectivity between nodes quantitatively without any contact with the user. Based on the clustering coefficient, we present a new label propagation algorithm with explicit node update sequence to uncover communities in complex networks. Experiments

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on real-world network datasets demonstrate that it overcomes the random initial label selection and random label update order of underlying label propagation algorithm. Our algorithm identifies stable communities and becomes more robust and efficient. Wide experiments show the better-quality and effectiveness of the proposed algorithm.

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SECTION I.
Introduction

Social network analysis has gained much attention in recent years because many real life complex systems can be represented as networks. Some of the real world networks include a network of co-authorship [1], biological networks that include neural networks [2], network of hyperlinks of web pages [3] known as World Wide Web (WWW), network of friends [4], network of food webs [5], technological network of Internet [6], metabolic networks [7], social networks, and even US political elections [8]. A network is a combination of a set of vertices interconnected by a set of tires. The ties represent various types of associations such as common hobbies, friendship, same locality, kinship, etc. Small world effect, power law degree distributions are some of the properties observed in these networks. An interesting property frequently found in these networks is the *community structure* [10] which is the point of our research work. A community with a network is defined as distinct groups of vertices gathered such that the ties within the community are dense, but the ties with the other communities are sparse [10] [11]. A social network of interactions can be expressed as a graph G containing a set V of vertices, and a set E of edges. Fig. 1 depicts a social network graph G = (V, E) with three community structures [12] where V = {1, 2,3,4,5,6,7,8,9, 10, 11} and E = {(1,2), (1,3), (2, 3), (2,4), (2,5), (4,7), (4,8), (5,6), (5,7), (6,7), (7,9), (8,9), (8,10), (8,11), (9,11), (10,11)} such that $|V| = 11$ and $|E| = 16$.

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CCLPA: A Clustering Coefficient based Label Propagation Algorithm for Unfolding Communities in Complex Networks

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***Abstract*—Identifying interconnected groups in complex networks such as social networks, biological networks, and communication networks is an ever important task in data analysis. These interconnected groups are termed as *communities* in social network analysis and plays an important role in understanding the structural and behavioral properties of complex networks. In this paper, we propose a novel label propagation algorithm, called CCLPA (A Clustering Coefficient based Label Propagation Algorithm) to address the randomness issue of label propagation algorithm. Our algorithm defines the function, *clustering coefficient*, to measure the neighborhood connectivity between nodes quantitatively without any contact with the user. Based on the clustering coefficient, we present a new label propagation algorithm with explicit node update sequence to uncover communities in complex networks. Experiments on real-world network datasets demonstrate that it overcomes the random initial label selection and random label update order of underlying label propagation algorithm. Our algorithm identifies stable communities and becomes more robust and efficient. Wide experiments show the better-quality and effectiveness of the proposed algorithm.**

Keywords*—community; clustering coefficient; label propagation; social networks; social network analysis.

I. INTRODUCTION

Social network analysis has gained much attention in recent years because many real life complex systems can be represented as networks. Some of the real world networks include a network of co-authorship [1], biological networks that include neural networks [2], network of hyperlinks of web pages [3] known as World Wide Web (WWW), network of friends [4], network of food webs [5], technological network of Internet [6], metabolic networks [7], social networks, and even US political elections [8]. A network is a combination of a set of vertices interconnected by a set of tires. The ties represent various types of associations such as common hobbies, friendship, same locality, kinship, etc. Small world effect, power law degree distributions are some of the properties observed in these networks. An interesting property frequently found in these networks is the *community structure* [10] which is the point of our research work. A community with a network is defined as distinct groups of vertices gathered such that the ties within the community are dense, but the ties with the other communities are sparse [10][11]. A social network of interactions can be expressed as a graph G containing a set V of vertices, and a set E of edges. Fig. 1depicts a social network graph G = (V, E) with three community structures [12] where V = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11} and E = {(1,2), (1,3), (2, 3), (2,4), (2,5), (4,7), (4,8), (5,6), (5,7), (6,7), (7,9), (8,9), (8,10), (8,11), (9,11), (10,11)} such that |V| = 11 and |E| = 16.

Uncovering community structure play an important role in understanding and exploiting the structure of complex networks and has many applications in various fields, such as in molecular interaction networks, online social networking websites, image segmentation, and circuit layout problems. The communities, when detected, reveal interrelationship, associations, and behavioral trends among the members. For example, the research community, when detected, in a social network may reveal domain specific Special Interest Groups (SIGs) which will be further used for effective research interactions among the members [9]. A set of web pages on related topics can be found by uncovering a community of web pages that connect to two or more web pages in the same community; with the help of this, the search engines and portals can narrow down their search by searching topically-related subsets of web pages [14].

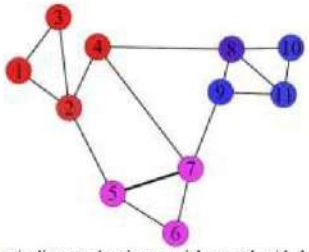

Fig. 1. A schematic diagram showing a social network with three community structures. (Drawn using Gephi network visualization tool)

The organization of the paper is as follows. In Section II, literature concerning related work is reviewed. In Section III, we give a formal problem statement and proposed algorithm

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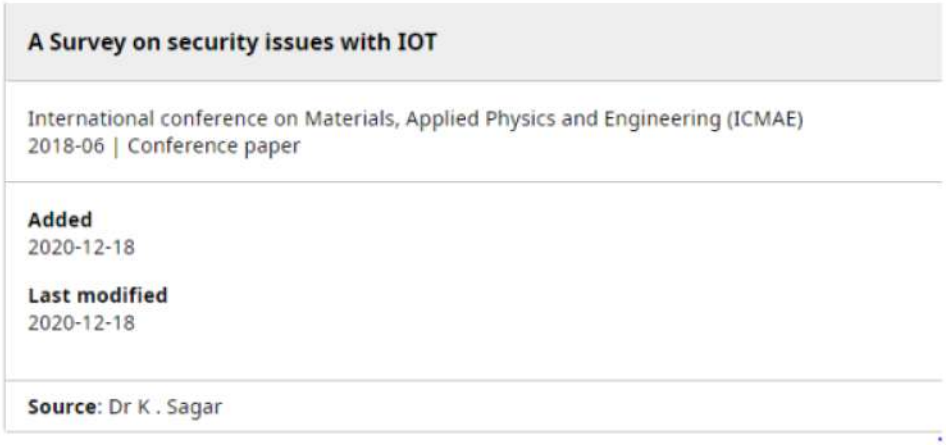
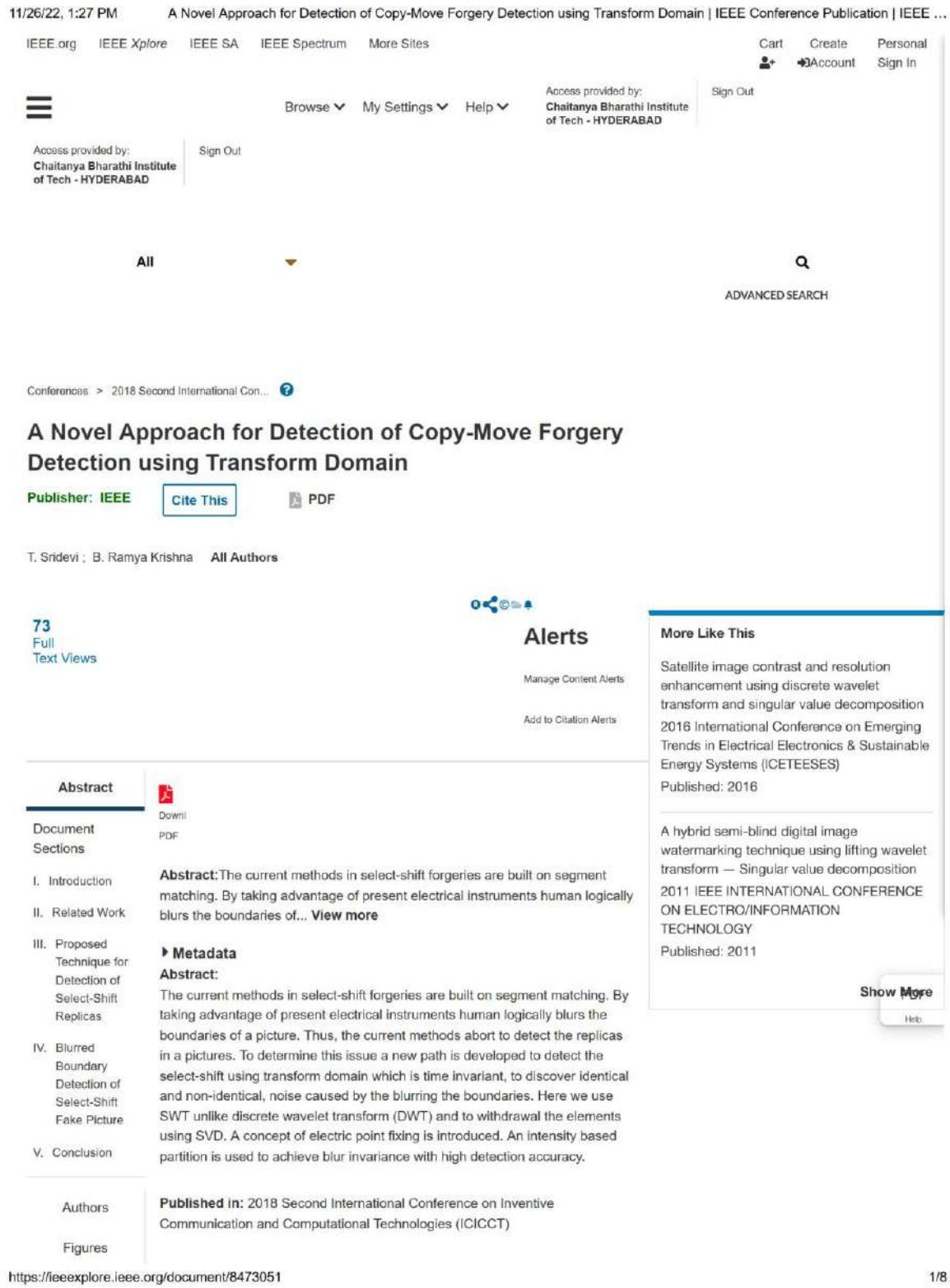


A Novel Approach for Detection of Copy-Move Forgery Detection using Transform Domain



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SECTION I.
Introduction

In the era of cyber world today not even an adhar card number or a pan card number or a secret account number taken as proof to approve person identity. Due to usage of highly advanced technologies and instruments by every human that makes the digital data at high risk. Digital pictures are the digital data that are taken as the main proof in law prosecution of judiciary. Due to availability of these technologies it has became easy and simple method to edit or manipulate the digital pictures. It has became a major crime scenes in order to investigate the weather picture is fake or original.

Digital forensics is the process of analysis by gathering, finding and verifying the replicas in a picture. Digital image forensics deal with study and remaking earlier actions in a picture. In this process we state the solution for detection of select-shift fake or region replicas affect, that selects the replica in a picture and place it in different region of same picture. A sample select-shift replica is shown in fig 1. The select-shift can also be called as copy-move. The detection of select-shift fake pictures becomes difficult when they are logically blurs the boundaries. Thus the traditional method fails to detect the fake regions. In this paper we propose a novel path in order to find the replicas in blurred regions. Traffic places a major problem in a country. In the case of fake traffic that is generated by software makes human to believe whether it is a genuine or fake. Live traffic images are also taken as example in order to find out fake regions to investigate the fake traffic.

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A Novel Approach for Detection of Copy-Move Forgery Detection using Transform Domain

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[2]*M.Tech 2/2 CSE, Department of Computer Science and Engineering,*
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Abstract: The current methods in select-shift forgeries are built on segment matching. By taking advantage of present electrical instruments human logically blurs the boundaries of a picture .Thus, the current methods abort to detect the replicas in a pictures. To determine this issue a new path is developed to detect the select-shift using transform domain which is time invariant, to discover identical and non-identical, noise caused by the blurring the boundaries. Here we use SWT unlike discrete wavelet transform (DWT) and to withdrawal the elements using SVD. A concept of electric point fixing is introduced. An intensity based partition is used to achieve blur invariance with high detection accuracy.

Key points: **SWT, SVD, DWT, intensity based partition, electric point fixing, Blur invariance.**

I. Introduction

In the era of cyber world today not even an adhar card number or a pan card number or a secret account number taken as proof to approve person identity. Due to usage of highly advanced technologies and instruments by every human that makes the digital data at high risk .Digital pictures are the digital data that are taken as the main proof in law prosecution of judiciary. Due to availability of these technologies it has became easy and simple method to edit or manipulate the digital pictures. It has became a major crime scenes in order to investigate the weather picture is fake or original.

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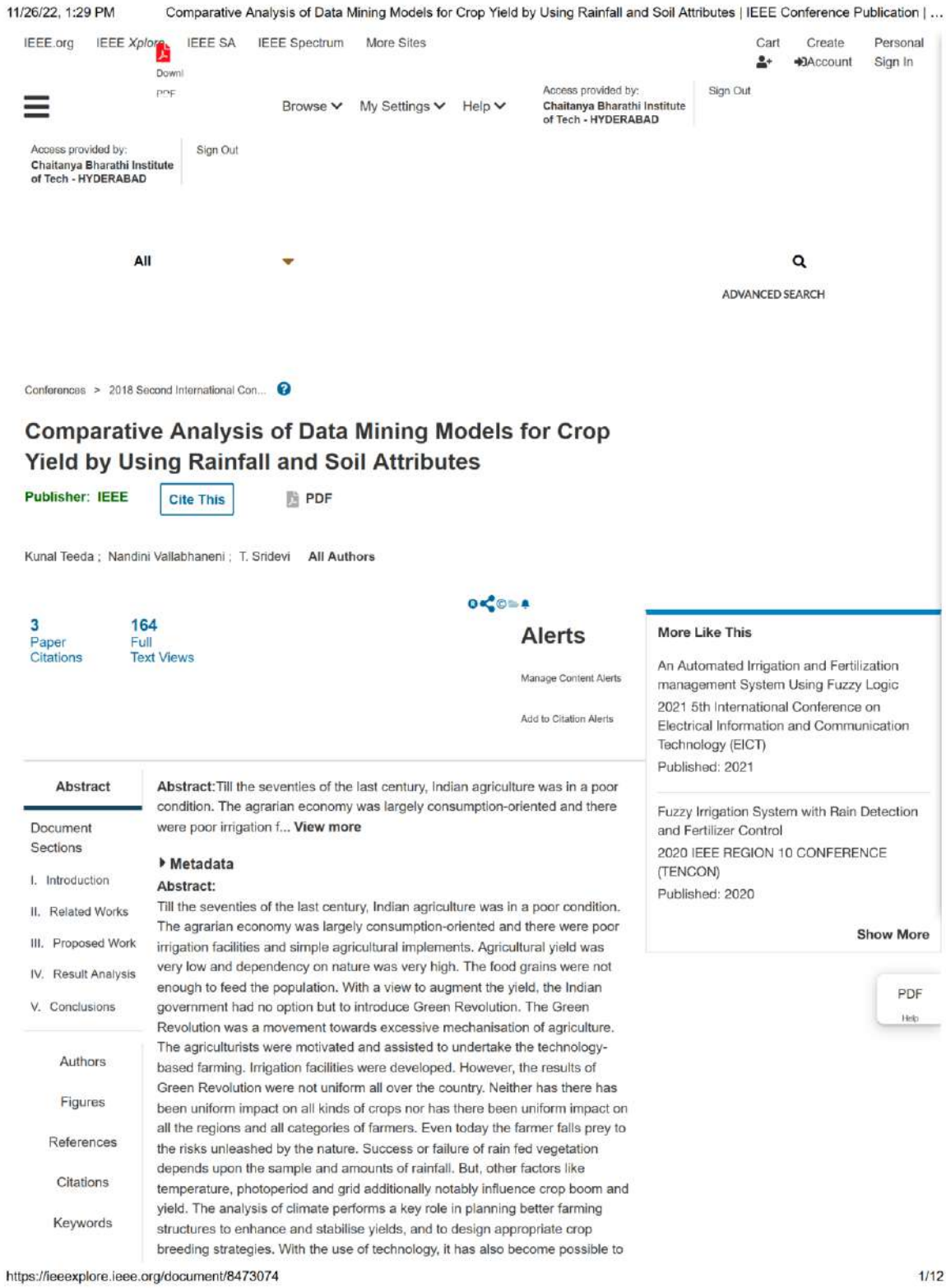
Figure: 1 select-shift replica detection

Most of the current algorithms are based on segment matching they aim to find pixel of every segment of an continuous overlap image .These methods are efficient to detect the fake regions but has failed in translations. In this case key point based techniques are useful. Key point based replicas detection methods are found on selection of high entropy

Comparative Analysis of Data Mining Models for Crop Yield by Using Rainfall and Soil Attributes



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minimise the risks involved in agriculture to which the early farmers were awfully exposed. There are in particular two procedures to predict rainfall. Empirical technique and dynamical method. In our method we use the empirical technique that is based on evaluation of historical information of the rainfall and its dating to a spread of atmospheric variables over different components of the nation. The most broadly used empirical approaches used for weather prediction are regression, artificial neural network, fuzzy logic and institution approach of statistics dealing with. We use data mining techniques su...

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Agriculture in India has a full-size history. nowadays, India is ranked 2nd worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for 16.6 percent of the GDP 2009, about 50 percent of the overall workforce. The monetary contribution of agriculture to India's GDP is regularly declining with the united states' large-primarily based economic boom. Agriculture is a form of an enterprise with a chance. The production of plants relies on different factors like on climatic, geographical, organic, political and financial elements. Accurate statistics about the character of an ancient yield of the crop is important modelling input, which is useful to farmers and authorities organisation for decision-making technique in establishing right policies associated with subsequent manufacturing. The advances in computing and information storage have provided largely at the maximum of information. The project 2 has been to extract expertise from this uncooked statistics, statistics mining that may bridge the understanding of the facts to the crop yield estimation. This task aimed to statistics mining strategies and follow them to the various variables consisting inside the database to set up if significant relationships may be discovered and the usage of fuzzy common sense to discover the circumstance of crops on a diverse situation of rainfalls. Bangladeshi student proposes Data mining techniques to predict annual yield of major crops and

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Comparative Analysis of Data Mining Models for Crop Yield by Using Rainfall and Soil Attributes

Kunal Teeda[1] Nandini Vallabhaneni[2] Dr.T.Sridevi[3]

Abstract— **Till the seventies of the last century, Indian agriculture was in a poor condition. The agrarian economy was largely consumption-oriented and there were poor irrigation facilities and simple agricultural implements. Agricultural yield was very low and dependency on nature was very high. The food grains were not enough to feed the population. With a view to augment the yield, the Indian government had no option but to introduce Green Revolution. The Green Revolution was a movement towards excessive mechanisation of agriculture. The agriculturists were motivated and assisted to undertake the technology-based farming. Irrigation facilities were developed. However, the results of Green Revolution were not uniform all over the country. Neither has there has been uniform impact on all kinds of crops nor has there been uniform impact on all the regions and all categories of farmers. Even today the farmer falls prey to the risks unleashed by the nature. Success or failure of rain fed vegetation depends upon the sample and amounts of rainfall. But, other factors like temperature, photoperiod and grid additionally notably influence crop boom and yield. The analysis of climate performs a key role in planning better farming structures to enhance and stabilise yields, and to design appropriate crop breeding strategies. With the use of technology, it has also become possible to minimise the risks involved in agriculture to which the early farmers were awfully exposed. There are in particular two procedures to predict rainfall. Empirical technique and dynamical method. In our method we use the empirical technique that is based on evaluation of historical information of the rainfall and its dating to a spread of atmospheric variables over different components of the nation. The most broadly used empirical approaches used for weather prediction are regression, artificial neural network, fuzzy logic and institution approach of statistics dealing with. We use data mining techniques such as clustering and classification techniques for rainfall prediction.**

I. INTRODUCTION

Agriculture in India has a full-size history. nowadays, India is ranked 2nd worldwide in farm output. Agriculture and allied sectors like forestry and fisheries accounted for 16.6 percent of the GDP 2009, about 50 percent of the overall workforce. The monetary contribution of agriculture to India's GDP is regularly declining with the united states' large-primarily based economic boom. Agriculture is a form of an enterprise with a chance.The production of plants relies on different factors like on climatic, geographical, organic, political and financial elements. Accurate statistics about the character of an ancient yield of the crop is important modelling input, which is useful to farmers and authorities organisation for decision-making technique in establishing right policies associated with subsequent manufacturing. The advances in computing and information storage have provided largely at the maximum of information. The project has been to extract expertise from this uncooked statistics, statistics mining that may bridge the understanding of the facts to the crop yield estimation. This task aimed to statistics mining strategies and follow them to the various variables consisting inside the database to set up if significant relationships may be discovered and the usage of fuzzy common sense to discover the circumstance of crops on a diverse situation of rainfalls. Bangladeshi student proposes Data mining techniques to predict annual yield of major crops and recommend planting different crops in different districts in Bangladesh[5]. They considered the effects of biotic(pH, soil salinity), environmental(weather), and area of production as factors towards crop production in Bangladesh. Taking these factors into consideration as datasets for various districts, they applied clustering techniques to divide regions; and then they apply suitable classification techniques to obtain crop yield predictions. In the research paper by David H White and S Mark Howden[9], they focus on the climates determinants of crop productivity.They considered how the climate envelopes different crops based on temperature, moisture and light influence the distribution of cropping and other land uses around the world. They also discuss how these and other climatic variables influence the growth and yield of crops. Adaption strategies are also discussed that helps a lot to assist the crop producers to cope with the rising global temperatures and carbon dioxide (CO2) levels, along with the often reduced rainfall, soil moisture and water availability.

II. RELATED WORKS

[1] In this paper, the author Dr. D. Ashok Kumar states that the purpose of the examination at it is to observe the best techniques to extract new understanding and information from present soil profile data contained within ISRIC-WISE soil statistics set. Numerous records mining techniques like Support Vector Machines, K nearest Neighbours, Bayesian Networks. Also various optimisation strategies like Ant colony optimisation, Particle Swarm Optimisation. [2] This review article written by Dr. Bharath Misra focuses mostly on various attributes to be taken in consideration while applying data mining techniques in the field of agriculture and also concludes that The multidisciplinary approach of integrating computer science with agriculture will help in forecasting/ managing agricultural crops effectively. [3] Sally Jo Cunningham emphasises on the usage of data mining techniques and its process model to derive innovative applications in the field of agriculture. He also visualises the applications of data mining, the goal might be to use a model predictively, to

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Region Based Semantic Image Retrieval Using Ontology

Morarjee Kolla and T. Venu Gopal

Abstract Extracting Semantic images from the large amount of heterogeneous image data is a quiet challenge in Content Based Image Retrieval (CBIR). Search space and Semantic gap reduction are two major issues in extracting semantic images. The proposed method of Region based semantic image retrieval considers both Search space and Semantic gap reduction. The proposed methodology first does the region based clustering as it reduces retrieval search space. Later it reduces the semantic gap with the support of ontology framework. The ontology framework shares the information among image seekers and domains. Our experimental results reveal the efficacy of the proposed method.

Keywords CBIR · Ontology · Search space · Semantic gap · Semantic image retrieval

1 Introduction

With the advancement of visual content and technologies, image plays a vital role in many of the applications and areas like medical, education, web, social media, entertainment, etc. Storage and processing of images requires efficient methods to retrieve information from image databases. With the increase in the large amount of image data, efficient retrieval mechanisms of visual information are in huge demand [1]. Efficient searching of a relevant image from different varieties of image datasets is a daunting task. Human beings are capable of interpreting image contents in high level perception, whereas a computer can interpret the image content with low level features extracted from image pixels. Hence, there is a wide gap between human

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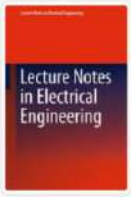

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Region-Based Semantic Image Clustering Using Positive and Negative Examples

Morarjee Kolla and T. Venu Gopal

Abstract Discovering various interest of users from massive image databases is a strenuous and rapid impel expedition region. Understanding the needs of users and representing them meaningfully is a challenging task. Region-based image retrieval (RBIR) is a method that incorporates the meaningful description of objects and an intuitive specification of spatial relationships. Our proposed model introduces a novel technique of semantic clustering in two stages. Initial semantic clusters are constructed in the first stage from the database log file by focusing on user interested query regions. These clusters are further refined by relevance feedback in the second stage based on probabilistic feature weight using positive and negative examples. Our results show that the proposed system enhances the performance of semantic clusters.

Keywords RBIR · Negative example (NE) · Positive example (PE)
Relevance feedback (RF) · Semantic image clustering

1 Introduction

Content-based image retrieval (CBIR) still faces difficulties when searching content from the large amount of image databases. Another challenge in this area is reducing the semantic gap. CBIR mainly consists of feature extraction and similarity matching. Current research focuses on CBIR systems that fetch an exact cluster of meaningful images. The process of a typical CBIR is as follows.

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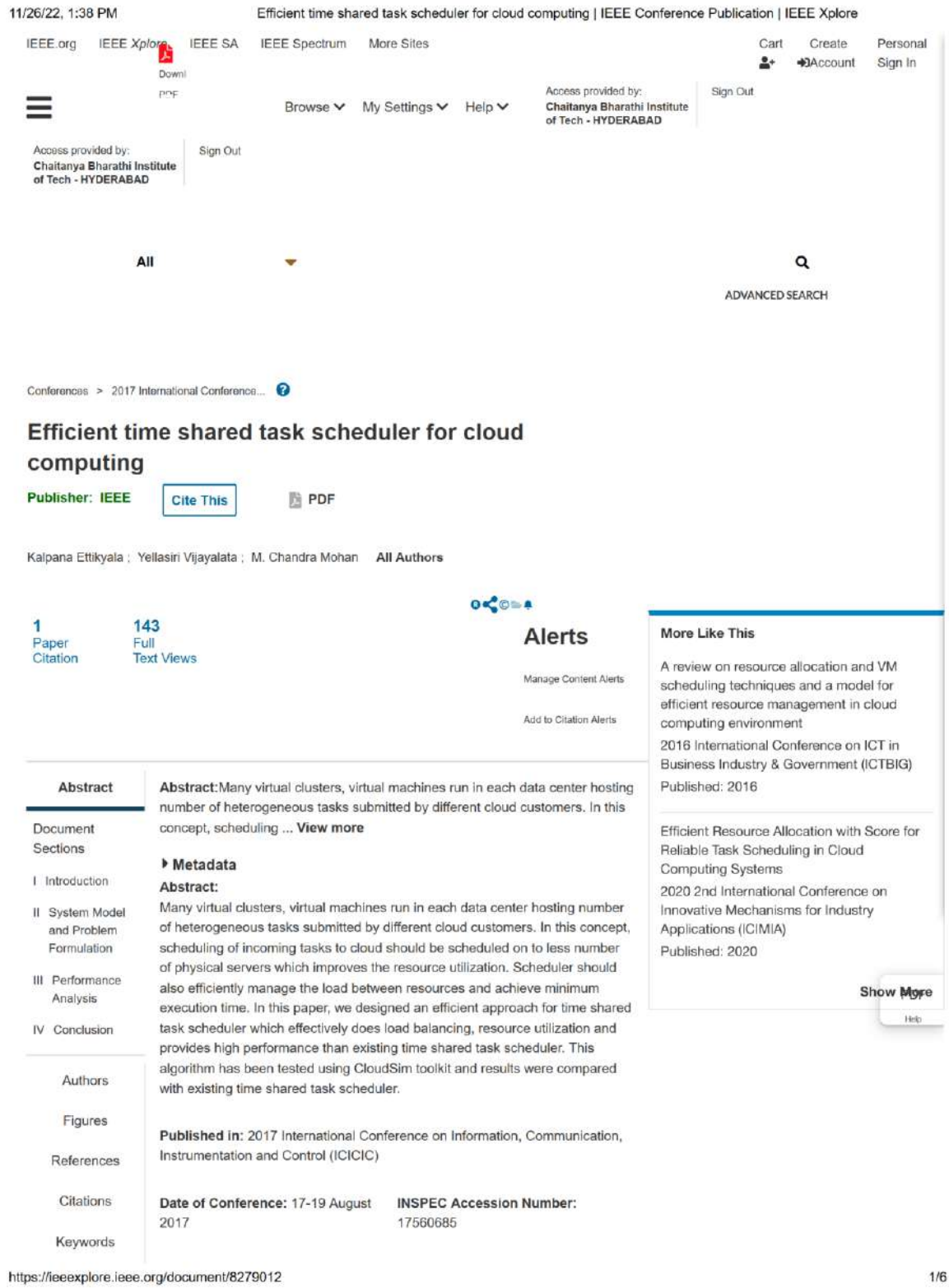
Efficient Time Shared Task Scheduler for Cloud Computing



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Cloud Computing is the connection of large pool of systems via public or private networks in order to provision dynamic scalable infrastructure for data, application and file storage. With this computing, hosting of applications, content delivery and storage, computation costs is greatly reduced. Cloud Computing involves the reusability of IT capacity. Cloud Computing expands the skyline across the organizational boundaries when compared to traditional computing like grid, distributed, utility.

Virtualization technology can create virtual representation from a physical system. It can be applied to servers, applications, networks and storage. This technology is the cost efficient, reduces capital and operating costs, dynamically provisions resources and applications, enables scalability and disaster recovery, simplifies data center management, and increases IT productivity. Virtual Machine (VM) is a tightly isolated virtual computer with a guest operating system and applications in it. Each VM is completely independent from one another. Hypervisor or virtual machine monitor creates VMs and decouples them from the host machine. It enables multiples VMs to run on a single host machine. Hypervisor allocates dynamically the computing resources to each VM as needed. It also provides isolation between VMs at the hardware level and also saves the complete state of each VM onto separate file called VM image. VMs can also be migrated from one physical machine to another as per requirement.

Many virtual clusters, virtual machines run in each data center hosting number of heterogeneous tasks submitted by different cloud customers. In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization. Scheduler should also efficiently manage the load between resources and achieve minimum execution time. In this paper, we designed an efficient approach for time shared task scheduler which effectively does load balancing, resource utilization and provides high performance than existing time shared task scheduler. In the proposed approach high speed VM will be allotted with complex tasks based on priority and VM Processing Elements (PES) will be greater than or equal to Cloudlet (task) Processing Elements to have optimal execution time for tasks. This algorithm is tested

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Efficient Time Shared Task Scheduler for Cloud Computing

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***Abstract*- Many virtual clusters, virtual machines run in each data center hosting number of heterogeneous tasks submitted by different cloud customers. In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization. Scheduler should also efficiently manage the load between resources and achieve minimum execution time. In this paper, we designed an efficient approach for time shared task scheduler which effectively does load balancing, resource utilization and provides high performance than existing time shared task scheduler. This algorithm has been tested using CloudSim toolkit and results were compared with existing time shared task scheduler.**

Keywords- Task; VM; Scheduler; Cloud Computing

I INTRODUCTION

Cloud Computing is the connection of large pool of systems via public or private networks in order to provision dynamic scalable infrastructure for data, application and file storage. With this computing, hosting of applications, content delivery and storage, computation costs is greatly reduced. Cloud Computing involves the reusability of IT capacity. Cloud Computing expands the skyline across the organizational boundaries when compared to traditional computing like grid, distributed, utility.

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Many virtual clusters, virtual machines run in each data center hosting number of heterogeneous tasks submitted by different cloud customers. In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization. Scheduler should also efficiently manage the load between resources and achieve minimum execution time. In this paper, we designed an efficient approach for time shared task scheduler which effectively does load balancing, resource utilization and provides high performance than existing time shared task scheduler. In the proposed approach high speed VM will be allotted with complex tasks based on priority and VM Processing Elements (PES) will be greater than or equal to Cloudlet (task) Processing Elements to have optimal execution time for tasks. This algorithm is tested using CloudSim toolkit and results show better performance than the existing time shared task scheduler.

II SYSTEM MODEL AND PROBLEM FORMULATION

A. System Model

CloudSim toolkit contains a time shared task scheduler for internal scheduling of tasks. This scheduler assigns a fixed amount of CPU time called time-slice for each task and tasks are executed in first-in-first-out manner for the amount of time-slice. For each task, after the time-slice period, CPU is preempted and is given to other task next in queue and preempted task is pushed at the end of the queue. In this approach, none of the tasks are starved for CPU but the larger tasks take long time to finish. So, if number of tasks increase, this approach takes much time to finish all the tasks in queue.

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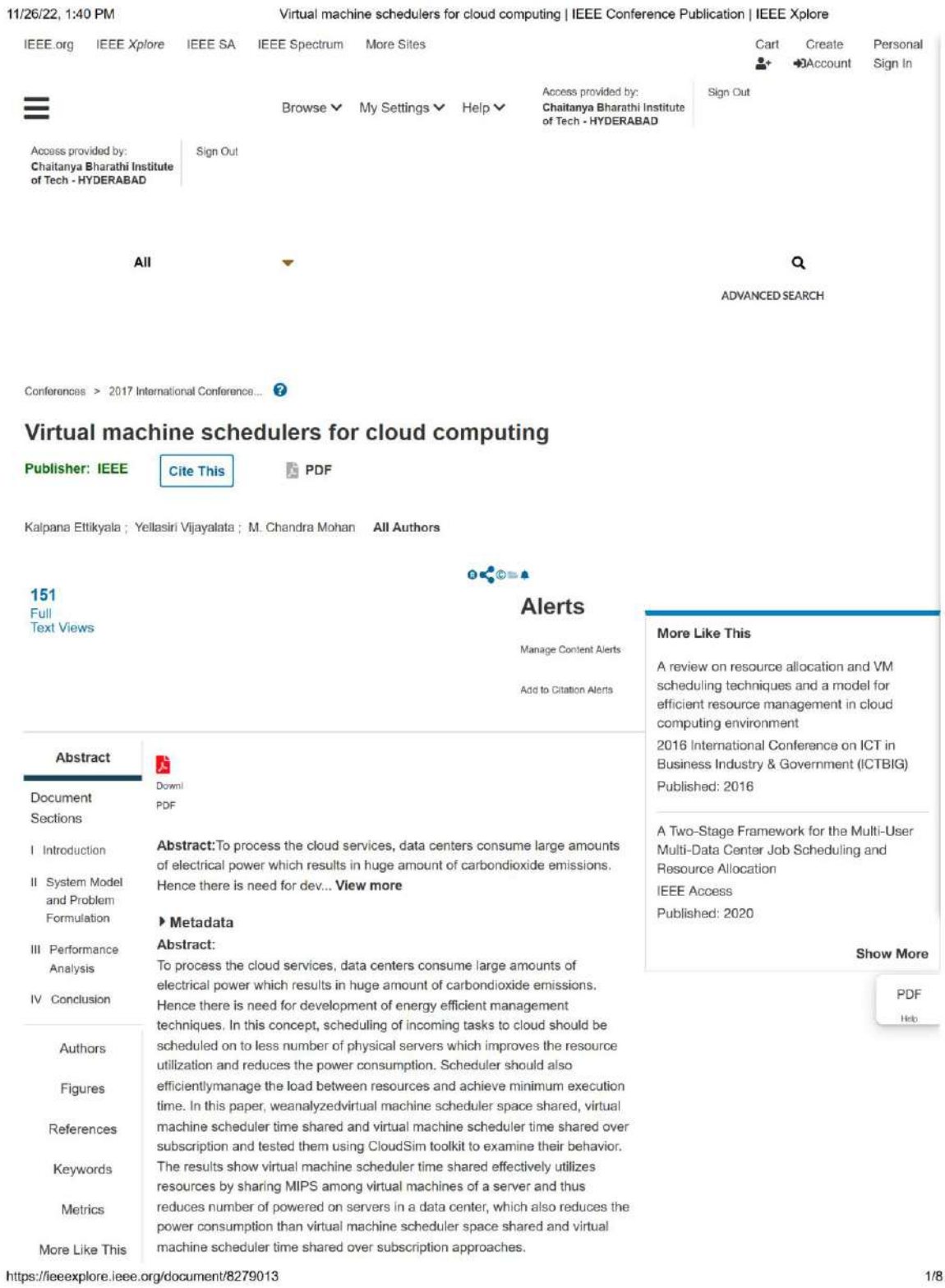

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To process the cloud services, data centers consume large amounts of electrical power which results in huge amount of carbondioxide emissions. Hence there is need for development of energy efficient management techniques. In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization and reduces the power consumption. Scheduler should also efficientlymanage the load between resources and achieve minimum execution time. In this paper, weanalyzedvirtual machine scheduler space shared, virtual machine scheduler time shared and virtual machine scheduler time shared over subscription and tested them using CloudSim toolkit to examine their behavior. The results show virtual machine scheduler time shared effectively utilizes resources by sharing MIPS among virtual machines of a server and thus reduces number of powered on servers in a data center, which also reduces the power consumption than virtual machine scheduler space shared and virtual machine scheduler time shared over subscription approaches.

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SECTION I
Introduction

Cloud Computing is the connection of large pool of systems via public or private networks in order to provision dynamic scalable infrastructure for data, application and file storage. With this computing, hosting of applications, content delivery and storage, computation costs is greatly reduced. Cloud Computing involves the reusability of IT capacity. Cloud Computing expands the skyline across the organizational boundaries when compared to traditional computing like grid, distributed, utility.

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Virtual Machine Schedulers for Cloud Computing

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Abstract-**To process the cloud services, data centers consume large amounts of electrical power which results in huge amount of carbondioxide emissions. Hence there is need for development of energy efficient management techniques.In this concept, scheduling of incoming tasks to cloud should be scheduled on to less number of physical servers which improves the resource utilization and reduces the power consumption. Scheduler should also efficientlymanage the load between resources and achieve minimum execution time.In this paper, weanalyzedvirtual machine scheduler space shared, virtual machine scheduler time shared and virtual machine scheduler time shared over subscription and tested them using CloudSim toolkit to examine their behavior. The results show virtual machine scheduler time shared effectively utilizes resources by sharing MIPS among virtual machines of a server and thus reduces number of powered on servers in a data center, which also reduces the power consumption than virtual machine scheduler space shared and virtual machine scheduler time shared over subscription approaches.**

Keywords- VM; Scheduler; MIPS; space shared; time shared; time shared over subscription; cloud computing

I INTRODUCTION

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II SYSTEM MODEL AND PROBLEM FORMULATION

A. System Model

CloudSim tool consists of Virtual Machine schedulers namely VM scheduler space shared, VM scheduler time shared and VM scheduler time shared over subscription for scheduling of VMs on Physical Machines (PM) in a data center.

VM scheduler space shared approach: This is a VM allocation policy. It allocates one or more PEs (Processing Elements) of PM to its VM based on

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Intelligent Technologies and Robotics, Intelligent Technologies and Robotics (R0)	Springer Nature Singapore Pte Ltd. 2020	978-981-15-1479-1
eBook ISBN	**Series ISSN**	**Series E-ISSN**
978-981-15-1480-7	2194-5357	2194-5365
Edition Number	**Number of Pages**	**Number of Illustrations**
1	XVI, 907	199 b/w illustrations, 230 illustrations in colour

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Computational Intelligence, Communications

Proceedings of the Third International Conference on Computational Intelligence and Informatics pp 627–637

Rough Set-Based Classification of Audio Data

T. Prathima ✉, A. Govardhan & Y. Ramadevi

Conference paper | First Online: 18 March 2020

Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 1090)

Abstract

For effective multimedia content, retrieval audio data plays an important role. Recognising classes of audio data which is neither music nor speech is a challenging task; in this aspect, the authors proposed to work on environment sounds. To represent the audio data, low-level features are extracted. These low-level descriptors are computed from both time domain and frequency domain representation of audio data. From the extracted descriptors, midterm statistics are computed and an information system (IS) is built with class labels. From this IS using the

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A Survey on Emotion's Recognition Using Internet of Things

K. P. L. Sai Supriya, R. Ravinder Reddy and Y. Rama Devi

Abstract Emotions play an important role in human life, because the emotions allow other people to understand the feelings. Emotions are obtained due to some physiological changes in human. When a person is in a situation where he is unable to speak, then their emotions can be used to understand the feelings. By using Internet of things, the emotions are going to be detected. In the first step, the sensors are placed on the human body. These sensors will capture the data, and real-time monitoring can be done. The data which is collected from the sensors is used for the emotion detection. Here the different works on IoT which is used for human emotions capturing and detection have been discussed. The analysis of these emotions will give significant results for various frame of mind of a person.

Keywords Internet of things (IoT) · Wireless sensor network · Linear discriminant analysis

1 Introduction

Nowadays, the Internet of things (IoT) became popular around worldwide and it is playing a major role in human life. IoT is nothing but interconnection of hardware and software devices like actuators, sensors, microcontrollers, Raspberry Pi. As human want to lead a luxurious life to maintain health and easy monitoring of the devices, they want to use the things which are portable in such a way that they can be carried out to any place and can be accessed from any place. Hence, IoT is seen everywhere and anywhere. Few applications of IoT are smart agriculture, smart city, smart homes,

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IOP Conf. Series: Materials Science and Engineering **594** (2019) 012027 doi:10.1088/1757-899X/594/1/012027

A Relative Survey on Handover Techniques in Mobility Management

Pramod Kumar P* and Sagar K

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Department of CSE, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana, India
Email: * pramodpoladi111@gmail.com

Abstract. Innovation is advancing at a speedier pace and necessity for web organizations at whatever point wherever is required. To impact this vision ever to better organizations open to a customer, effective mobility managing procedures must be composed. Two key intends to execute mobility administrations are Handover and area administration. Therefore, we need to have an efficient mobility management system among heterogeneous wireless networks where several wireless networks can interoperate to provide users with good QoS. In this paper, distinctive issues related to mobility administration in the coming period of frameworks are highlighted and besides throws a light on the uncertain zones to ensure proficient mobility management.

Index Terms— Location Management, Mobile Node, Handover, Mobility Management, Mobility Models.

1. Introduction

An enormous number of termini are connected over the Internet worldwide with a mutual aim of being 24 by 7 service. This has incited improvement in all areas, business, enlightening, transportation et cetera. Now a days the network technologies are speedily continuing forward in the advancement pathway, various access administration systems have been proposed to address the issues of predictable accessibility. The organization of mentioned frameworks is the prime point of view as proposed frameworks requires more resource allocation [1]. The Figure.1: Mobility administration in various heterogeneous wireless networks shows the varied setup of systems through mobility administration structure [8].

2. Related Work

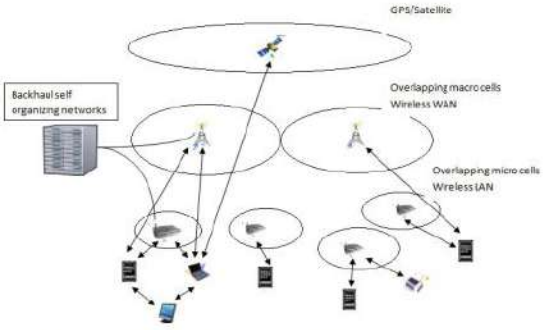
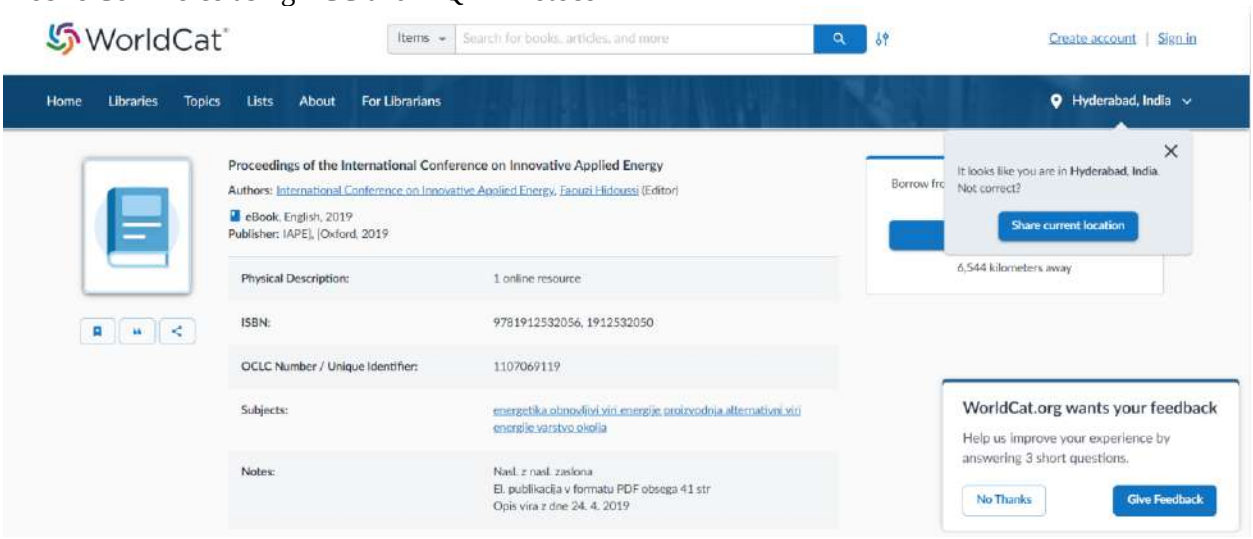


Fig. 1. Mobility in Heterogenous Network



Mobile Commerce using ECC and MQTT Protocol

Authors	S. Ramana, N. Bhaskar, S China Ramu, M.V.Ramana Murthy
Publication date	2019
Journal	International Conference on Innovative Applied Energy, Oxford, United Kingdom
Pages	1-9
Publisher	ISBN: 978-1-912532-05-6
Description	Trading is the key factor of world's economic growth and trading has taken its shape from ancient barter system to modern mobile commerce because of advancements in technologies, Internet, use of currency and human beings livelihood. Because of advancements in technology and a drastic improvisation in hardware front, the entire computational devices and mobile phones have changed its motto of usage, where 90 percent of market users are using palm tops, lap tops and smart phones and the human beings life style is also drastically changed where they want everything on a single click through mobile apps irrespective of time and location (anytime from anywhere). The so called e-commerce is merged with mobile communications which emerged into a mobile commerce.
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Access, Innovations in Systems and Software Engineering: A NASA Journal, Computers and Electrical Engineering, IET Biometrics, and ACM/Springer MONET. He is serving as the vice-chair for IEEE Computational Intelligence Society Technical Committee for Intelligent Systems Applications for the year 2019. He received the prestigious Innovative Student Projects Award 2011 from Indian National Academy of Engineering (INAE) for his master's thesis. He has more than 50 publications in reputed journals, reports, and conferences.

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Image Filter Selection, Denoising and Enhancement Based on Statistical Attributes of Pixel Array

Vihar Kurama & T. Sridevi

Conference paper | First Online: 01 December 2019

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Abstract

The choice of image filters in computer vision has a significant effect on the image reconstruction and feature extraction. Currently, the most filters are used to enhance images for human consumptions, programmed operations and to reduce the noise, frequency levels in the image. Though it is hard to select an optimal set of filters for a given series of images, in this work, we propose to choose the best assortment of different filters for a given image as the input. By generating the pixel array of the input image, we compute all the image attributes such as

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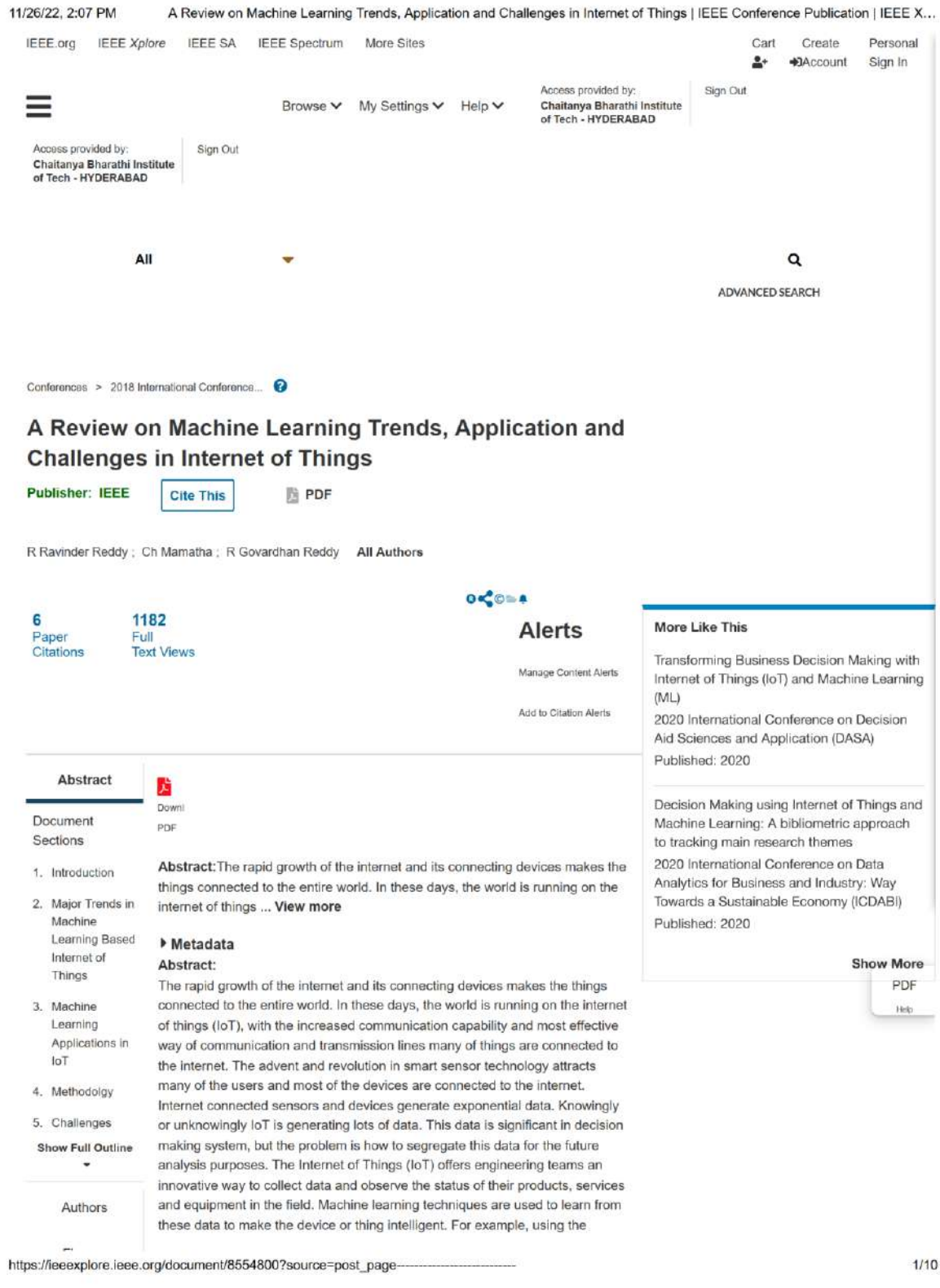

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SECTION 1.
Introduction

The significance of automation of the industry makes the life of the person more comfortable and easy. With the advent technologies like artificial intelligence and machine learning makes the apathetic things likes computer, robot, mobile phone etc., are able to learn and intelligent. It has been anticipated that very soon all the different things that are going to be connected, that we are seeing around us. They are all going to be interconnected. Unification of technologies such as low-power embedded systems, big-data, cloud computing, machine learning and networking is required to enable the powerful technologies. The enormously generated data will be the biggest problem in these days, how can we utilized these generated data and what is the purpose of this data are the big questions. Fortunately, there is an emergent technology growing concurrently with the IoT that has the potential to stave off the hypoxia in these stagnant data lakes and instead turn them into a healthy ecosystem of usable information. By funneling big data into machine learning algorithms, engineers can breathe life into their development cycles, operations, manufacturing and more. In this work we are trying to identify the scope of the machine learning for IoT. The main challenges and trends of the machine learning techniques in deriving the knowledge for the IoT community to make the devices more automated.

The major share of the IoT comes from its connectivity, connecting anything, anytime anyplace, it make sure what is going to be observed in this new era of ubiquitous computing [3]. It makes the digital world, that is going to result in billions and trillions of things are connected. it means, Humans, everybody is being connected. When it is happened with the usage of machine

A Review on Machine Learning Trends, Application and Challenges in Internet of Things

Dr.R Ravinder Reddy	Ch Mamatha	R Govardhan Reddy
Associate Professor	PG Scholar	Assistant Professor
CBIT	JBIET	CBIT

Abstract: The rapid growth of the internet and its connecting devices makes the things connected to the entire world. In these days, the world is running on the internet of things (IoT), with the increased communication capability and most effective way of communication and transmission lines many of things are connected to the internet. The advent and revolution in smart sensor technology attracts many of the users and most of the devices are connected to the internet. Internet connected sensors and devices generate exponential data. Knowingly or unknowingly IoT is generating lots of data. This data is significant in decision making system, but the problem is how to segregate this data for the future analysis purposes. The Internet of Things (IoT) offers engineering teams an innovative way to collect data and observe the status of their products, services and equipment in the field. Machine learning techniques are used to learn from these data to make the device or thing intelligent. For example, using the machine learning identifying the abnormalities from our wearable and taking necessary actions like calling doctor and ambulance automatically when it necessary.

Keywords: machine learning, data analytics, Internet of things, smart city.

1. INTRODUCTION

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Unstructured Data Analysis with Passphrase-Based REST API NoSQL for Big Data in Cloud

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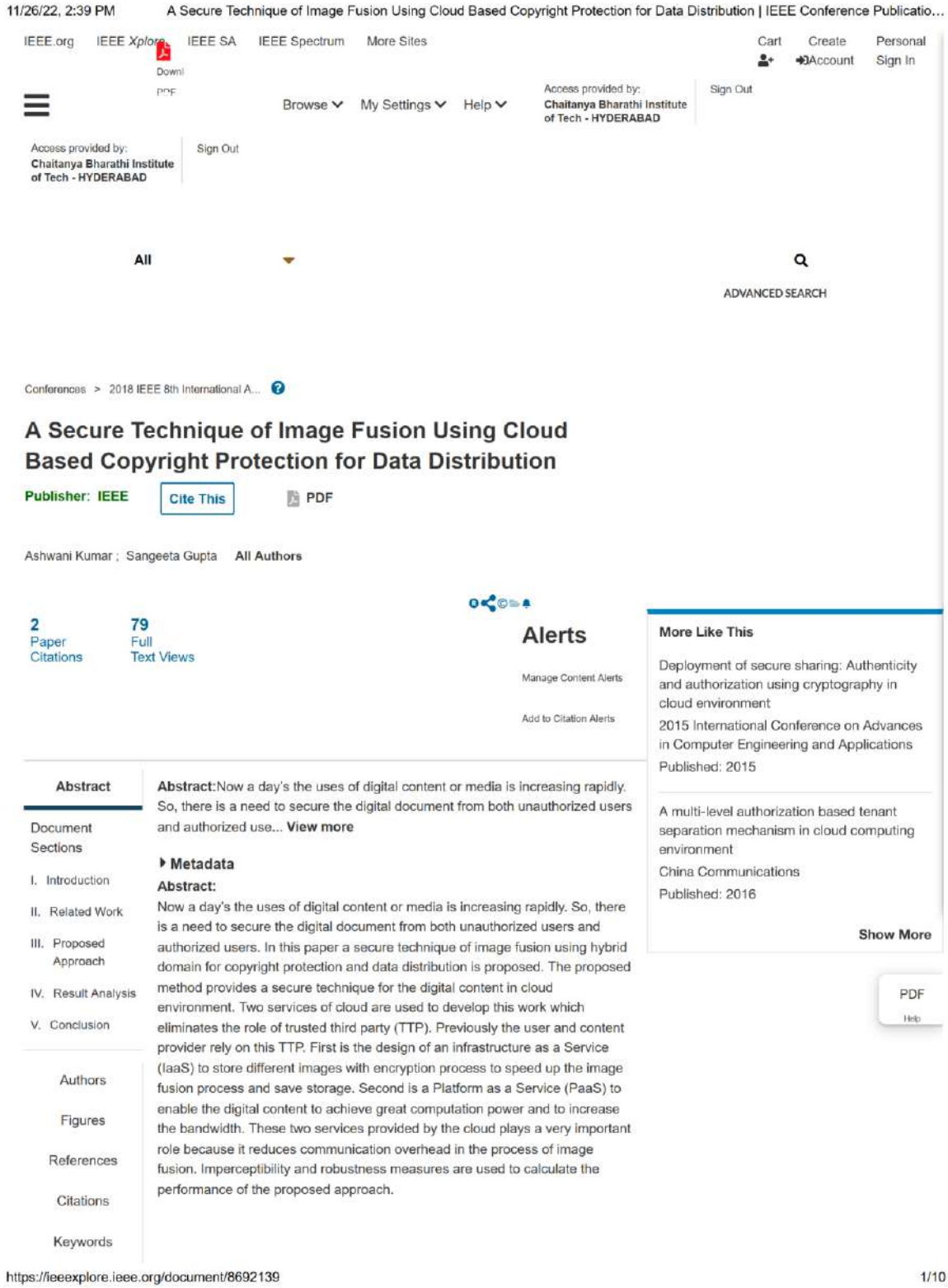
Abstract

The synthetic word big data is emerging from almost every source in the modern world pertaining to any and every field, either technical or nontechnical. This big data generating at a rapid pace is difficult to analyze and yield productive decisions using the traditional tools like relational stores. NoSQL data stores stand as an alternative to deal with streaming big data. Though a wide set of NoSQL databases exist, column-oriented store Cassandra and document-based MongoDB are chosen to carry out the current work due to their simplicity and easy to set up environment. Both the chosen NoSQL databases are highly scalable with minimal security added at a single node level. However, the scalability exists at either load or retrieval levels but not both as desired by an enterprise to satisfy their end users and attain huge profits out of minimal investments. Moving toward this end, there is a need to design a system in which scalable load and retrieval operations with strengthened security is to be developed. Also, it is essential to enlighten the big data users to choose an appropriate NoSQL store among abundant available ones. Hence, in this work, Passphrase-Based REST API model is developed to enhance the security for huge scalable data. Among a huge set of NoSQL data stores, Cassandra and MongoDB are chosen to carry out the research which proved worth efficient in achieving better results for drastically increasing the number of records. Also, the proposed security implemented is to further strengthen the entire system from being tampered.

Keywords

NoSQL Big data Cloud Cassandra MongoDB Encryption Passphrase REST API

A Secure Technique of Image Fusion Using Cloud Based Copyright Protection for Data Distribution



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Contents

SECTION I. Introduction

Cloud is a buzz word in the recent times to assist the peculiar aspects of scalability and elasticity. Getting access to resources of any kind in a ubiquitous way is the prime motivation behind moving towards cloud. Also, it exists in various forms in terms of services and deployment models. People can choose an appropriate one based on the level of requirement and workload execution. At the other end, digital image fusion is an essential technique required to enhance the level of image security without distortion of the image with secret data hidden inside while propagating from sender to receiver[1]- [2]. The copyright protection of digital data in any form is also necessary when reaching the destination as it may tough to separate the original data from the edited one without any compromise with the quality attacked by the intruders [3].

If there is a huge set of images to be secured, then cloud can be a suitable platform to act as a house for such vast set. But the third party used to store the image is not threat free under all circumstances. Particularly in Social networking sites like facebook, linkedIn etc, where the photos uploaded out of excitement by the users are used in a contrary way to generate duplicate identity, additional layer of security is required [4]. In this work, an attempt is made to integrate the diverse fields of cloud computing and image processing to further strengthen the security of image data being transmitted across the internet.

Digital watermarking has a vital role in e-commerce, now days the use of internet is rapidly growing which produces efficient exchange of multimedia data [5]- [6]. Digital copyright is an emerging technique for embedding the information into digital content with the goal of tracing any pirated copy and redistributed it illegally. In history, many watermarking schemes have been developed for finding out the illegal copies of digital content [7]- [8]. Dittman et al. presented a watermarking classification dividing watermarks into five groups based on their

A Secure Technique of Image Fusion Using Cloud Based Copyright Protection for Data Distribution

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***Abstract* — Now a day's the uses of digital content or media is increasing rapidly. So, there is a need to secure the digital document from both unauthorized users and authorized users. In this paper a secure technique of image fusion using hybrid domain for copyright protection and data distribution is proposed. The proposed method provides a secure technique for the digital content in cloud environment. Two services of cloud are used to develop this work which eliminates the role of trusted third party (TTP). Previously the user and content provider rely on this TTP. First is the design of an infrastructure as a Service (IaaS) to store different images with encryption process to speed up the image fusion process and save storage. Second is a Platform as a Service (PaaS) to enable the digital content to achieve great computation power and to increase the bandwidth. These two services provided by the cloud plays a very important role because it reduces communication overhead in the process of image fusion. Imperceptibility and robustness measures are used to calculate the performance of the proposed approach.**

Keywords— Digital Content, Digital watermarking, Cloud computing, public key cryptography, Trusted third party

I. INTRODUCTION

Cloud is a buzz word in the recent times to assist the peculiar aspects of scalability and elasticity. Getting access to resources of any kind in a ubiquitous way is the prime motivation behind moving towards cloud. Also, it exists in various forms in terms of services and deployment models. People can choose an appropriate one based on the level of requirement and workload execution. At the other end, digital image fusion is an essential technique required to enhance the level of image security without distortion of the image with secret data hidden inside while propagating from sender to receiver[1-2]. The copyright protection of digital data in any form is also necessary when reaching the destination as it may tough to separate the original data from the edited one without any compromise with the quality attacked by the intruders [3].

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The paper is structured as follows: The First section provided introductory content to identify the need to move ahead with the proposed work in the area of amalgamating cloud with image fusion for copyright protection preservance. The second section presents the scenarios where the authors have a similar intent to integrate cloud with image processing methods with a varying set of techniques to show the effectiveness of their systems and a set of limitations are identified from the same. The third section throws a light on the proposed model with an architectural representation and modules developed as a part of the work. Fourth section evaluates the efficiency of results with the proposed model in strengthening the security of image data in cloud environment. Finally the fifth section concludes the work with a focus on future direction.

II. RELATED WORK

In recent times to assist the aspects of scalability, elasticity and security the term cloud computing is used [9-10]. Though there are a wide set of cost minimization benefits through this field, there are various security concerns to be solved with high priority [11]. Image Processing at the other end is integrated in cloud environment to strengthen the security of unstructured data, particularly image data [12]. Modern works that include integration of the aforementioned technologies are either inexistent or exist with little theoretical research [13].

The authors in [14] propose a security model for scalable big-data using NO-SQL data-stores. This may allow the eaves droppers to attack the secure data and extract confidential information. The authors in [15] propose a model to secure and enhance the image quality after reaching destination across the internet by using an integration of DWT and DCT fusion techniques. The work proposed however deals with only a few sample and structured images without taking into account a huge

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Detecting fraud in cyber banking using feature selection and genetic algorithm

DETECTING FRAUD IN CYBER BANKING USING FEATURE SELECTION AND GENETIC ALGORITHM

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Abstract : In the last decade,due to extensive development of information technology and communication infrastructure.there has been a rapid advancement in financial and banking system and Services. Banks and other financial institutions have invested in the field of modern technologies to provide more updated and efficient products and services. Thus, the variety of relevant products and services and also the number and value of transactions have increased. As online transactions became more and more popular, the frauds associated with them have also grown affecting the industry largely. Financial fraud has been a big concern for many organizations across industries, as billions of dollars are lost yearly because of this fraud. Securing transactions, detection of new ways of fraud and abuse in financial documents, the discovery of finished and unfinished frauds, detection and discovery of processes and operations of money laundering and etc. are among the most challenging issues in this area. The existing algorithms used do not give results considering different aspects of a transaction being carried out. However, there are a few researches which quote many features, but they are not practically implemented. Here a solution to the field of fraud detection in cyber banking is provided using feature selection and genetic algorithm. The bank data is given in an excel sheet and feature selection is applied to the data. To increase the accuracy of detected fraud, genetic algorithm is applied to the output of feature selection.

IndexTerms **- cyber banking, feature selection, genetic algorithm, fraud detection.**

I. INTRODUCTION

With the increase in the development of people's access to the internet, the use of online transactions in daily trades have increased. One of the most important problem of e-commerce is internet payment systems and fraud in e-payments.. Financial fraud can, not only cause financial damages to the relevant organization but also causes the loss of credit and damage to customer's confidence towards the system. Thus, in case of not using the fraud detection mechanisms, we should expect the increase of fraud statistics in e-banking system. Today, a large volume of financial and monetary transactions are performed on the internet. These services and transactions are not done in person. This makes the criminals remain unknown on the internet and encourages and stimulates the swindlers and fraudsters. Due to the lack of physical presence of customers in the context of electronic services, the need to recognize the identity for providing these services is very important and critical from the perspective of financial and monetary institutions. Perhaps it can be claimed that the main limitation in providing more extensive banking services is the need to recognize the identity of individuals. This issue is the most important factor of fraud attractiveness in the context of e-services and is increasing due to the development of e-banking services. Financial frauds can be widely classified as:

1. Bank fraud : It can be defined as "whoever knowingly executes to defraud a financial institution; or to obtain any of the money, funds, credits, assets, securities, or other property owned by a financial institution, by means of fraudulent pretends," that is, mortgage fraud, money laundering, etc.
2. Insurance fraud : It is the one which occurs in between the insurance process. It can happen while in application, billing, rating, claims, eligibility process etc. and are dedicated mostly by healthcare providers, consumers, agents or brokers, company employees and others.
3. Security and commodities fraud : It includes theft from manipulation of the market, securities accounts and wire fraud. It widely includes market manipulation, high yield investment fraud, commodities fraud, foreign exchange fraud, late-day trading, broker embezzlement, etc.
4. Other related financial fraud : It includes frauds such as mass marketing fraud and corporate fraud.

The fraud detection methods are divided into the two following main groups [17] :

1. Anomaly detection: In this method, the history of customer behaviour is considered a normal behaviour and any deviation from this behaviour can be recovered as an anomaly or fraud.
2. Misuse detection: This method focuses on specific behaviours of customer and assumes some unknown behaviours as a fraud. The main objective is to propose a new technique to detect fraud in e-banking using a new combination of algorithms to serve the purpose.

Financial fraud is normally discovered through outlier detection process enabled by data mining techniques, which also identify valuable information by revealing hidden trends, relationships, patterns found in a large database. Data mining, defined as "a process that uses statistical, mathematical, artificial intelligence, and machine learning techniques to extract and identify useful information and subsequently gain knowledge from a large database", is a major contributor for detecting different types of financial fraud through its diverse methods, such as, logistic regression, decision tree, support vector machine (SVM), neural network (NN) and naive Bayes.

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Sections

His main research interests include multimedia processing, social media analysis, crowdsourcing and data mining.

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Instrument Recognition in Polyphonic Music Using Convolutional Recurrent Neural Networks

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Abstract

Sounds or music usually occurs in an unstructured environment where their frequency varies from time to time. These temporal variations are one of the major problems in the music information retrieval. Additionally, polyphonic music or polyphony is simultaneous combination of two or more tones or melodic line, where each line is an independent melody of an instrument. As a result, identifying various instruments from recordings of polyphonic music is difficult and inaccurate using conventional methods. In this paper, a framework is presented for predominant instrument recognition in real-world polyphonic music. The framework consists of both convolutional neural networks (CNNs) and recurrent neural networks (RNNs). CNNs are used to pull out important features that are unchanging to local spectral and temporal variations. Similarly, RNNs are used as they quickly learn the long-term dependencies in the audio signals. The results obtained by the convolutional recurrent neural networks (CRNNs) showed an improved performance when compared to network built using only convolutional neural networks.

Keywords

Convolutional neural networks Recurrent neural networks
Convolutional recurrent neural network Long short-term memory

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Sign Language Recognition System using Convolutional Neural Network and Computer Vision

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Abstract — **Conversing to a person with hearing disability is always a major challenge. Sign language has indelibly become the ultimate panacea and is a very powerful tool for individuals with hearing and speech disability to communicate their feelings and opinions to the world. It makes the integration process between them and others smooth and less complex. However, the invention of sign language alone, is not enough . There are many strings attached to this boon.The sign gestures often get mixed and confused for someone who has never learnt it or knows it in a different language. However, this communication gap which has existed for years can now be narrowed with the introduction of various techniques to automate the detection of sign gestures . In this paper, we introduce a Sign Language recognition using American Sign Language. In this study, the user must be able to capture images of the hand gesture using web camera and the system shall predict and display the name of the captured image. We use the HSV colour algorithm to detect the hand gesture and set the background to black. The images undergo a series of processing steps which include various Computer vision techniques such as the conversion to grayscale, dilation and mask operation. And the region of interest which, in our case is the hand gesture is segmented. The features extracted are the binary pixels of the images. We make use of Convolutional Neural Network(CNN) for training and to classify the images. We are able to recognise 10 American Sign gesture alphabets with high accuracy. Our model has achieved a remarkable accuracy of above 90%.**

Keywords: Sign Language, ASL, Hearing disability, Convolutional Neural Network(CNN), Computer Vision, Machine Learning, Gesture recognition, Sign language recognition, Hue Saturation Value algorithm.

I. INTRODUCTION

As well stipulated by Nelson Mandela[1], "*Talk to a man in a language he understands, that goes to his head. Talk to him in his own language, that goes to his heart*", language is undoubtedly essential to human interaction and has existed since human civilisation began. It is a medium humans use to communicate to express themselves and understand notions of the real world. Without it, no books, no cell phones and definitely not any word I am writing would have any meaning. It is so deeply embedded in our everyday routine that we often take it for granted and don't realise its importance. Sadly, in the fast changing society we live in, people with hearing impairment are usually forgotten and left out. They have to struggle to bring up their ideas, voice out their opinions and express themselves to people who are different to them. Sign language, although being a medium of communication to deaf people, still have no meaning when conveyed to a non-sign language user. Hence, broadening the communication gap.To prevent this from happening, we are putting forward a sign language recognition system. It will be an ultimate tool for people with hearing disability to communicate their thoughts as well as a very good interpretation for non sign language user to understand what the latter is saying. Many countries have their own standard and interpretation of sign gestures. For instance, an alphabet in Korean sign language will not mean the same thing as in Indian sign language. While this highlights diversity, it also pinpoints the complexity of sign languages. Deep learning must be well versed with the gestures so that we can get a decent accuracy. In our proposed system, American Sign Language is used to create our datasets. Figure 1 shows the American Sign Language (ASL) alphabets.

Identification of sign gesture is performed with either of the two methods. First is a glove based method whereby the signer wears a pair of data gloves during the capture of hand movements.Second is a vision based method, further classified into static and dynamic recognition[2]. Static deals with the 2dimensional representation of gestures while dynamic is a real time live capture of the gestures.

And despite having an accuracy of over 90%[3], wearing of gloves are uncomfortable and cannot be utilised in rainy weather. They are not easily carried around since their use require computer as well. In this case, we have decided to go with the static recognition of hand gestures because it increases accuracy as compared to when including dynamic hand gestures like for the alphabets J and Z. We are proposing this research so we can improve on accuracy using Convolution Neural Network(CNN).

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Stock Price Prediction on News Data and Market Data Using ML Techniques

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Abstract: ***Stock Price Prediction is a progressive research area, where the returns in stocks depend on the prediction. Stock prices vary based on the market sentiment [1]. The news also plays a major role in the prediction of stock prices. So, using news for prediction may have immense consequences on the financial world. The aim of this article is to develop a model which can anticipate the stock price movements using the market data and the sentiments of news data. The proposed framework is beneficial to investors and can be used by firms to preserve shares of their shareholders. The authors have preprocessed data, feature engineered and trained data on various classification models, the model showing the highest accuracy is chosen for predicting stock prices. The authors have observed the accuracy of around 77% for the next day prediction. The accuracies decreased gradually, when the stock price movements are calculated 10 days in advance.***

Keywords: Stock Price; Market Data; News Data; Classification Models; Data Preprocessing; Feature Engineering

I. Introduction

Stock price prediction is the act of predicting the subsequent value of a particular company's stock, share or any other financial share traded on an exchange. Investors would gain more profits if the prediction produces a better result. So, the stock price prediction is the active research area in this era. Market data has the information of open and close prices, volume and returns of the stock market. News data includes many features, such as word count, sentence count, relevance and sentiment score. The daily news about the companies effects the stock prices in many ways, such as the stock price may increase or decrease. Since, the news has a lot of information about the company's happenings.

Investors, before investing in any company would first do research on that company by knowing the shares of previous years, share values and profits of the company. In this process, they even go through many news articles published regarding the company to know the latest happenings in the company which would help them decide whether to buy the share, sell or hold if they already own a share.

The time series is the series of data points listed in equally spaced points of time. Mostly a stock price relevant data such as market data or news data are time series because, they are collected on a daily basis. Time series analysis comprises of methods to analyse time series data which extracts the characteristics and the statistics of the data. Forecasting of time series is the process of using a model to anticipate the future values based on historical values.

Classification models can be used to anticipate the stock price movements when given new data as an input. There are many classification models among which authors have used 4 popular models for training and predicting the stock price. The authors have used the following models: Multi-layer Perceptron (MLP), Recurrent Neural Network (RNN), Light Gradient Boosting Machine (Light GBM or LGBM), Extreme Gradient Boosting Machine often called as XG-Boost. The RNN and MLP are from Neural Networks, Light GBM and XG-Boost are from gradient boosting machines. RNN and MLP use hidden layers and activation functions to train the model. Light GBM and XG-Boost uses the inbuilt parameters which are tuned and optimised for training the model.

The primary motivation of this article comes from the challenge hosted by the company Two – Sigma on Kaggle. The company hosted market data with the values of returns calculated and news data with the sentiment of the news articles already determined. The data provided by the company have a part of US listed companies. The included set of companies change every day based on the trading amount and information availability, which means that there may be few companies which enter or leave the data on a particular day. Both, the market data and news data are used for predicting the stock price movements. The methodology used for prediction is: data collection, data preprocessing, feature engineering, building classification models, model evaluation and results analysis.

II. Literature Survey

In recent years, remarkable efforts have been put into generating models to predict the market trend or the trend of a stock price in the future.

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Survey on Diabetic Retinopathy Detection

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Abstract: Diabetic retinopathy is a diabetes (occurs when your blood glucose is too high) problem where the eyes get effected. The blood vessels are important as they transport glucose and insulin all over the body. Due to High level of glucose, the blood vessels get damaged and organs like heart and eyes get most effected in this condition. The tissues which are sensitive to light that are present at backside of eye get highly effected. This paper explains various stages of diabetic retinopathy detection, to classify the stages of disease the Convolutional Neural Network (CNN) is used. The diagnosis of retinal image with maximum resolution are done automatically. Taking the severity of disease as basis, classified into 5 stages. The unevenness is the major difficulty for classification of images as there exists the retinal proliferation of new blood vessels and segmentation of retina. To get the best result the blood vessels are to be analyzed properly. The process of detection of blood vessel edges or boundaries automatically is called retinal segmentation. The features get restored during region merging which are lost during the segmentation process. In order to classify these, they are sent through the image classifier. For the segmentation of retinal images U-Net is used and is trained on database called DRIVE. Diabetic Retinopathy database is taken to classify the level of Diabetic Retinopathy by training it on Convolutional Neural Network. Our approach of detection is to train Convolutional Neural Network as well as classify the Diabetic Retinopathy image levels. The Diabetic Retinopathy database is taken from Kaggle detect the Diabetic Retinopathy. The database used for training the image are taken under different conditions. These are labelled and image resolution is high. The database is approximately of 35,126 labelled images.

Keywords: Diabetic Retinopathy, U-Net Segmentation, Convolutional Neural Network.

I. Introduction

Diabetes is a metabolic disease is caused due to release of excess amount of glucose in the blood. The key factor which leads to Diabetic Retinopathy is hyperglycemia. The people with diabetes have a greater number of chances to get diabetic retinopathy. With proper medication and frequent monitoring of eyes this can be reduced. Diabetic retinopathy has a major chance to increase if the cholesterol and blood pressure levels are high. Deep Neural Network is used for detection and classification of Diabetic Retinopathy as there is the availability of large dataset. In case of retinal proliferation and detachment of blood vessel fundus image classification becomes difficult due to high variability

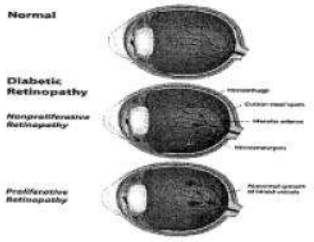

Fig 1: Diabetic Retinopathy Classification

The model called U-Net is used for segmentation of the images which are present in DRIVE database. The classification is done by using the database present in Kaggle. Convolutional Neural network is used for classification of the images. Some amount of data lose occurs during segmentation of the images; the lost data can be brought back by merging the regions.

A. U-Net Architecture

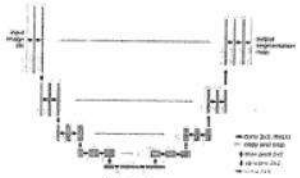

Fig 2: U-net

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Visual Question Answering with External Knowledge

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ABSTRACT

Visual Question Answering (VQA) system is an algorithm that takes an image, and a natural language question about it as input and produces an answer as the output. One of the most intriguing features of the VQA task is the uncertainty of the questions asked. To extract the knowledge required in answering them needs a spread of image manipulations. A significant part of the ongoing advancement in vision to language issues is accomplished by merging Recurrent Neural Networks and Convolutional Neural Networks. We propose a fully trainable neural network based on attribute extraction, established on the CNN and RNN design, which will apply to different vision to language issues. We do that by embedding a particular attribute representation of the scene interpretable by users. Each semantic feature corresponds to a word strip-mined from the training image description and signifies high-level information regarding the image context. We train an RCNN-based classifier for every attribute, and therefore the set of attribute likelihoods for a picture that forms a high-level representation of image content are learned. We then train an LSTM to get the captions, and answers, on the idea of these likelihoods. In light of the proposed feature-based vision to language model, the subsequent contribution is to present a means of incorporating information outside to the picture into the VQA task.

Keywords— Deep Learning; Recurrent Neural Networks; Convolutional Neural Networks; Long Short-Term Memory; Natural Language Processing; Image Processing;

1. Introduction

Visual Question answering is considered a formidable issue as it includes vision and language interpretation that is basic for human discernment. The objective of VQA is to form a system that can respond accurately to a given picture and a pertinent query. VQA research has fundamental importance and can be expanded to different tasks, for example, visual dialogue and visual narrating. As needs are, numerous scientists are putting forth constant attempts to solve the VQA problems. Past examinations have indicated that assimilating the idea of VQA and the available datasets are vital to improving performance. VQA is a vision to language task where a user can ask a natural-language query relating to an image. By using the correlation between the query sentence and the picture, a natural-language answer is generated. Similar to other computer vision tasks like image captioning and content-based image retrieval, VQA demands a top to bottom comprehension of the input image and also the question to gather the appropriate response. In this research paper, we explore how the needful data for VQA differs as the input queries change and how this data can be gathered from the multiple hierarchical layer CNN. Also, we examine the final output that can be reasoned by collectively embedding the hierarchical attributes from CNN with the semantics of the question and use a knowledge base to answer the question that requires information, the image alone doesn't contain.

Fig. 1 Example of visual question answering method

Green sustainable process for chemical and environmental Engineering and Science

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Green Sustainable Process for Chemical and Environmental Engineering and Science

Ionic Liquids as Green Solvents

Book • 2020

Edited by:
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About the book

Description

Green Sustainable Process for Chemical and Environmental Engineering and Science: Ionic Liquids as Green Solvents discusses the application of ionic liquids as environment-friendly solvents in the extraction, separation and purification of organic and inorganic compounds, as reaction media in biochemical and chemical reactions and catalysis, and in green organic and drug syntheses. It covers various industrial applications, from polymer synthesis, to biodiesel and lubrication, paint

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Key Features

- Presents ionic liquids as an alternative to conventional solvents
- Covers organic and drug synthesis using ionic liquids as a solvent
- Outlines industrial product development using ionic liquid as a solvent

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Details

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Editors

Inamuddin

Abdullah M. Asiri

Suvardhan Kanchi

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Sustainable Organic Synthesis

2020, Pages 251-262

Chapter 10 - Green organic synthesis by carbon oxide conversion

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Edition	1st Edition
First Published	2021
Imprint	CRC Press
Pages	18
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ABSTRACT

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Film Based Packaging for Food Safety and Preservation: Issues and Perspectives

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Environmental Microbiology and Biotechnology

Volume 2: Bioenergy and Environmental Health

Editors: Anoop Singh, Shaili Srivastava, Dheeraj Rathore, Deepak Pant

Information on new developments in the applications of biotechnical and microbiological methodology for best utilization of waste will help the researchers/industrialists for up to date guidance

The sustainability assessment will provide information to policy makers about effects of new developments on the society, environment and economy

The book will also provide advice on which procedures should be followed to achieve adequate, relevant and acceptable results

Sections

systems. He has published 4 books (with Springer, CRC Press and Elsevier), 4 Patents, 127 peer-reviewed articles (h-index 55) and 30 book chapters. He is a member of various scientific societies, including ISMET, ISE, BES, BRSI, IFIBiop and AMI. He is the editor of "Bioresource Technology Reports", associate editor of "World Journal of Microbiology and Biotechnology" and is an editorial board member of the journals: 'Bioresource Technology', 'Scientific Reports', 'Molecules', 'Sustainability', 'Electronic Journal of Biotechnology', 'Biofuel Research Journal', 'Heliyon' and 'Frontiers in Environmental Science'.

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Film Based Packaging for Food Safety and Preservation: Issues and Perspectives

15

Bishwambhar Mishra, Sunita Varjani, Monali Parida, Gayathri Priya Iragavarapu, Mukesh Kumar Awasthi, Sanjeev Kumar Awasthi, and Zengqiang Zhang

Abstract

The extensive production of conventional plastics and their use in various food industries as packaging materials create a significant threat to the environment. This ends up creating problems concerned with performance, processing, and overall cost, thus being a big question in dealing with these non-renewable materials. The bioplastics evolved during development of renewable resources. As a part of the consequences to the dynamic changes in the present demand of customer and market scenario, the film-based active packaging system is of huge importance. The application of packaging systems is not to pose as a "wrap on," hence lowering the quality control. It should, anyway, serve as an "add on" for the protective measures taken to assure the safety and best quality of foods. This chapter aims to compile information on types of active food packaging systems, its commercial applications meant for improving food safety and quality with the extension of its life. It also describes various critical factors to be considered for commercialization, current market strategy, and legislative considerations, and application of bioplastic as packaging materials to meet ever-growing consumer demands with comparatively high quality fresh produce.

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M. K. Awasthi · S. K. Awasthi · Z. Zhang
College of Natural Resources and Environment, Northwest A&F University, Yangling, Shaanxi Province, People's Republic of China

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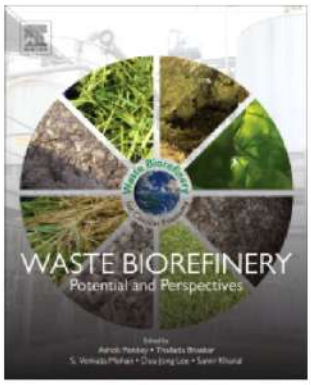
https://doi.org/10.1007/978-981-15-7493-1_15

Petroleum waste biorefinery: A way towards circular economy



Waste Biorefinery

Potential and Perspectives

1st Edition - April 13, 2018

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CHAPTER

13

Petroleum waste biorefinery: A way towards circular economy

Sunita Varjani[a], *Bishwambhar Mishra*[b,*], *Rajasri Yadavalli*[b], *Xuan-Thanh Bui*[c,d], *Mohammad J. Taherzadeh*[e], *Dinesh Chand Agrawal*[f], *Siming You*[g], *Jo-Shu Chang*[h,i,j]

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*Corresponding author

13.1 Introduction

In recent years the waste disposal sector has drawn the attention of scientists and industrialists in addressing ecological problems and hazards [1]. The planet is experiencing a steady rise in the emission of different forms of toxins from the growth of man-consumed manufacturing practices. The solid waste produced during various factories is improved daily posing a threat to the ecological system as dumping without remedial works culminating in adverse effects [2]. The new technology is progressing in the oil refining sector across the globe which results in vast volumes of fuel dumps from the refineries. The sediment is distinguished by higher carbonaceous material, typically as landfilling is used as one solution [3]. This means of way to dispose of sludge, though, is correlated with contamination of the soil and in the forest, ocean shore, and flowing rivers [4].

Waste Biorefinery. http://dx.doi.org/10.1016/B978-0-12-821879-2.00013-2

Recent advancements and challenges in nanomaterial applications in biofuel production

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Nanomaterials

Application in Biofuels and Bioenergy Production Systems

Book • 2021

Edited by:

R. Praveen Kumar and B. Bharathiraja

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Description

Nanomaterials: Application in Biofuels and Bioenergy Production Systems looks at how biofuels and bioenergy can be part of the "sustainable" solution to the worlds energy problems. By addressing bioenergy products compared to their fossil energy counterparts, covering research and development in biofuels applied with nanomaterials this book analyzes the future trends and how biofuels and bioenergy can contribute to its optimization.

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- Provides a one stop solution manual for applications of nanomaterials in bioenergy and biofuels
- Includes biofuel applications with compatible global application case studies
- Addresses the demand for environmental and techno-economic analysis of nanomaterials applications

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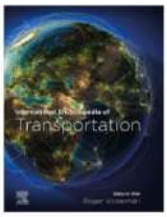

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Chapter 2

Recent advancements and challenges of nanomaterials application in biofuel production

Bishwambhar Mishra, Rajasri Yadavalli, Y. Vineetha and C. Nagendranatha Reddy
Department of Biotechnology, Chaitanya Bharathi Institute of Technology (A), Hyderabad, India

2.1 Introduction

Ecological concerns, such as the greenhouse gas (GHG) effect produced by various factors, including the overuse of fossil fuels, have necessitated the search for green energy and biofuel resources. They are also due to the rapid depletion of existing oil reserves that demand alternative sources. Biofuel is widely looked to as a value-efficient and environmentally sustainable substitute for petroleum and other fossil fuels. Among the most encouraging options available for the production of biofuels is vegetable biomass, which mostly uses lignocellulosic substances and is the precursor of renewable carbon in the environment. Plant biomass often contains two-thirds of polymeric carbohydrates, belonging to the hemicellulose and cellulose groups. These can be used during bioprocesses to generate alternative fuels and some other value-added goods (Antunes et al., 2014; Jiang et al., 2017; Ullah et al., 2018). Any fuel obtained from biomass can be categorized as a biofuel, including waste from animals, plants, or algae. Biofuels from such materials produce approximately 10 to 50 billion tons per year (Abate, Giorgianni, Lanzafame, Perathoner, & Centi, 2016; Zhao, Zhang, & Liu, 2012).

2.1.1 Biofuels

The increased competition for biofuels has inspired scientists and business leaders to identify efficient strategies for biofuel production in line with geographical factors and requirements. Biofuels can be categorized on the basis of the feedstocks used for their production. First-generation biofuels are

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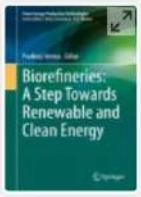

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Biorefineries: A Step Towards Renewable and Clean Energy

Editors: Pradeep Verma

Underlines all the existing technologies available for conversion of biomass to bioenergy and recovery of essential chemicals

Focuses on both advantages and limitations of bioenergy conversion approaches

Special section on the techno & socio-economic impact of biomass based biorefineries

Part of the book series: Clean Energy Production Technologies (CEPT)

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Pradeep Verma is the Group leader of the "Bioprocess and Bioenergy laboratory" at the Department of Microbiology, School of Life Sciences, Central University of Rajasthan, Ajmer, Rajasthan, India. He is working extensively in the area of microwave/biological delignification, enzyme-mediated hydrolysis, and development of consolidated/integrated biorefineries. He has contributed significantly to the area of lignocellulosic biomass based biorefineries that is evident from his highly cited publication in peer-reviewed journals. He has contributed to several international patents. He is working as editor and reviewer to numerous high impact journals.

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Bibliographic Information

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Biorefineries: A Step Towards Renewable and Clean Energy	Pradeep Verma	Clean Energy Production Technologies
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Chapter 16
Electro-Fermentation of Biomass for High-Value Organic Acids

C. Nagendranatha Reddy, Sanjeet Mehariya, S. Kavitha, R. Yukesh Kannah, K. Jayaprakash, Rajasri Yadavalli, J. Rajesh Banu, and Parthiba Karthikeyan Obulisamy

Abstract Microbial fermentations are well recognized process for large-scale bio-conversion of organic waste biomass into high-value organic acids. It requires processes optimization, i.e., that should reach at maximum productivity and no feedback inhibition, to reduce the cost of up- and down-stream processing for commercialization. To achieve this, triggered metabolic activities are often needed that maximize the conversion of organic carbon into organic acids under non-sterile conditions. By regulating the redox balance in-situ, the specific organic acid production could be tailored in fermentation systems under mixed/mono-culture conditions. In recent years, bio-electro-fermentations (BEF) has developed as a promising approach for organic waste conversion into value products due to its

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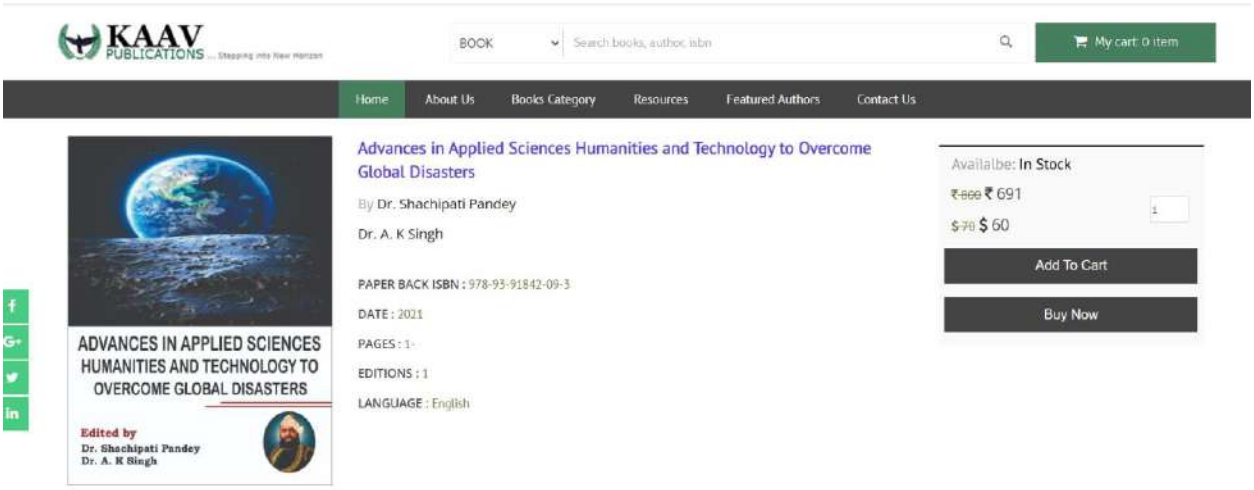
P. Verma (ed.), *Biorefineries: A Step Towards Renewable and Clean Energy*, Clean Energy Production Technologies, https://doi.org/10.1007/978-981-15-9593-6_16

Microstructure of NdCaCoO3 (0≤x≤ 0.4)



Microstructure of $Nd_{1-X}ca_xcoo_3$ ($0 \leq X \leq 0.4$) For Solid Oxide Fuel Cells

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VISHNUVARDHAN REDDY C
Department of Physics Osmania University Hyderabad, India

SREENIVASA RAO PUDI
Department of Physical Sciences Kakatiya Institute of Technology and Science Warangal, India

Detection of copper by localized surface Plasmon resonance based fiber optic technique

N.Aruna[a,b], K.Chandra Mouli[b] ,P.V.N.Kishore[a], B.M. Pratima[c], N. Rajeswara Rao[d], J. Ashok[e]

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ABSTRACT

The present article discusses a cost effective technique for the detection and quantification of copper ion by using localized surface Plasmon resonance (LSPR) based fiber optic technique. For the purpose, a small portion of a plastic optical fiber is functionalized with gold nanoparticles which are modified with 4-mercapto benzoic acid (4-MBA). The proposed is very successful in the detection of Cu^{2+} even in trace levels (ppb) in a wide range of real time samples. The results are comparable with the existing detection techniques.

Keywords: Fiber sensors, Copper detection, Plastic fibers, Surface Plasmon resonance, metal ion detection, Plastic optical fibers, straight plastic fiber probes, LSPR

1. INTRODUCTION

During recent decades, the necessity for detection of selective heavy metal ions, such as Mercury (Hg), Cadmium (Cd), Arsenic (As), Chromium (Cr), Lead (Pb), Zinc (Zn) Copper (Cu) etc., has increased immensely due to growing environmental pollution. Upsurge of metal ion concentration above the permissible limit, would prompts carcinogenesis and other severe health problems [1-4]. Copper ion pollution is one of the major contributor of the overall metal ion

Multi U-bent Cladded POF Sensors for Refractive Index Measurement

P.V.N. Kishore[a], N. Aruna[a], B.M. Pratima[b], N. Rajeswara Rao[c], J. Ashok[d]

[a]Department of Freshman Engineering, Lakireddy Bali Reddy College of Engineering, Mylavaram-521230, Andhra Pradesh, India; [b]Department of Physics, Chaitanya Bharathi Institute of Technology, Hyderabad, Telangana-500075, India; ; [c] Department of Physics, Aditya College of Engineering & Technology, Surampalem, A.P-533437, India; [d]Department of Physics, SRK Institute of Technology, Enikepadu, A.P-521108, India

ABSTRACT

The cladded U-bent plastic optical fiber (POF) probes with single, triple and quintuple U-bent regions investigated under this study show a RI sensitivity of 2.7, 3.7 and 2.3 absorbance units/RI units respectively. The highest sensitivity obtained here is more than 50% of decladded single U-bent POF probes, however with superior chemical resistance.

Keywords: Fiber optic Sensors, Optical Sensing and Sensors, Remote Sensing, plastic fiber, POF Sensors, U-bent fibers, Refractive index, low cost.

1. INTRODUCTION

Identification of precise refractive index (RI) changes, is an important concern in various fields such as petroleum industries, food processing, pharmacy applications, clinical diagnostics etc. Conventional RI measuring instruments suffer from limitations due to their voluminous size, inefficiency for remote monitoring and high cost [1]. Plastic optical fiber (POF) based RI sensors have recently gained attention due to their innate properties such as ease in handling, flexibility, high facture toughness, negative thermo-optic coefficient and high sensitivity to strain. Apart from that they offer excellent compatibility to organic materials, enabling them for chemical and biomedical applications [2]. Evanescent field absorption based POF sensors could be low cost and reliable alternatives for RI measurement. Various fiber sensors such as straight decladded fiber, biconically tapered, D-shaped, micro bent, laterally polished etc. were

Chapter 3
Print ISBN: 978-93-91473-81-5, eBook ISBN: 978-93-91473-88-4

Antiepileptic Drug Phenobarbital: A Chemsketch Study

Katanguru Laxmi[1*]

DOI: 10.9734/bpi/nicb/v1/3429F

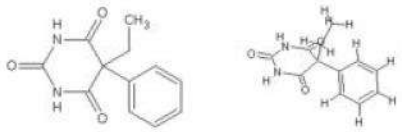
ABSTRACT

Phenobarbital belongs to the class of medications called barbiturates. It is used to treat insomnia (difficulty sleeping) and as a sedative to relieve the symptoms of anxiety or tension. It is also used for the control of certain types of seizures. It works by slowing down the brain and nervous system. Phenobarbital is a barbiturate, nonselective central nervous system depressant which is primarily used as a sedative hypnotic and also as an anticonvulsant in subhypnotic doses.

Keywords: Phenobarbital; an anticonvulsant and cns activity; ACD/Chemsketch; auxinfo; smiles notation; chemspider; ACD/3D viewer; macroscopic properties.

1. INTRODUCTION

Phenobarbital belongs to a class of drugs known as barbiturate anticonvulsants/hypnotics [1-3]. Barbiturates are substituted pyrimidine derivatives in which the basic structure common to these drugs is barbituric acid, a substance which has no central nervous system (CNS) activity. CNS activity is obtained by substituting alkyl, alkenyl, or aryl groups on the pyrimidine ring. Phenobarbital is chemically Designated as 5-Ethyl -5-phenyl barbituric acid. Phenobarbital (Fig. 1) works by controlling the abnormal electrical activity in the brain that occurs during a seizure. This medication is also used for a short time (usually no more than 2 weeks) to help calm you or help you sleep during periods of anxiety [4-6].



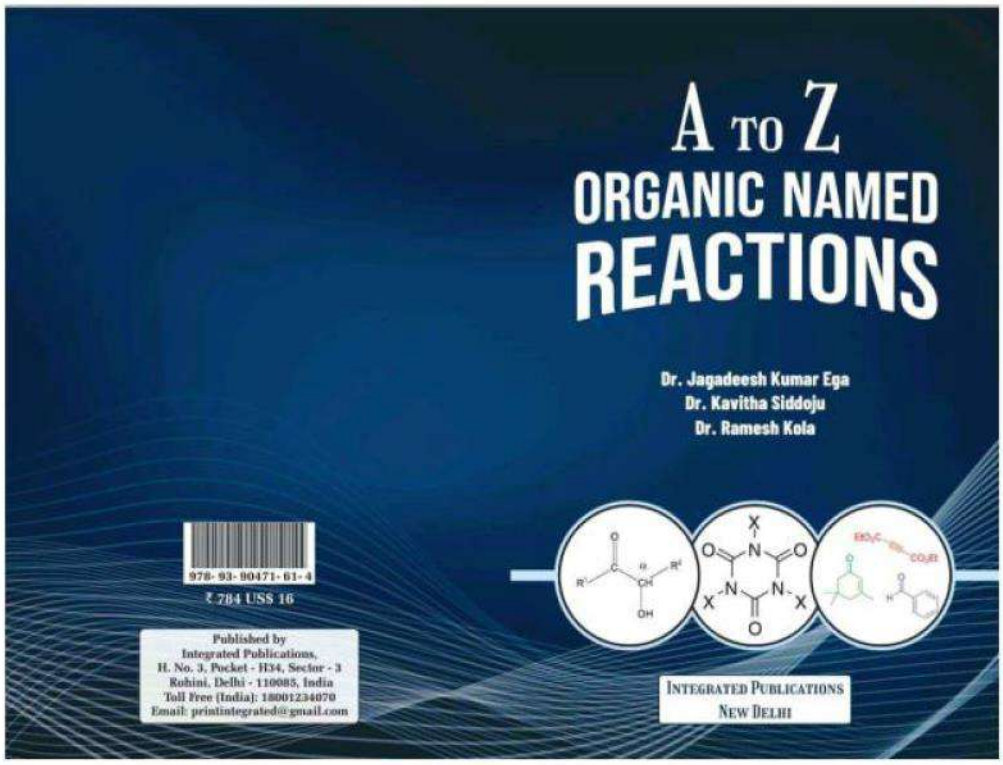
Fig, 1. Structure of phenobarbital

1.1 Hypothetical Study of Phenobarbital

ACD/Labs [7-9] provides a Chemical Naming Service that will use our powerful software to quickly and accurately name compounds. ACD/Name features enhanced naming capabilities that allow you to generate systematic names according to both IUPAC and CAS Index nomenclature rules, in addition to generating chemical structures from names.

Molecular Formula of Phenobarbital is $C_{12}H_{12}N_2O_3$ and its Molecular Weight is 232.24.
Name of structure 5-ethyl-5-phenylpyrimidine-2,4,6 (1*H*,3*H*,5*H*)-trione.
InChI name of Phenobarbital.

A TO Z Organic Named Reactions



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Editors: V. Bindhu, João Manuel R. S. Tavares, Ştefan Ţălu

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Proceedings of Fourth International Conference on Inventive Material Science Applications pp 595–603

Modern Progression in Anode Materials for Lithium-Ion Batteries: Review

Gubbala V. Ramesh, N. Mahendar Reddy & D. Saritha

Conference paper | First Online: 20 October 2021

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Abstract

Li-ion batteries are the dynamic energy storage device presently. Li-ion batteries have broadly explored an extensive variety of areas comprising electric, information technology, hybrid vehicles and aerospace. Nanostructure anode materials with superior reversible capacity and constant cycling life are vital for the great performance of Li-ion batteries. Consequently, various new anode

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Proceedings of Fourth International Conference on Inventive Material Science Applications pp 585–594

Ordered Pt_3M (M = Early d-Block Metals) Intermetallic Nanocrystals: Synthesis and Electrocatalysis

D. Saritha, N. Mahender Reddy & Gubbala V. Ramesh

Conference paper | First Online: 20 October 2021

Part of the Advances in Sustainability Science and Technology book series (ASST)

Abstract

Ordered intermetallic nanocrystals have demonstrated significantly higher electrocatalytic activity and stability in fuel cell reactions such as cathodic oxygen reduction reaction (ORR) and anodic fuel oxidation reactions when compared to their counter disordered alloy nanocrystals. The improved electrocatalytic behavior may be attributed to definite structural, geometrical, and electronic structures. In this chapter, various Pt_3M

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2D Nanomaterials for Photocatalysis and Photoelectrocatalysis

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22.1 Introduction

Two-dimensional (2D) nanomaterials extracted enormous interest since graphene was first published in 2004 [1]. Thickness of the 2D nanomaterials is in the order of nanometers, i.e. single- or few atom thickness and the properties can be tuned finely by changing the thickness of the materials [2, 3]. These 2D nanomaterials were demonstrated exceptional properties in the fields of science and engineering such as physical, mechanical, electronic, and chemical properties that were different from their bulk counterparts [4]. Therefore, the potential uses of 2D nanomaterials are explored in a wide spectrum of applications such as electronics/optoelectronics, photocatalysis, photoelectrocatalysis, energy storage, and electrochemistry [5–8]. Researchers/scientists from all over the world inspired to investigate other 2D nanomaterials such as metal dichalcogenides (WS_2, TaS_2, MoS_2, etc.), layered metal oxides (LDH), metal oxyhalides (MOX), hexagonal boron nitride (h-BN), graphitic carbon nitride (g-C_3N_4), Mxenes, metal–organic frameworks, polymers, and black phosphorus [4].

Over the past few years, considerable efforts have been made to explore and develop the reliable methods for the synthesis of 2D nanomaterials. Broadly, these routes can be classified into two ways such as chemical and physical methods for, e.g. wet-chemical synthesis methods, [9, 10] chemical vapor deposition (CVD), [11, 12] chemical and electrochemical ion-intercalation and exfoliation routes, [13, 14] liquid phase exfoliation in solution phase, [15, 16] and laser thinning technique [17, 18]. The exceptional properties of 2D nanomaterials come from the capability of the captivity of electrons in their interlayers and also the covalent bond between interplanes [19]. 2D nanoarchitecture possesses a high surface area that favors high catalytic activity.

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Chapter 2

Bio-Inspired Metal Oxide Nanostructures for Photocatalytic Disinfection

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Abstract

Interest in photocatalytic disinfection synthesis has increased in recent years with the use of different semiconductor photoreceptors. While much attention has been given to the photocatalytic inactivation process, researchers have shifted to focusing on bio-inspired metal oxide materials for photocatalytic inactivation in recent years. Bio-inspired metal oxide photocatalysts have unique advantages with special emphasis being placed on its highly earth abundance, economic cost of production, eco-friendliness, simple structure and easy to synthesize. Besides that, bio-inspired metal oxide photocatalysts has also been applied extensively for the development of emerging areas, such as environmental as well as energy materials. Today, the development of simple and inexpensive bacterial disinfection technology to addresses the peril of waterborne disease in the emerging areas has grown rapidly. This chapter proposes an analysis of recent research activities that involved the use of bio-inspired photocatalytst for the disinfection of water under light radiation. Various nano-structured photocatalytic materials like titanium dioxide (TiO_2), zinc oxide (ZnO), iron oxide (Fe_2O_3), nickel oxide (NiO), etc., are introduced. Material and various bacterial pathogens, photocatalytic and pathogens disinfection mechanism are described in detail. Finally, the progress of novel bio-inspired photocatalysts for the disinfection applications is discussed at the end of this chapter.

Chapter 3
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Determining the Properties of Phenobarbital an Antiepileptic Drug Using Chemcalise Software

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DOI: 10.9734/bpi/cacs/v6/5051F

ABSTRACT

Medications of barbiturate class are used in the treatment of certain types of diseases like insomnia (difficulty sleeping), and for controlling certain seizures. One such type of medicinally important compound is Phenobarbital. It is also known for its activities as anticonvulsant, antidepressant and antihypnotic [1]. Phenobarbital is used for treatment of seizures and its structure is studied with the objective of making the drug available at affordable prize, wide range of action and convenience of use. With these advantages it is considered to be a most efficient antiepileptic drug and is used as nonselective central nervous system depressant. In view of medicinal importance of Phenobarbital [1-3]. Its structure and properties were studied by using chemcalise softwareof Chemaxon and data obtained is interpreted.

Keywords: Phenobarbital; properties; pka, isoelectric point; logP; logD; solubility; geometry; HNMR.

1. INTRODUCTION

A compound Phenobarbital is well known medications of barbiturate class which is used in treating insomnia (difficulty sleeping). It is also used for controlling seizures caused due to Epilepsy [1-3].

By the use of Chemaxon's cutting edge technology, a powerful online facility of chemcalize was developed. In this it is possible to peform the chemical calculations, name-structure conversion, search etc. We can draw the chemical structure as an input and the calculation view gives the structure, structure-based calculations, its 3D view, the molar and exact mass. Structural properties (like atom count, Hydrogen bond acceptor count, polar surface area, polarizability are given by the calculation view. pKa, isoelectric point ,logP, logD, solubility, H-NMR spectral data were also obtained in the chemcalise software.

In the present paper the structure of chemical compound Phenobarbital is drawn by using the chemicalise software and all the results obtained were presented in detail. The particulars of basic properties, structural properties, names and identifiers like IUPAC name, Traditional name, Common names, SMILES, InChI, CAS Registry numbers of Phenobarbital are provided in this paper. pKa,isoelectric point, logP. logD, Solubility, Geometry and [1] HNMR spectrum of Phenobarbital were analysed in detail as given in this manuscript.

2. BASIC PROPERTIES OF PHENOBARBITAL

The structure of Phenobarbital is drawn as the input and from the data [4,5] given (Table 1) it is clearly evident that the formula of phenobarbital is $C_{12}H_{12}N_2O_3$ and its composition is C=69.06%, H=5.21%, N=12.06%, O=20.67%. The molar mass of Phenobarbital is 239.239 g/mol and its exact mass is 232.084792254 Da.

Chapter 8
Print ISBN: 978-93-5547-091-1, eBook ISBN: 978-93-5547-143-7

Structural Aspects of Indoline-2,3-dione-3-oxime: An Approach towards Experimental and Theoretical Perspectives

K. Laxmi [a*]

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ABSTRACT

Indoline-2,3-dione-3-oxime(IDOX) was synthesized and characterized by IR, mass and ^{1}H-NMR. The Hyper Chem 7.5 software was used for quantum mechanical calculations. Study was conducted to determine molecular components of Indoline-2,3-dione-3-oxime (IDOX) and to provide information about its Structural details.

The geometry optimization was carried out using Ab Initio method. The theoretical spectral data and QSAR parameters were generated with semi empirical single point AM1 method. The HOMO and LUMO frontier orbital energies were also computed for the optimized keto and enol forms of IDOX molecule. The experimental and theoretical spectral data are nearly comparable. The pH- metry studies indicated presence of one dissociable proton in IDOX. The manuscript describes the structural aspects of Indoline-2,3-dione-3-oxime

Keywords: IDOX; Hyperchem 7.5 Software; QSAR; IR Spectral data; ^{1}H NMR Spectral data; Quantum chemical studies; HOMO; LUMO.

1. INTRODUCTION

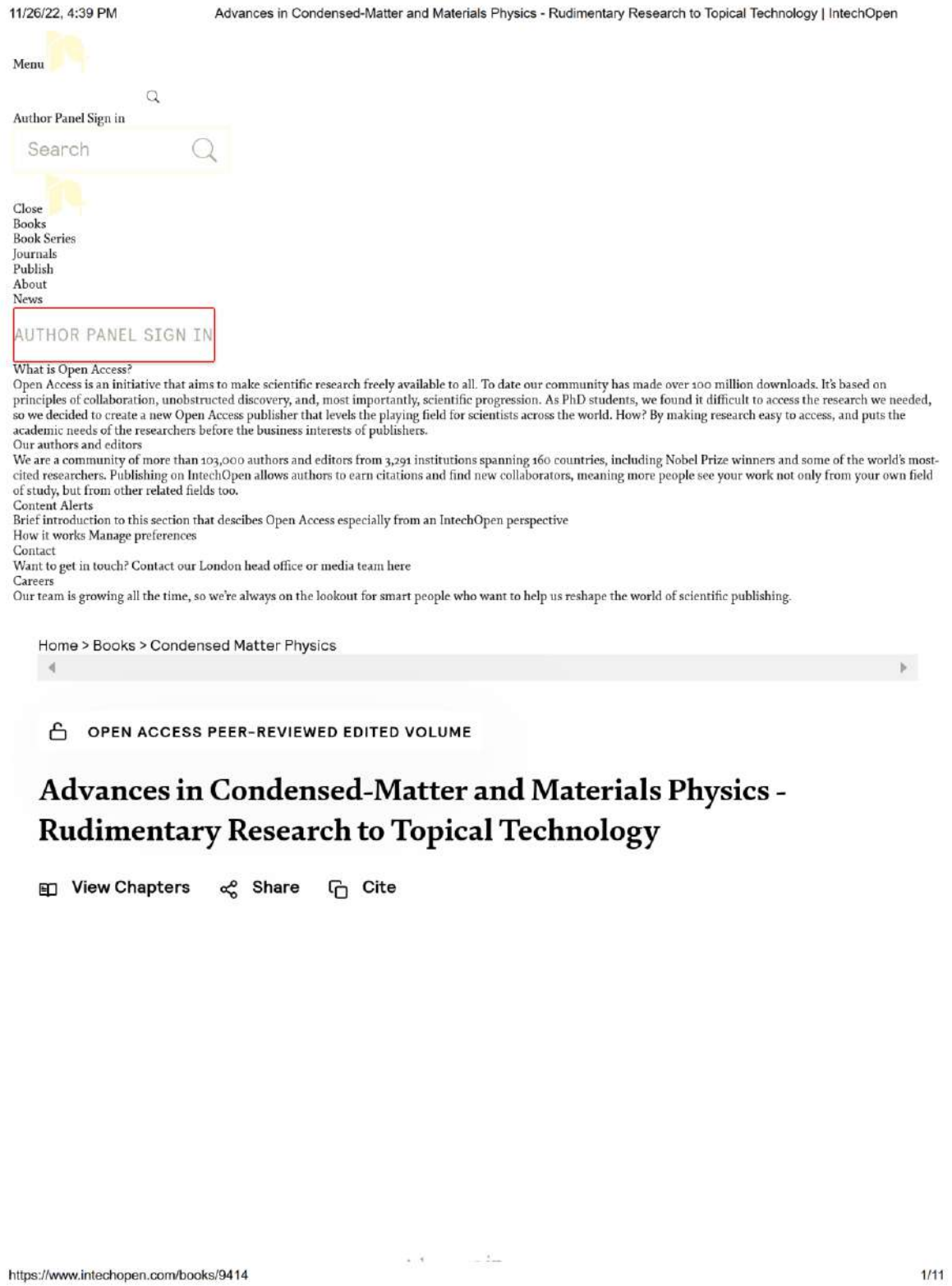
Isatins (2,3-indoline-dione) are an important group of heterocyclic compounds which are biologically active and of significant importance in medicinal chemistry [1]. A literature survey identified several isatin derivatives in the development phase as potential new drugs. Isatin derivatives that have been reported to show considerable pharmacological actions such as antimicrobial, anticancer, antiviral, anticonvulsant, antiinflammatory and analgesic [2]. Indoline-2,3-dione-3-oxime abbreviated as IDOX synthesized by the condensation of isatin with hydroxyl amine was found to have number of applications.

Epilepsy is a brain disorder that causes people to have recurrent seizure. A large number of populations of different age groups and sex are affected by this disease. The estimated number of people in 2011 with epilepsy would be 11.5 million in India. The number of new cases with epilepsy, each year would be close to half a million.

Therefore, studies have been carried out for designing of newer antiepileptic drugs with reduced neurotoxicity. Recently it has been found that isatin is a novel template for designing of new anticonvulsants [3-5].

Indoline-2,3-dione-3-oxime (Isatin -3-oxime)was found to have anticonvulsant activity [6]. Literature studies revealed that anticonvulsant screening of Indoline-2,3-dione-3-oxime (IDOX)was performed by Maximal Electroshock (MES) model at dosage of 30, 100 and 300 $mgkg^{-1}$. IDOX was found to be active in the MES test at a lower dose of 100 $mgkg^{-1}$ .This compound IDOX was also found to be more potent than standard drug sodium valproate.

Chapeter: G-jitter effects on chaotic convection in a fluid layer



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This book, Condensed Matter and Material Physics, incorporates the work of multiple authors to enhance the theoretical as well as experimental knowledge of materials. The investigation of crystalline solids is a growing need in the electronics industry. Micro and nano transistors require an in-depth understanding of semiconductors of different groups. Amorphous materials, on the other hand, as non...

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Chapter

G-Jitter Effects on Chaotic Convection in a Rotating Fluid Layer

Palle Kiran

Abstract

The effect of gravity modulation and rotation on chaotic convection is investigated. A system of differential equation like Lorenz model has been obtained using the Galerkin-truncated Fourier series approximation. The nonlinear nature of the problem, i.e., chaotic convection, is investigated in a rotating fluid layer in the presence of g-jitter. The NDSolve Mathematica 2017 is employed to obtain the numerical solutions of Lorenz system of equations. It is found that there is a proportional relation between Taylor number and the scaled Rayleigh number R in the presence of modulation. This means that chaotic convection can be delayed (for increasing value of R) or advanced with suitable adjustments of Taylor number and amplitude and frequency of gravity modulation. Further, heat transfer results are obtained in terms of finite amplitude. Finally, we conclude that the transition from steady convection to chaos depends on the values of Taylor number and g-jitter parameter.

Keywords: g-jitter effect, nonlinear theory, rotation, chaos, truncated Fourier series

1. Introduction

The study of chaotic convection is of great interest due to its applications in thermal and mechanical engineering and in many other industry applications. It was introduced by Lorenz [1] to illustrate the study of atmospheric three-space model arising from Rayleigh-Benard convection. Some of the applications are production of crystals, oil reservoir modeling, and catalytic packed bed filtration. He developed a simplified mathematical model for atmospheric convection given below:

$$x' = Pr(y - x), \tag{1}$$

$$y' = x(R - z) - y, \tag{2}$$

$$z' = xy - \beta z. \tag{3}$$

This model is a system of three ordinary differential equations known as the Lorenz equations. These equations are related to the properties of a two-dimensional Rayleigh-Benard convection. In particular, the system describes the rate of change of three quantities convection, temperature variation vertically with respect to time. These equations are related to the properties of two-dimensional

The effect of gravity driven thermal instability in the presence of applied magnetic field and internal heating

The Effect of Gravity Driven Thermal Instability in the Presence of Applied Magnetic Field and Internal Heating

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Abstract. This paper deals with the weakly nonlinear thermal instability problem between two infinite parallel surfaces under an imposed magnetic field and time-periodic gravity modulation. In this case gravity has two parts: a constant part and an externally imposed time-dependent part. In addition to applied magnetic field, the layer is heated internally. We focus on stationary convection using the slow time scale and arrive at the real Ginzburg-Landau equation. The classical fourth order Runge-Kutta method has been used to solve the real Ginzburg-Landau equation. This equation gives finite amplitude of convection and helps to analyze the effect of heat transfer in the presence of magnetic field and modulation. The effect of various parameters on heat transport has also discussed. It is found that, the heat transport can be controlled by suitably adjusting the frequency and amplitude of modulation. The applied magnetic field is to diminish the heat transfer in the system. It is concluded that both concepts internal heating and applied magnetic field regulate heat transfer.

Keywords:-Ginzburg-Landau Equation, Gravity modulation, Applied magnetic filed, Internal heating.

1. INTRODUCTION

In this paper we study the impact of time-periodic oscillations of the Rayleigh Benard convection in the presence of applied magnetic field with thermal modulation by weakly nonlinear analysis. We derive the Ginzburg-Landau equation focussing on stationary finite amplitude convection. We study heat transfer from this equation and discuss the impact of thermal modulation on heat transport. An excellent review of the studies related to magneto convection has been reported by Yu et al.[1], Thomson [2] and Chandrasekhar [3]. The effect of thermal modulation on linear instability of Rayleigh Benard convection is reported by Venezian [4]. The shift in the critical Rayleigh number has been calculated as a function of frequency modulation and wavenumber. It has been reported that frequency of modulation having a significant effect on instability of the layer with its proper tuning. Among the early studies on gravity modulation, Gresho et al.[4] and Malashetty et al. [5] using small amplitude approximation studied the effect of gravity modulation in a fluid and porous layer. They showed that the system could be stabilised or destabilized based on the tuning of the frequency of modulation. With periodically varying gravity of the plane investigated unsteady equilibrium of a fluid in the layer. The two component fluid convection under applied magnetic field is reported by Rudraiah et al.[6]. They have shown that the magnetic field acts as a third diffusing component to suppress onset convection.

In the presence of gravity modulation either linear or nonlinear studies have been reported by Bhadauria [7−10] and Kiran et al.[11−19]. In their studies the effect of gravity modulation has been investigated on different fluid and porous models either for linear or nonlinear theory. In situations like radioactive decay or relative weak exothermic reactions the fluid layer offer its own internal heat generation (IHG). It is because of IHG that there is a thermal gradient among the interior and exterior of the earth's crust with multi component liquids. It is the main reason of the energy for celestial bodies to warm and active. Other important and relevant application can be seen in the theories of geophysics, reactor safety analyses, fire and combustion studies, metal waste form development for spent nuclear fuel and storage of radioactive materials are very few. However there are few studies reported on internal heating of the convective flow. Some of them are given by Tveitereid et al.[20,21], Tasaka et al. [23], Takashima [23], Bhadauria et al. [24, 25], Kiran et al.[26]. No data is reported on thermal convection in the presence of applied magnetic field and internal heat generation.

The unsteady flow of free incompressible viscous fluid in an infinite vertical channel in the presence of applied magnetic field investigated by Rao e atl. [27]. They have considered viscous dissipative heat along with the free convection currents. It is reported that variations of velocity field, temperature field and skin friction are influenced by applied magnetic field. The study of heat transfer in the presence of magneto convection is reported by Bhadauria et al.[16]. It is reported that under the effect of magnetic field modulation heat transfer can be suppressed more than that

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Students Perception and Satisfaction Towards ICT Enabled Virtual Learning

Moshina Rahamat & B. Lavanya

Conference paper | First Online: 20 May 2021

Abstract

According to the Ministry of Education, 2010 "The Education service is that which moulds young generation into good citizens, who become conscious with their responsibilities towards the family, society and country. The present COVID 19 Pandemic has largely affected the lives of scholars round the world. They missed the possibility to interact one on one basis with their teachers as all the governments temporarily closed the academic Institutions. Due to this, the importance for technology based learning has become more prominent which resulted in ICT enabled learning called Virtual learning. It particularly becomes

Dr. Bhuwaneshwari Melinamath

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According to the Ministry of Education, 2010 "The Education service is that which moulds young generation into good citizens, who become conscious with their responsibilities towards the family, society and country. The present COVID 19 Pandemic has largely affected the lives of scholars round the world. They missed the possibility to interact one on one basis with their teachers as all the governments temporarily closed the academic Institutions. Due to this, the importance for technology based learning has become more prominent which resulted in ICT enabled learning called Virtual learning. It particularly becomes important to grasp how this ICT enabled learning helps the scholars, who lay strong foundation for better Society, therefore the present research aimed to look at the student's

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Role of Stakeholders in Promoting MOOCs

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Abstract

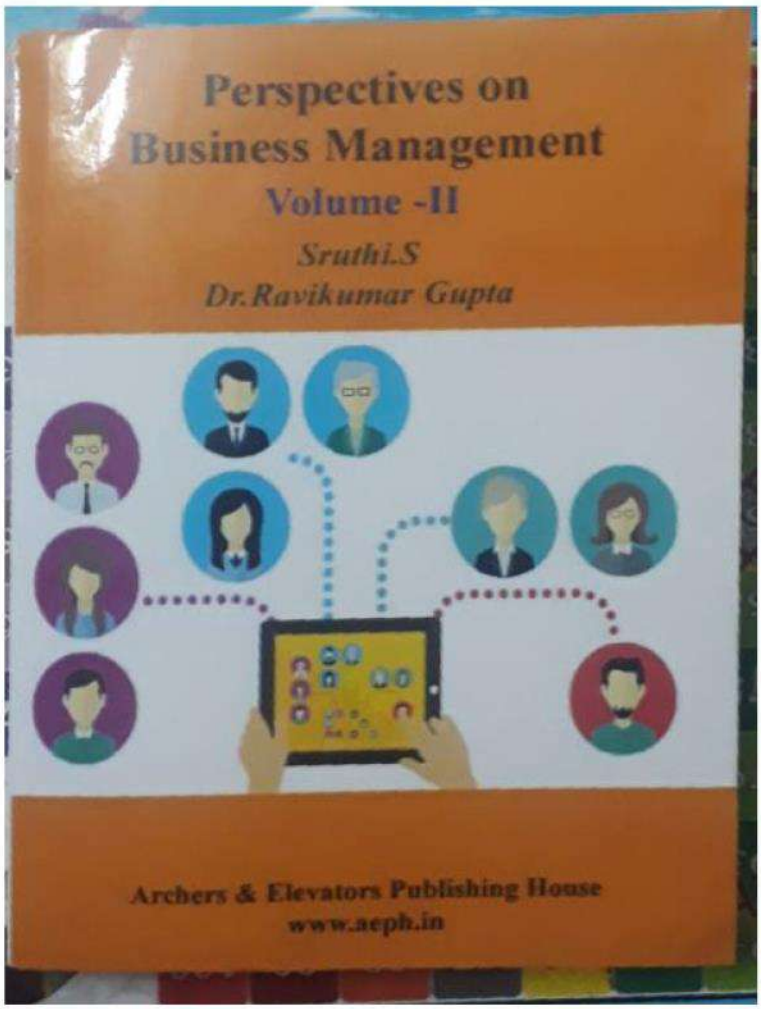
Massive Open Online Courses (MOOCs) have emerged unitedly of the foremost potential tools in proffering quality education and large coaching to an enormous domain of audience worldwide. On one hand it reaches a world domain of learners, associate degree, on the opposite hand it promulgates data in an economical digital platform, besidex intertwining an enormous network of scholars, scientists, professors, scholars, academics and completely different stakeholders associated with education. It is believed that this new openness movement could be a real game changer, because it has the potential to widen access to lifelong learning, address key gaps in ability development, and ultimately enhance the standard of life for millions. There is even some hope in India that MOOC courses could also be able to play a crucial role in closing the ever widening gap of attainment and in reducing youth state. There is a necessity to form a solid systematic structure for the validation and recognition of accomplishment of the courses from online sources as Coursera, edX and SWAYAM, UGC, and different academic authorities that seeks cooperation between these establishments. This wildcat study addresses the role of the necessary stakeholders in promoting MOOCs.

Keywords: *MOOCs, lifelong learning, literacy, stakeholders of MOOCs.*

Introduction

The two research martyrs Siemens and author Downes had coined the word MOOC in the year 2008. Massive Open Online Courses provided the scholars with the possibility to scan and study flexibly for anyone from any corner of the globe at any given time i.e., anyone with an honest web access across the world will have access to the net courses. There are also several establishments where academics and professors truly suggest students to take the net courses as they will gain some further data. Thanks to the present pandemic scenario, the usage of the MOOCs have increased due to the vast support offered by MOOCs platforms not solely by students. However, conjointly academics gift in these courses either teaching or they themselves square measure learning new things.

India proclaimed official SWAYAM MOOC Platform in the year 2016. SWAYAM stands for (Study Webs of Active-Learning for Young Aspiring Minds). This platform was originated by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Social Media Branding and its effect on Brand Loyalty”

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SOCIAL MEDIA BRANDING AND ITS EFFECT ON BRAND LOYALTY

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ABSTRACT

The rapid rise of social media and web technologies has captured the attention of marketers and consumers globally. Social media provides platform for companies/ brands to engage in two-way communication with consumers. Nowadays, consumers are no longer considered as passive recipient. These platforms have offered a podium to consumers wherein they can open their hearts. Brands/companies have to respond to their queries/concerns/ complaints quickly. Additionally, building, maintaining a loyal base of consumers are one of the main objectives for marketers for a very long time. Marketers have utilized various means to maintain the brand loyalty of their customers. One of the recent means is the social media marketing. The aim of the study is to identify the impact of social media marketing on brand loyalty, given that the concept is receiving increasing traction from academicians and practitioners. The scope of the study consists of customers who follow at least one brand on the social media. The sample size for the study is 200 and a five-point Likert scale is used to collect the data. Exploratory factor analysis and Regression analysis was employed to analyse the collected data with the help of SPSS. Results showed that respondents get more influenced towards social media platforms. The results of the study showed that brand loyalty of the customers is positively affected when the brand showcases attractive campaigns, relevant content, offers popular contests, deals, appears on various platforms and offers applications on social media. Based on the results, the study can be considered as a forerunner in this new area of marketing, and propose strategies for the practitioners.

Keywords: social media; two-way communication; brand loyalty.

INTRODUCTION

Social Media Marketing has emerged as the most popular and effective tool of integrated marketing communication. The companies are using social media campaigns to attract the prospects and making the existing customers brand loyal. Now, firms are not the only source of brand communication as social media allows the consumers or prospects to communicate with many other consumers from all corners of the world.

Brand loyalty may be a pattern of consumer behaviour through which consumers tend to urge committed to a selected brand or product and make repeat purchases over time. Businesses plan different creative marketing strategies like reward and loyalty programs, incentives, trials and brand ambassadors to make brand loyalty. Those who are loyal to a specific brand don't purchase a substitute brand just in case the well-liked brand is unavailable.

Chapter-12

An Assessment of Financial Planning for Salaried Employee in Financially Distressed Times

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Associate Professor at Lovely Professional University, Jalandhar, Punjab[2]

Abstract

Financial Planning is process of framing objectives, policies, procedures, programs and budgets regarding the financial activities of a concern or individual. This ensures effective and adequate financial and investment policies. The need to plan and save for a secured life is becoming even more critical post spread of COVID 19 pandemic that shaken the pockets of not individuals but also big business entities. This planning no longer restricts to simply putting money aside every month. However, it also includes investing the savings for getting returns. Investment is the employment of funds with the aim of getting return on it. It is the commitment of funds which have been saved from current consumption with the hope that some benefits will accrue in future. So, the first step to investment is savings. This study highlights the various factors like Spending Behavior, Savings, Investments, Provisioning for emergencies etc. which influence the financial planning of salaried individuals.

Keywords: *Financial Planning, Tax Savings, Salaried Employees*

Chapter-4

A Study on Financial Distress of 3 Major Automobile Companies in India - Using Altman's Z Score

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Student at Chaitanya Bharathi Institute of Technology, Gandipet, Hyderabad[3]

Abstract

The present study is focused to examine and compare the financial health of 3 major players in the Indian Automobile Industry. Altman's Z score model is employed to examine and predict the financial distress of considered 3 companies. Secondary data related to required financial indicators as per Altman's Z score model is being collected for 5 years i.e., 2015-2019 from the annual reports of respective companies. 2020 is not considered for the present study as it was the year when most individuals and business houses were in Financial Distress condition due to the COVID-19

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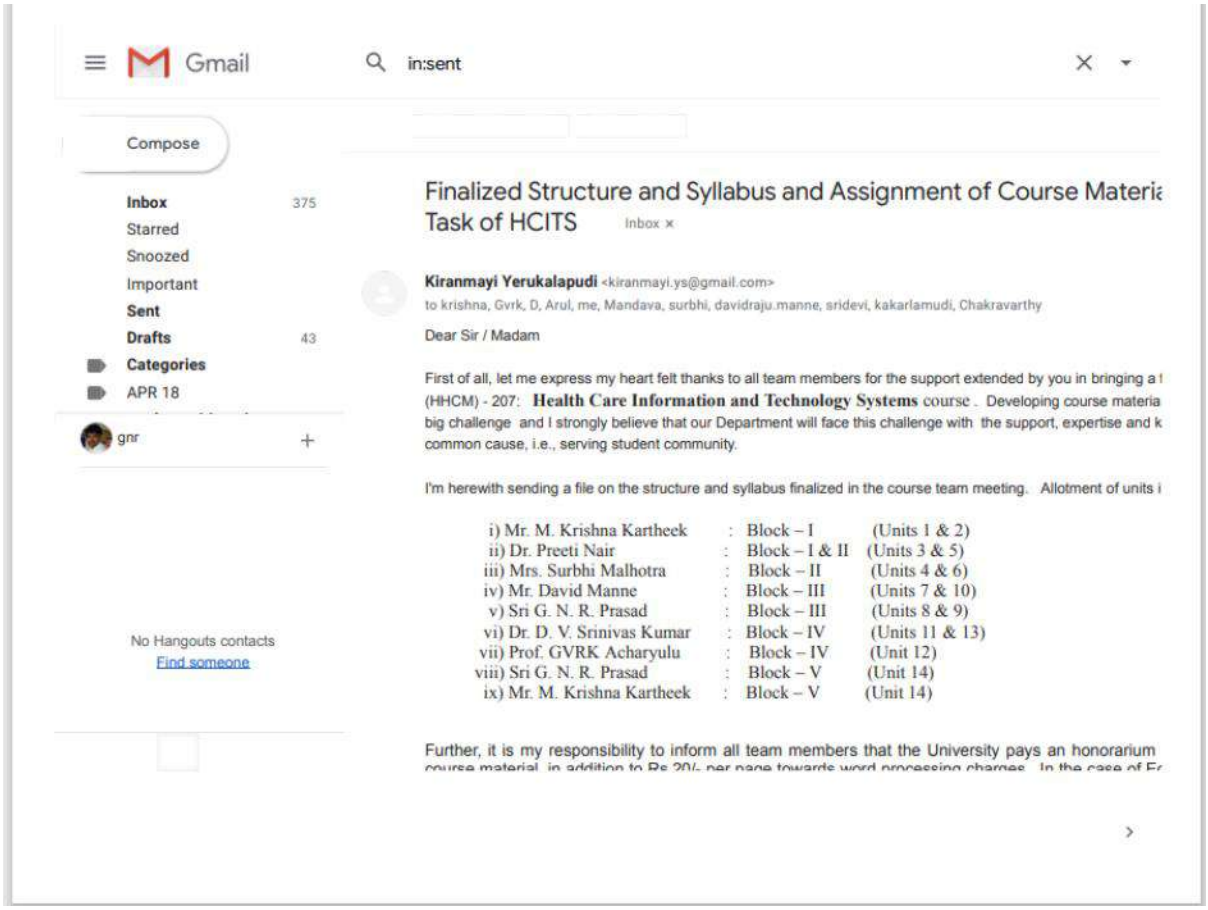

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