Annual International Conference on Emerging Research Areas (AICERA 2020)

AICTE Sponsored International E-Conference on Computing & Communication Systems for a Fourth Industrial Revolution

Conference Proceedings

Amal Jyothi College of Engineering
Kanjirappally, Kottayam, Kerala, India

Dr. Juby Mathew
Organizing Chair AICERA 2020

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Fr. Dr. Mathew Paikatt
Manager, AJCE

MESSAGE FROM THE MANAGER

AICERA [Annual International Conference on Emerging Research Areas], the much-renowned technological conference of Amal Jyothi College of Engineering has paved the way for path breaking ideations and inventions come to forefront since its initiation. Amidst the pandemic situation, the event is organized as an E-Conference focusing on the domain of Computing & Communication Systems for a Fourth Industrial Revolution from 14th to 16th of December 2020. This event, the ninth in the series, is sponsored by All India Council for Technical Education, India and has IOP Publications as the publication partner.

The Fourth Industrial Revolution encompassing leading edge production techniques and smart systems is all set to fundamentally change the way we live, work and relate to one another. As pillars of higher educational institutions, we are the formators of the leaders who would be leading the Fourth Industrial Revolution. With domains like Artificial intelligence, Robotics, Internet of Things, Autonomous Vehicles, 3-D printing, Nanotechnology, Biotechnology, Materials Science, Energy Storage, Quantum Computing and Cybersecurity making impactful marks in our day to day life, it is our responsibility that we enable our wards to not just focus on what to learn but on how to learn also. Preparing them in that manner will bring out the technocrats for the future.

On behalf of Management of Amal Jyothi College of Engineering, Kerala, I wish all the participants a fruitful, enriching and enjoyable experience over these three days. The organizing team deserves an unending round of applause for their untiring efforts in preparing for the successful conduct of the event. I wish the event all success.

Dr. Z V Lakaparampil
Principal, AJCE Conference Chair

MESSAGE FROM THE PRINCIPAL

Amal Jyothi College of Engineering, Kanjirapally, is organizing the International Conference on Computing & Communication Systems for a Fourth Industrial Revolution, under the auspices of the Annual International Conference on Emerging Research Areas AICERA-2020 which will be from on 14 to 16 December 2020.

The Conference aims at bringing together researchers, scientists, engineers, and student scholars in various areas of Engineering and Technology, and provides an international forum for the dissemination of original research results, new ideas and practical development experiences which concentrate on both theory and practice.

AICERA-2020 focusses on the creation of a platform for open communication and exchange of ideas on the recent Technological and Engineering developments. It also provides a global venue for sharing knowledge and innovations in the field of Computer Science and Information Technology. The three-day event will provide exposure to erudite work by researchers in the field of engineering. Sessions on the sideline will discuss recent advances, challenges, breakthroughs and research innovations on various engineering aspects of green technologies.

The present conference consists of keynote lectures, tutorials, workshops and oral presentations on various aspects of engineering and science. Researchers are invited to present the latest developments and technical solutions in their multidisciplinary areas.

Dr. Juby Mathew
Organizing Chair, AICERA 2020

PROGRAM OVERVIEW

Amal Jyothi College of Engineering, Kerala, celebrating 20 years of Excellence in Professional Education, has regularly organized events for imparting and disseminating technical knowledge and awareness since inception at regional and national levels. Since 2011, Amal Jyothi took it forward to engage in a platform to bring in exponents internationally through the Annual International Conference on Emerging Research Areas, later known as AICERA. Specific conferences have been held under the parent AICERA umbrella, the theme varying every year.

The 2020 edition, being organized jointly by the Departments of Computer Applications, Computer Science & Engineering and Information Technology from 14th to 16th of December 2020 is revolving around the theme "Computing & Communication Systems for a Fourth Industrial Revolution". This event, the ninth in the series, has All India Council for Technical Education, India as the sponsor and IOP Publications as the Scopus Indexed publication partner.

Through this endeavor, we aim to provide an open platform for sharing of knowledge and enlightenment of participants to enable them to explore uncharted territories of future technologies. Having received competent research materials in the diverse domains pertaining to Data Mining and Computational Intelligence Techniques, Green Computing and Neural Networks, Advanced Engineering Applications, Information and Communication Technology and Theoretical Computer Science, the arena is set for an explosion of technical ideas and innovations. The Conference also features invited keynote addresses by accomplished academicians of international stature.

I extend whole-hearted thanks to all participants, the Management of Amal Jyothi College of Engineering, Kerala and members of the organizing team who have painstakingly undertaken the successful conduct of the event as a top priority as a relevant stake-holder.

Plenary Talk-1

DR. EVA Y. W. WONG, PFHEA
Director, Centre for Holistic Teaching and Learning
Principal Fellow, Higher Education Academy, UK
Hong Kong Baptist University

Deploying IT and eLearning to Assist Students Attain Attitudinal Outcomes – Experience from Two Successful Projects

The advances and proliferation of smart devices and seemingly unlimited internet access have facilitated the design of more interactive activities to engage students in learning. Information technology (IT) in education (eLearning) has thus been recognized as an effective means to help students acquire generic skills. However, young people today need more than just generic skills to face a global society that is marked by challenges and opportunities. While issues such as global warming, pollution, financial crises, natural disasters and pandemics etc.have become too complex and significant for any one individual to handle them on their own, IT has made collaboration much more feasible, enabling concerted efforts amongst collaborating with people around the world (usually of different cultures and disciplines) to manage and provide solutions. To use the unlimited resources which are readily available on the internet becomes very tempting when the students face the pressure of assignment deadlines and the demand for good grades. Most importantly, education must ensure that the graduates should have a high ethical standard and an intrinsic motivation to improve the welfare of mankind and to serve the contemporary societies of their times.

This talk will describe two collaborative projects that make use of IT to help students attain attitudinal outcomes: academic integrity, ethics and working online, in multicultural and multidisciplinary teams. The first project, named AIEAR project, makes use of the latest advances in augmented reality (AR), coupled with mobile technology, to bring scenarios of academic integrity and ethics (AIE) to real-life situations for students. The second project, (CCGame) deploys innovative and motivating technologies together with the challenge-based, gamified learning pedagogy to prepare students to work in multidisciplinary and multicultural online teams.

Plenary Talk-2

Dr. R. Rajesh
Head, Department of Computer Science
Central University of Kerala

Topic: Computational Intelligence

Discovery science and knowledge mining: Discovery science (also known as discovery-based science) is a scientific methodology which emphasizes analysis of large volumes of experimental data or text data with the goal of finding new patterns or correlations, leading to hypothesis formation and other scientific methodologies. Tools of interest include: Data Mining: looking for associations or relationships in operational or transactional data; Text Mining and Information Extraction: looking for concepts and their associations or relationships in natural language text; Structured, semi-structured and unstructured text mining; Text Summarization: extracting terms and phrases from large text document collections that summarize their content; Web mining: Web structure, content and usage mining; and, Ontology Learning from Text and Data bases.

Web intelligence and semantic web: Web intelligence is concerned with the application of AI to the next generation of web systems, services and resources. These include better search/retrieval algorithms, client side systems (e.g. more effective agents) and server side systems (e.g. effective ways to present material on web pages and throughout web sites, including adaptive websites and personalized interfaces).

Machine learning in knowledge-based systems: Knowledge-based systems aim to make expertise available for decision making, and information sharing, when and where needed. The next generation of such systems needs to tap into large domain-specific knowledge, which combine machine learning and structured background knowledge representation, such as ontology, and causal representations and constraint reasoning. Information sharing is concerned with creating collaborative knowledge environments for sharing and disseminating information. Learning is based on real-world data.

Plenary Talk-3

Dr. Anoop V. S.
Rajagiri College of Social Sciences
(Autonomous), Kochi, Kerala, India

Blockchain Demystified: An Introduction to Blockchain Technology, Potential Opportunities, and Research Dimensions

Blockchain, a distributed ledger management infrastructure where blocks of transactional data are hash chained for immutability to establish trust for enabling the digital currency Bitcoin, has recently emerged as a disruptive technology with many real-world applications demanding trusted data management. Such a Blockchain infrastructure on clusters of computers providing decentralized data management is now believed to have the capability to move the notion of trust from trusted institutional mechanisms to mathematically provable technology infrastructure. Formalizing and establishing the credibility of data in a multi-party collaborated environment is a highly relevant arena in any geography, and this is an area where Blockchain can disrupt businesses. Due to this disruptive nature, Blockchain technology is getting a lot of attention from industries and businesses which are vying each other to incorporate this immutable, shared, and tamper-proof ledger mechanism into their business models. Some of the Industry and business giants have already implemented this distributed ledger technology in their mainstream business modules to ensure the credibility of transactions for their stakeholders. It is evident that the enterprises who implemented or plan to implement Blockchain in their mainstream business process will reap more benefits than those who rely on traditional centralized databases. On analyzing the level of disruption caused by this mathematically verifiable technology infrastructure, we may be astounded to see that it has been implemented or showing high potential in areas such as Finance, Healthcare, Supply Chain Management, Identity Management, Banking, Governance, Education, Agriculture to name a few. This talk will help you understand the Blockchain technology in detail and also the trends, potential research opportunities and challenges that must be addressed to make a secure decentralized world.

Plenary Talk-4

Mr. Robinson Dsouza
Founder of CyberSapiens United LLP

Topic: Cyber Security

Coverage: Need or Cyber Security, Cyber Attacks, Vulnerabilities, Hackers, Hacking Groups, How Cyber Security Works, Security Controls, Principles of Cyber Security, Confidentiality, Integrity, Availability, Roles & Responsibilities

Computer security, cybersecurity or information technology security is the protection of computer systems and networks from the theft of or damage to their hardware, software, or electronic data, as well as from the disruption or misdirection of the services they provide. Cyber Security has become a very important need for the current Digital World. Cyber Attacks have become very common and companies, industries and countries are finding it very difficult to tackle the attacks and crimes. The coronavirus pandemic has caused a surge in cyberthreats and attacks, a lot of which have targeted companies whose employees must now access critical infrastructure, such as industrial control systems (ICS) and operational technology (OT) networks, from home. But that critical infrastructure, which keeps modern society going even during a pandemic, is seriously under- protected against cyberattacks. Thus, the demand for security professionals have also increased and it has become one of the emerging careers. Cybersecurity is no longer a technology-specific activity nor the responsibility of a single central function to identify and mitigate known and unknown issues proactively or reactively. It is a collective responsibility of all stakeholders and users with clear accountability and roles. This session would help the individuals to understand the concepts of cyber security not just from a career perspective but also from an overall view. Because security is everyone's concern and every user is required to know about it.

Mr. Vishnu Bose
Program Manager in IBM India pvt Ltd

Cloud Computing and Artificial Intelligence Overview and Opportunities:

In the past decade, information technology (IT) has embarked on the cloud computing paradigm. Although cloud computing is only a different way to deliver computer resources, rather than a new technology, it has sparked a revolution in the way organizations provide information and service. Originally IT was dominated by mainframe computing. This sturdy configuration eventually gave way to the client-server model. Contemporary IT is increasingly a function of mobile technology, pervasive or ubiquitous computing, and of course, cloud computing. But this revolution, like every revolution, contains components of the past from which it evolved. Thus, to put cloud computing in the proper context, keep in mind that in the DNA of cloud computing is essentially the creation of its predecessor systems. In the brave new world of cloud computing, there is room for innovative collaboration of cloud technology and for the proven utility of predecessor systems, such as the powerful mainframe. This veritable change in how we compute provides immense opportunities for IT personnel to take the reins of change and use them to their individual and institutional advantage.

Artificial Intelligence Overview and Opportunities:

AI as anything that makes machines act more intelligently like to think of AI as augmented intelligence. AI should not attempt to replace human experts, but rather extend human capabilities and accomplish tasks that neither humans nor machines could do on their own. Next decade is the era of AI. From your Home appliance to 5G mobile, it runs on AI. We cover the industrial opportunities on AI

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TRACK 1:

DATA MINING & COMPUTATIONAL INTELLIGENCE TECHNIQUES

ECG based Decision Support System for Clinical Management using Machine Learning Techniques

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Abstract: Heart disease prediction system using ECG is to predict heart disease using ECG signals. Heart is the next major organ comparing to brain, which has more priority in human body. Heart disease diagnosis is a complex task which requires much experience and knowledge. The huge amount of data generated for prediction of heart disease is too complex and voluminous to be processed by traditional methods. By using traditional methods doctors took lot of time to diagnosis the disease. So, an entropy-based feature selection technique is used with classification algorithms in order to reduce the search space. The proposed model was tested on the real time dataset of NRI Hospital medical data. Using this system it is easier to predict the disease. It will also helpful for the doctors to take quick decisions.

Keywords. ECG, prediction, classification algorithms, Machine Learning

An Evaluation of Deep Learning Approaches for Detection of Voice Disorders

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Abstract. The human voice production system is an intricate biological device capable of modulating pitch and loudness. The underlying internal and / or external factors often destroy the vocal folds and cause some changes in the sound. The consequences are reflected in the functioning and emotional state of the body .Therefore, it is essential to recognize the sound variations at an early stage and give the patient a chance to overcome any impact and improve their quality of life. In this line, the automatic detection of sound disorders using in-depth study methods plays an important role, as it has been proven to facilitate the process of understanding voice disorders. In recent years, many researchers have explored technologies for an automated system that can help clinics diagnose noise disorders early. In this paper, we present a survey of research activities conducted for the automatic detection of voice disorders.

Keywords: Voice disorder " Pathological voice " Deep learning " voice disorder detection - The Long Short-Term Memory (LSTM)

Answer Book Valuation Using Semantic Similarity

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Abstract.

Conventional examination systems are a tedious task for the universities and the faculties. It takes a lot of time and human effort for the valuation of the answer books, updation of the marks and the declaration of the results. Automation of descriptive answer book assessment would be useful for universities and academic institutions to simplify the valuation system to a large extend. It ensures a uniform valuation and also helps to publish the results without much delay after the examination. We design a system for automatic assessment of descriptive answer books of technical subjects. Semantic similarity is a metric used to assess the similarity between documents and it gives the degree of similarity as a numeric value. It can be used to value the students' answer books by checking the similarity with original answers given in the answer key and then award appropriate marks.

Keywords. Semantic Convolutional Neural Network, Recurrent Neural Networks, Connectionist Temporal Classification

Energy consumption monitoring in smart home system

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Abstract.

Energy Consumption especially electricity consumption is one of the serious problems that we are facing in today's world. There is a need for an efficient system to monitor this energy consumption. Internet of Things opens a way to solve these problems by interconnecting hardware, software and cloud. Therefore, an energy consumption monitoring system for home appliances has been developed which is used to calculate the energy consumption of the household and to keep the person informed about the consumption through an android app where he can view the units of electricity used and a prediction of the bill at the end of the month. The app can also be incorporated with the features of controlling the energy consumed by the appliances as desired by the user and the user will be notified through the app if the electricity consumption exceeds a threshold value that can be set by the user.

Keywords. Energy Consumption,Thingspeak cloud database ,Regression model

Enhancing the efficiency of continuous integration environment in DevOps

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Abstract.

Faster release of features to the production environment is the need of the hour of every IT organizations. This faster and continuous software delivery is made possible through DevOps. DevOps is a set of practices that bridges the gap between development team and operations team. The different aspects of DevOps came from agile methodology. Continuous integration is the paramount of DevOps life cycle. In a continuous integration development practice, the development code and the applications code are continuously integrated several times a day. Developers follow the practice of committing changes frequently into the version control system such as git. A change in the version control system triggers the continuous integration system such as Jenkins. This exploratory study presents the ways that support the developers during the build break in continuous integration environment and thereby improve the efficiency of continuous integration process. Our findings contribute that the selected list of plugins in the Jenkins support the developers during the build break, thus developers can come up with faster recovery of build failures which in turn increase the efficiency of continuous integration environment.

Keywords. DevOps, continuous integration, continuous testing, continuous delivery.

Theoretical and Empirical study of Support Vector Machine learning model on real-time data and implementation of model using python

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Abstract. The data is increasing rapidly and the complexity is increasing day by day reaching 59 zettabytes in 2020. This also supplies to new data analysis, data prediction and data classification tools. Therefore, the global data market demands better classification and analysis methods for prediction and decision making. At the same time all these computations should maintain high performance to produce faster result. In this paper we are analyzing the most popular supervised learning method support vector, its methodology, Support vector Classifier, Support vector Regression and the challenges and trends. The support Vector Machine can be applied in both classification and regression problems. We analyzed both classification and regression with some real word examples and performance is measured. The same support Vector Machine can be implemented with one of the popular programming language python with its library scikit. A case study of python on Support Vector Machine is done and performance analyzed. Finally, a high performance computing (HPC) model is suggested which is made completely in python and has same level of performance and scalability as MPI - Message Passing Interface in HPC.

Keywords. Support Vector Machine,HPC,MPI

Secure Analysis of disaster area using satellite imagery and deep learning

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Abstract. Deep learning is part of a broader family of machine learning methods based on learning data representations, as opposed to task-specific algorithms. Deep learning models are vaguely inspired by information processing and communication patterns in biological nervous systems but they are different from the structural and functional properties of biological brains and are incompatible with neuroscience evidence. During a disaster, it is necessary to ensure that containment and rescue operations are conducted as quickly as possible with a primary focus on affected areas as an improper organization might lead to wastage of resources such as money, materials, and time. To properly plan during disasters, satellite images of the affected location can be analyzed to identify the areas demanding immediate attention. A model can be designed using Convolutional Neural Networks (CNN) to help categorize the areas by the degree of destruction. To secure data fed into the model, a layer of security can be added between the input and output layers of the CNN. The model can be trained using old satellite images of the cities. New images fed into the model can be analyzed to obtain information on the level of devastation.

Keywords. Deep Learning,CNN

A Study On Augmented Reality And Privacy Concerns

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Abstract. It is biggest technology trends right now. Augmented Reality (AR), as per definition, collects and processes a lot of information about a user and his/her environment. This is not simple as displaying data but is technology in which components of the digital world blend into a person's perception of the real world. It is a way to highlight and implement digital 3D models.it also can be considered as the integration of physical world with digital world. Virtual reality is also a technology which is having resemblance to Augmented reality. The difference between them is that, The VR is completely immersive and puts a user into isolated reality while the AR is partly immersive in augmented reality the algorithm will make use of sensors and markers to locate the physical object. And determine location of simulated object. As this technology incorporate virtual objects into real environments it will pave the way to the real life interactions. AR is being used in industries like Education, medicine, retailing etc. But (how) do privacy risks influence consumers.

Keywords. Virtual reality,Augmented Reality

Review on Blockchain for Supply Chain Management

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Abstract: Blockchain technology, which is foundation of bitcoin, has been used in many fields with its rapid development resulting in the beginning of new technology. Supply chain data is not always visible, available or trusted. Supply chains contain complex networks of suppliers, manufacturers, distributors, retailers, auditors, and consumers. A blockchain's shared information technology infrastructure would modernize workflows for all parties, it does not matter the size of the business network. Additionally, a shared infrastructure would provide auditors with greater visibility into participants' activities along the block chain. Blockchain in Supply Chain Management enables easy execution of more secure and transparent tracking of all kinds of transactions pertaining to areas such as product traceability, supplier payments, logistic transaction details, contract bids, and execution. This paper is a survey on blockchain for supply chain management. This paper focuses on the benefits of applying blockchain for supply chain management. It also discusses the issues faced in supply chain management and existing work in the related area.

Keywords. Blockchain, Supply Chain Management, Security,

Effective Churn and Offer Prediction for Telecom using Multi-Level Boosted Ensemble

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Abstract. Churn prediction in telecom is of vital significance due to the dynamic and quickly evolving nature of the domain. Data imbalance, sparsity and data complexity serves as the major challenges in identifying churners. This work presents a multi-level boosted ensemble, MLBE, for effective prediction of churners. The model is composed of multiple boosted ensembles that operate on data bags containing subsets of the training data. This ensures effective handling of imbalance, and also handles the high complexities of the data. Offers are recommended based on the customer lifetime value, ensuring appropriate offers. Experiments were performed with UCI Churn data. Experiments indicate high performances, with churn detection rates of 0.9 Comparisons with existing models in literature shows that the MLBE model performs better compared to the other models, exhibiting the high performing nature of the model.

Keywords. Churn prediction; Ensemble; Boosting; Customer Lifetime Value; Offer Recommendation

Application for Predictive Recommendation and Visualization of Personal Expenses

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Abstract. Every day in our lives we tend to spend money on different kinds of things. A huge amount can be remembered and also helps in the final tallying of the expenses and income. But the smaller expenses go unattended and those small amounts eventually lead to a big amount of money being spent. As a result, A total comprehension of individual finances is getting progressively significant as the normal people's disposable income has diminished because of a changing financial atmosphere. The aim of this project is to make an application that will help the user keep a track of even the smallest of the smallest financial expenditure and income. The project also aims to remind the user of payment dues before the due date so the user need not worry about overdue. As it is important for the user to also see where his/her money is being spent excessively, the application will also help visualize the different areas of expenses in different forms of graphs and eventually suggest to the user which area of expense has to be reduced

Keywords. expense tracker, predicting expenses, visualizations, payment reminder, recommender system.

Machine Learning Techniques to Validate Authenticity of News

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Abstract. Misinformation isn't definitely new thing; it is way before the beginning of social media. From 14th century, it's been evolving but the term such as "fake news", "post truth" comes in picture during campaign of 2016 US presidential election. As social media is low cost, user friendly and quick sharing of information is possible on it, people use social media to get news instead of newspapers. With this merit, it is also having major disadvantage. If the news is false or misleading news with intention then it will have adverse consequence on civilization. Therefore, battling fake news is important and has now become developing area of research. Researchers are using techniques such as machine learning and deep learning to detect fake news. This paper presents a comprehensive overview of the fake news detection techniques and proposed methodology to improvise the result.

Keywords. Fake News, Machine Learning, Natural Language Processing, Social Media

Object Identification Model using Deep Reinforcement Machine Learning Concept for Image

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Abstract. This paper presents a model which gives the detailed process of object identification. We need to identify class and location of object in image for completing process of objet identification .proposed model works on the principal of reinforcement learning which takes action on the basis of rewards and experiences. Normally methods in literature uses sliding window which moves in same direction but proposed algorithm provides a variable mask which moves 360 degree for identifying object. Proposed mask acts as agent and focuses on proposed candidate reason this saves time and works in efficient manner for identification. Agent depends on transformation action and by applying top down reasoning it gives location of object. Classification is done using Softmax classification as we are having features of image by CNN. Reinforcement learning concept used for training of agent and pascal voc dataset used for testing. Analysis of only 10 to 25 regions is sufficient with proposed work to identify first instance of object. Experiment and performance evaluation shows the efficiency of proposed work

Keywords. Softmax classification,CNN.FAST RCNN,Reinforcement Learning

Heart Disease Prediction System Using Correlation Based Feature Selection with Multilayer Perceptron Approach.

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Abstract. Cardiac disease prediction helps physicians to make accurate recommendations on the treatment of the patients. The use of machine learning (ML) is one of the solution for recognising heart disease-related symptoms. The goal of this study is to suggest a methodology for identifying the most relevant features of cardiac disease characteristics by applying a feature selection technique. The data collected from the KAGGLE Machine Learning Repository for this study was, Framingham heart disease dataset (FHS). There are 16 attributes and a mark in the dataset that has been validated by four ML classifiers. There are two feature selection methods, Correlation Based Feature selection (CBFS) and Principle Component Analysis (PCA) was used for the comparison in this study. By using CBFS Method five highly correlated features are selected for this study, and by using PCA thirteen features are selected. The experimental result shows that Correlation Based Feature Selection with Multilayer perceptron (CBFS with MLP) obtained the highest accuracy for this dataset.

Keywords.CBFS, ML, MLP FHS, Correlation Based Feature Selection, Machine Learning, Multilayer Perceptron, Framingham heart disease datasets

A Novel approach for monitoring Retinopathy of Prematurity at home (in the Pandemic situation) using IOT and Deep Learning

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Abstract. Retinopathy of prematurity (ROP) is a vision-threatening condition associated with abnormal retinal vascular development in premature infants, when it happens to have excess reception of supplemental Oxygen, due to the use of breathing machines. So, the preterm infants with very low birth weight must be screened for ROP by frequent retinal examinations till the baby becomes 1 year old. This screening is done using a direct Ophthalmoscope, after dilating the pupil of the infant with medication. For premature infants, the dilation process is very painful. Weekly monitoring of the blood vessel growth is a tedious task for the preterm infant and parents, which includes hospital visit and public contact. In this paper, we are proposing a low-cost technology for replacing the painful direct Ophthalmoscope method, with a smartphone with a high-resolution view of the retina through an undilated pupil.

Keywords. ROP, Ophthalmoscope, Fundus Image, Smartphone, Deep Learning, Weka Tool, Iris Recognition

Study on Machine Learning Techniques for Video Anomaly Detection

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Abstract. The significance of security in everyday life is increasing as the crime percentage against ladies and kids increases. Violence during theft is also getting common. For ensuring the safety for life and property of common people, the security systems must be advanced. For providing advanced security in an organisation or public places, the people entering into the area should be recognised as a legitimate individual, and the behaviours of the individuals should be ordinary. A smart anomaly detection video surveillance system is required for efficient monitoring in an organisation to enforce an individual's security. The handling of data storage in video surveillance is another serious problem. This paper studies different smart video surveillance systems, which automatically detects anomaly using incremental knowledge learning process and intelligent processing. By utilising Machine Learning Techniques for automatic detection of anomalies, the security towards ordinary citizens and organisations can be enforced.

Keywords. anomaly detection, big data, machine learning, unsupervised learning, video surveillance

A comparative study on machine learning algorithms for employee attrition prediction

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Abstract. The fourth industrial revolution introduces a wide range of technologies for an effective functioning of organizations with optimal usage of all resources including human resource. Machine learning is one of the driving technologies implemented in fourth Industrial Revolution. Machine learning can be utilised for developing models that can predict the retention or attrition of employees. The study is using machine learning algorithms like classification and clustering for preparing the prediction models. A comparison of these algorithms is done based on its performance. The performance is measured using parameters like accuracy, prediction, recall, F Measure and time taken to build the model. The study is also finding the correlation between variables used in the work to the decision of staying back in the organization. The study is using the open source tool Weka and also python for doing the same.

Keywords. Attrition, Retention, Machine Learning, Classification, Clustering

A Hybrid Clustering Based Approach to Extract Drug Elements which Causes Side Effects

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Abstract. Prescription manifestations or drug reactions are an imperative and complex test. Medications are synthetic substances for treating illnesses, however, may actuate unfriendly responses or results. Medication revelation is tedious and works concentrated, and applicant drugs experience the ill effects of likely side. Heaps of affirmed drugs were removed from the market due to sudden results. Since drug results are an incredible worry of the general wellbeing, the recognizable proof of medication results assists with diminishing dangers in drug revelation. With the expansion of medication information, scientists gathered data about endorsed sedates, and recognize possible symptoms of new applicant drugs. Medication disappointments because of unexpected unfriendly impacts at clinical preliminaries present wellbeing hazards for the members and lead to generous monetary misfortunes. Side effect forecast calculations can possibly direct the medication configuration measure. Drug utilized in remedy relies upon the harmony between anticipated favorable circumstances and possible threats.

Keywords. Drug protein interactions, protein- protein interactions, hybrid clustering, structural similarity profiles

Intelligent Handwritten Character Recognition for Malayalam Scripts using Deep Learning Approach

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Abstract. Machine Learning, especially Deep Learning has been incorporated into Pattern Recognition and Image Processing for the Handwritten Character Recognition (HCR) research which is always a hot area of research. Foreign scripts are enriched with Handwritten Character Recognition (HCR) studies. But very less research can be seen for HCR in Indian scenario, especially in Malayalam script. This paper provides an overview of different feature extraction and classification techniques used for Handwritten Character Recognition of Malayalam Scripts using Deep Learning Approaches.

Keywords. Deep Learning, Handwritten Character Recognition, Gradient based features.

Empirical Statistical Analysis and Cluster Studies on Socioeconomic Status (SES) Dataset

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Abstract. Socio-economic status (SES) levels and conditions are extremely influential variables in the study of a particular area of society or any society. Social factors, for instance, the position of caste, religion, marital status, education levels, give good assessment results for us about a person's goals and the method of achieving their objectives. Generally economic status of any family is needy upon the social factors, for instance, the size of the family, educators in family and levels, and the level of the friendly environment in the family. SES with machine learning (ML) especially cluster analysis is important to identify important features or dimensions of the SES dataset, evaluate the rakings of dimensions and dimensional reductions. In this research, we collected 1742 samples (household information) as per socio-economic ratios and area (rural and urban) wise ratios with good questionnaires between 2018 and 2019 from Rajamahandravaram, East Godavari District, AP, India. We conduct the statistical analysis and cluster analysis for identifying the important factors of SES levels and their problem analysis. In cluster analysis, we apply k-means, hierarchal clustering (HC), and hierarchal with principal component analysis (PCA). The good projection results related to HC and PCA-HC specifies passements of SES class values.

Keywords. Socio Economic Status, clustering, Machine Learning, PCA, Hierarchal Clustering, k-Means

Analysis of distance measures in spatial trajectory data clustering

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Abstract. Tremendous growth of Location-based technologies resulted in the generation of a huge volume of spatial data, which needs to be analyzed to get potentially important patterns. The spatial patterns extracted can be used to design a better infrastructure ensuring reliable service coverage. Trajectory data is one variant of spatial data that are generated by moving objects travelling across. It is represented as a sequence of spatial coordinates (latitude, longitude) of a location. Trajectory clustering tries to group similar spatial data points to extract the most common movement behaviors. Trajectory data poses major challenges including uncertainty, sampling rate, representation, relationships, spatial autocorrelation, serialization, redundancy, and triviality, which makes it hard to apply traditional clustering algorithms over trajectory data. In this paper, K-Means and DBSCAN (Density-based spatial clustering of applications with noise) clustering algorithms are analyzed using different similarity measures like Euclidean, Hausdorff and Haversine distances with the help of index measures say Adjusted Rand Index (ARI) and Fowlkes-Mallows scores (FMS). Experiment is carried out over two different trajectory datasets.

Keywords. Clustering, trajectory data, distance measures, K-Means, DBSCAN, Haversine.

Securing IOT networks using Machine Learning Techniques

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Abstract.IOT stands for Internet of Things, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IOT transformed our life by providing us witha broad spectrum of services including smart cities, homes, cars,manufacturing, e-healthcare, smart control system, transportation, wearables,farming, and much more using the connected things. It brings ease to humanlives and at the same time all these devices are susceptible to different threats and security challenges. Machine Learning is a powerful tool in identifying the normal and abnormal behaviour of IOT components and devices. In this paper we discuss the research status of ML-based security schemes to provide reliable and secure IoT services.

Keywords. IOT,e-healthcare,Machine Learning

The need for CBIR hybrid methodologies with Deep learning

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Abstract. Image repositories and its allied applications are growing at a rapid rate, necessitating the need for efficient and effective tools to query databases. Content-based image retrieval (CBIR) techniques extract features directly from properties of images and use them to search image collections. Recent image retrieval techniques depend on multiple image features for efficient image retrieval. Images are sensibly retrieved based on their primitive features, shape, texture, colour and spatial information after investigating on a variety of images. The proliferation of image datasets coupled with the need for improved retrieval accuracy forces researchers to use a variety of semantic properties to group datasets. State-of-the-art algorithms and methods focus on finding significant matches within the images based on their intrinsic features. These methods enable efficient retrieval of images from the clusters formed of big data sets of digital images. Improvements in the traditional CBIR clustering methods are gaining much importance and significance in this era. New methodologies are adopted from different disciplines and the need of the hour is to explore novel methods and uncharted routes to improve the significance of the query results. An important aspect to be studied in this regard is the application of deep learning methods for improved end results. This paper presents a comprehensive review to showcase the need for such hybrid methods and direct researchers so that new developments can be explored at large.

Keywords. CBIR, deep learning, review, clustering, big data.

D-App for providing geriatric aid and to collect and handle periodic health survey data

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Abstract. The system aims to build a health survey platform designed to collect basic health information about residents of particular area. Block chain is used to store the collected information making sure only authenticated persons can have access to crucial information. This system also provides information about government health policies or schemes that the members of a family are eligible for and can have easy access to these facilities. This system can also be used as a platform to host health survey in case of an unexpected outbreak of a disease .Machine learning algorithms may be used predict health issues like the possible occurrence of epidemics etc. The system efficiently reduces the paperwork and inefficiency of traditional door to door health surveys by enabling each family to directly feed in their information. In case of backward areas or late entries a government official can be given authority to complete a survey within a limited period of time, this can be made secure by digital signatures and OTP generation.

Keywords. Block chain, Smart Contracts, Decision Trees, Government, Health information, Information security, K-nearest neighbors and Prediction algorithms

An Early Disease Prediction and Risk Analysis of Diabetic Mellitus using Electronic Medical Records

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Abstract. In the world today, the fourth leading disease is Diabetes that could lead to other serious complicating diseases. Diabetes is one of the most common chronic disease which can also be the cause of death in many cases. An efficient system for early disease prediction and risk analysis of diabetic mellitus is very much needed as it has the major adverse effects. The large amount of medical data is collected by healthcare industry in the form of Electronic Medical Records. The medical data comprise of some hidden patterns that are useful in making accurate decisions. However, Electronic Medical Records is used in accurately predicting multiple medical events for machine learning research. Therefore, processing and analysis of Electronic Medical Records is required to achieve accurate result on early prediction and risk analysis of diabetic mellitus disease using machine learning approach.

Keywords. Machine Learning, Data Mining, Diabetes, Electronic Medical Records.

Performance Analysis of Various Lightweight Cryptographic Techniques for IoT Based Health Care System.

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Abstract. In the presence of an adversary, cryptographic techniques are used to ensure secrecy and integrity of data. Conventional cryptographic techniques are mostly optimized for desktop and server environments. Resource limited devices such as sensors, embedded system, RFID devices etc., mostly demand for lightweight cryptographic techniques which use less memory, less computing resources and less power supply to provide security solutions. Unlike conventional cryptographic techniques the lightweight cryptography ,trade-offs implementation cost, data and privacy protection, performance and energy consumption on resource-limited devices. This paper deals with a comparative study of various symmetric lightweight encryption techniques. In this paper various available symmetric lightweight encryption techniques are implemented and the performances of each techniques are analysed and compared to recommend the best suitable technique for IoT based health care system.

Keywords. IoT, Cryptography, Lightweight Encryption Techniques

TRACK 2:

GREEN COMPUTING AND NEURAL NETWORKS

Innovative Approach to Harvest Energy from Traffic-induced Deformation

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Abstract. This article targets on the development of an efficient green energy source to power the wireless sensor nodes and small power electronic devices used in the road ways and traffic system. A simulation-based model of Piezo-electric Traffic Energy Harvesting (PTEH) System has been presented to advocate the idea of scavenging electric energy from vehicular vibrations. The viability of the system is investigated using the real time MATLAB & Simulink platform. The material property of the piezo-electric sensors and the electronic factors associated with the additional components used to achieve the maximum kinetic-energy utilization were taken into consideration for proposing the structural design of the system. In addition to the designing, this paper estimates the total energy generation using MATLAB & Simulink platform.

Keywords. Piezoelectric energy ,Piezo-stack

Energy Harvesting using Piezoelectric Transducers: A Review

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Abstract. For managing the soaring power demand, various types of Energy Harvesting Systems (EHS) have been developed. The energy harvesting from unutilized natural renewable sources using piezoelectric transducers is one of them. Day-byday different analytical models are being reported with different piezoelectric transducers to improve the energy efficiency and output power of the energy harvesting systems. The goal of this paper is to review the PEH (Piezo-electric Energy Harvesting) systems developed in last decade to harness energy required for small electronics. The Piezo-electric energy harvesting system works on the phenomena of direct piezo-electric effect; i.e. the transducer generates electric energy when it is exposed to mechanical stress/pressure/ vibration. The suitability of piezoelectric transducer for different applications depends upon the piezo-electric materials, their shapes and configurations. In this article the different piezoelectric materials and the transducer configurations have been discussed. The performance parameters of different piezo-electric energy harvesting systems have been analysed and the scope of improvement in the existing systems has been discussed in this manuscript. Index Terms — Energy demand, Renewable, Vibration, Piezoelectric transducer, Energy harvesting.

Keywords. Energy demand, Renewable, Vibration, Piezoelectric transducer, Energy harvesting.

Real time supervision of faults in converter of PV system

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Abstract. PV systems are remotely installed at unmanned places. They have sub-systems like converters, inverters etc. Electronic components in these circuits work under electrical stress conditions. PV systems occupy huge land area; therefore fault diagnosis is critical in these applications. In this work a system is presented for boost converter to monitor the component level faults in it. The system implemented at site monitors the electrical parameters across the devices, compares it with the known standard values and records it. Whenever any remote node accesses it, the formatted information is displayed to indicate the present situation at site. Due to this remote site supervision and parameter observation is possible.

Keywords. PV systems, Electrical parameters, Boost converter

Investigation of Rule Based Classifiers in Associative identification and Classification

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Abstract. Associative classification is a field of data mining which deals with both supervised and unsupervised learning. Besides association rule mining, it has an important integral part classification. There are various ways to classify association rules. We will focus on rule based classification. A rule based classifier works if(antecedent) then() consequent manner. In this paper, we will analyze some existed rule based classifiers and simulate these on different data sets on Weka to have a better insight.

Keywords. Data mining, classifier, rule based classifier, Weka, associative identification and classification.

Real Time Resource Scheduling Framework for Smart City

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Abstract. Smart City plays a vital role in social development. Real time scheduling of different tangible and intangible resource in distributed environment in smart is challenging problem. The different disaster management tasks smart city applications such as floods, earthquake, pandemic, fire, disaster relief, and control of hazardous area, major accidents, control of terrorism and other attacks require real time emergency resources scheduling. The existing techniques uses for smart city resource management are suffering from low resource utilization and high response time, migration and preemption overhead. This work paper presents cluster based real time resource scheduling framework for emergency situation in smart city. The edge computing resources are group into cluster. The proposed framework increases resources utilization and reduces response time, migration. Preemption overheads. The emergency tasks are scheduled to these computing cluster are allow to migrate within the cluster to ensure to reduce migration ,preemption overhead, response time and increase resource utilization and success rate.

Keywords. Cluster scheduling, Global scheduling, Resource scheduling

Reduction Of Peak To Average Power Ratio for Fbmc based using G-DFT

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Abstract. The Filter Bank multicarrier system (FBMC) is a multicarrier variation structure with undisturbed symmetrically, expanded frequency proficiency, and enhanced shape and low out-of-band obstruction characteristics in FBMC procedures. The primary disadvantage of the FBMC is a high PAPR of the transferred signals. To rectify that, various authors proposed plans to decrease PAPR for the FBMC structure. In this present paper, we utilized a proposed algorithm that is used in the G-DFT for additional peak to average power reduction with no extra difficulty overhead. From the outcome of the simulation that is run at various estimations of subcarriers, it is indicated that the G-DFT spreading with the modified technique (enhanced G-DFT) achieves an additional measure of peak to average power reduction with the other DFT spreading strategies. In this system, including the enhanced G-DFT demonstrate compelling PSD (power spectral densities) contrasted with various DFT-spreading structures.

Keywords. Generalized DFT, FBMC -Filter Bank multicarrier signals, PAPR reduction

Evaluation of Speckle Noise Reduction and Feature Enhancement in Prolapsed Mitral Valve Leaflet Echocardiography

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Abstract. Rheumatic heart disease has a substantial impact on morbidity and mortality for both men and women in developing countries. It is a complication of autoimmune phenomenon known as acute rheumatic fever in response to group A streptococcus bacteria. It often causes damage to valves and lacks its functionality. Initial manifestations of prolapsed valves are evident in echocardiography in the form of valve bulging, redundancy of leaflets, commissural fusion and restricted leaflet motion. The precise assessment of these features is very essential for a clinical diagnosis. However, these echocardiogram images are inevitably degraded by multiplicative noise known as speckle noise at the time of image acquisition and transmission. The speckle contamination often obscures fine morphological details and making it difficult to detect low contrast features. Hence despeckling is of vital importance for enhancing ultrasound image quality. In this paper, a comparative analysis of well established despeckling filters compiled for speckle suppression and feature enhancement has been performed. Since significant despeckling induced the blurred image, Contrast-Limited Adaptive Histogram Equalization (CLAHE) method is utilized for enhancing fine details, texture features and local contrast of the filtered image. In addition to this, the performance of these filters is validated using different quantitative metrics such as mean squared error (MSE), peak signal-to-noise ratio (PSNR), The Structural Similarity Index (SSIM), Universal Quality Index (UQI), Visual Information Fidelity (VIF), Noise Quality Measure (NQM). The experimental result shows that Fast Non-Local Means (FNLM) filter outperforms other state-of-art filtering techniques in the aspect of higher PSNR value and preserves structural similarity in terms of SSIM value near to unity. In conclusion, the preprocessing intends to suppress speckle noise while preserving the essential information and enhancing perceived visual quality that aids for further processing.

Keywords. Echocardiography, Speckle noise, Despeckling, FNLM filter, CLAHE, Quantitative metrics.

An Overview of Industrial Revolution and Technology of Industrial 4.0

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Abstract. The article presents a complete overview of revolutions in industrial history as well as the Technology of Industry 4.0 and related terms. Industry 4.0 refers to the means of automation and data exchange in manufacturing technologies including Cyber-Physical Systems, Internet of Things, Internet of Service, Big Data and Analytics, Augmented Reality, Autonomous Robots, Additive Manufacturing, Cloud Computing, as well as Simulation. It serves a role to help integrate and combine the intelligent machines, human actors, physical objects, manufacturing lines and processes across organizational stages to build new types of technical data, systematic and high agility value chains. This paper also discussed strengths, weaknesses, opportunities and threats of Industry 4.0.

Keywords. Industry 4.0, Revolution, Smart Factory, Smart Product, Technology

Energy Efficient Cluster Based Algorithm Technique for Wireless Sensor Networks

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Abstract. Wireless sensor network [WSN] energy efficiency is the most critical task of researchers. Power regulation is a very effective technique for minimizing interference in wireless sensor networks and energy consumption. Wireless sensor networks with several nodes linked to the network, including transmitting power to measure network output. The energy consumption is connected directly to the node size and weight. Secure data aggregation in wireless sensor networks is a highly challenging activity. In this research paper suggested stable aggregation of data using fuzzy logic, based on clustering techniques. The clustering method is done in a network. The distance power consumed and faith value are measured for each cluster. The stable data aggregation using fuzzy logic techniques is based on these parameters. The proposed research work would minimize energy consumption to increase the lifespan of the network in wireless sensor networks.

Keywords. Clustering, Energy Consumption, Packet Drop Ratio and Throughput

TRACK 3:

ADVANCE ENGINEERING APPLICATIONS

Analysis of image inpainting and object removal methodologies

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Abstract: Image inpainting is a process that tries to fill in missing parts of a degraded image or remove objects from an image, but maintain the realistic content in the image. Various methods can be employed to perform inpainting. Here three benchmark methods of which two are conventional and other GAN based are evaluated to check the effectives of the inpainting process, for different class of images. The visual quality evaluation as well as quantification parameter namely the SSIM score was computed. Based on the test score it was seen that the GAN based method was capable of providing visually good restored images with an average SSIM score of 0.9516, which is an indicator on the quality of the image. The GAN based methods can be further enhanced to provide more realistic images by incorporating functions to extract both local and global contextual content.

Keywords: Image Analysis,Image inpainting,GAN

A Review of distortion techniques on OFDM for PAPR reduction

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Abstract. OFDM is abbreviated as Orthogonal Frequency Division Multiplexing which is the key technology used in 4G wireless communication,digital television,power line networks,radio broadcasting etc.Multiple carriers are used for data transmission instead of a single carrier for long distance communication with high data rate and better spectral efficiency and no intersymbol interference.Inspite of its advantages the high Peak to Average Power Ratio restricts the wide applications of OFDM.This paper proposed a review of distortion techniques on OFDM systems and discussions with Iterative Clipping and Filtering for better PAPR reduction.

Keywords.OFDM,PAPR,ICF,CCDF

Design & Development of an Automated Snack Maker with CNN based Quality Monitoring

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Abstract. Fried snacks often require mass production. This paper discusses the automation of the cooking process of one such deep fried food item called Unniyappam. The south Indian fried sweet snack often requires mass production due to its traditional important. Our work involves the complete fabrication of a machine with quality assured possibility of producing this delicacy in a more efficient manner for distribution over a huge consumer. The process involves pouring the prepared batter into the mould which is immersed in boiling oil. Unniyappam is then fried according to the predefined cooking time and get removed from the die automatically. DC motors, valves, microcontroller and limit switches automates the whole process. This machine is also incorporated with temperature sensors and controllers for maintaining optimum temperature for frying. Additional functionalities may be added to this base model aiding for mass production. The quality of the unniyappam is monitored using image recognition concepts. In this study, we propose an efficient real time quality checking method based on a transfer learning approach by using pretrained Google Net convolutional neural networks (CNNs). The proposed Google Net CNNs were trained using 300 image samples of partially, perfectly and over cooked unniyappams. Using the experimental results of the identification, the cooking time is adjusted manually. This unexplored area of automating unniyappam making has opened the door to the world of largescale snack production.

Keywords. Automated cooking, food processing, unniyappam maker, snack maker, temperature,controlling, quality monitoring, deep CNN, machine learning, Google Net, detection, MATLAB

Assimilating Region of Interest for Fused Biometric Modalities through CIE L*a*b* Color Space 1

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Abstract. Idiosyncrasy in recent times has been a challenge that is not quite easily effectuated in many domains and work structures. Security compromises have led to immeasurable loss and altered the deportment of individuals. In order to counter such circumstances, biometric modality analysis and utilization stimulate an inimitable framework to enhancement of security mitigated impostures. Nonetheless, the existing indagation has always instituted the single biometric modality processing and evaluation. Although the previous work of pre-processing and post-processing for biometric modalities such as fingerprint, iris, gait, and other physiological and behavioral modalities have been considered through explicit algorithmic and computational processing, the rate of precision fallacy and contriving unique identification has been a lingering question. This paper focuses on augmenting the efficacy of identification through the fused biometric modalities of fingerprint and iris, along with unsheathing the region of interest (ROI) by designating color masks using the CIE L*a*b* color space and delta disparity computation. The histogram analysis is implemented to analyze the pixel intensity, and the pixel matched extraction is surface plotted using MATLAB.

Keywords. Biometric modalities, Fingerprint, Iris, Fusion, CIE L*a*b* color space, histogram analysis, ROI.

Linear Regression based Power Optimization of Wireless Sensor Network in Smart City

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Abstract. The modern smart cities are highly dependent on the performance of Internet of Things (IoT) based energy efficient sensor networks. Energy efficiency is a critical and indispensable issue for wireless sensor network (WSN). In the collection of sensor nodes, one node is selected to collect data and forward it to the base station. The modern base stations in smart cities are unmanned aerial vehicle (UAV) based. This paper presents a linear regression based model, where the initial residual energy and it corresponding transmission power is submitted to the proposed system, then it generates a prediction model, since transmission power depends on the residual energy of the sensor node. Based on this model the transmission power of sensor node can be calculated for data transmission as higher residual node is best suitable for data transmission to the base station. As presented in simulation result, the regression based model gives better performance for energy efficiency in WSN.

Keywords. Wireless Sensor Network, Smart City, Linear Regression, Transmission Power, Residual Energy

Research topic detection using a TV-tree based system

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Abstract. There is a tremendous growth in scientific research, thereby resulting in a huge number of research articles being published. Selecting the appropriate search keywords facilitates an efficient search from this pool of articles. Naive researchers find it difficult to choose such keywords and are unable to identify articles relevant to their topics of interest. This paper proposes a tree-based approach to detect research topics from a set of research articles. This enables naive researchers to choose appropriate keywords and to identify articles relevant to their topics of interest and in turn pick the trendiest topic for their research. The topic detection system proposed herein determines the top influential research topics in computational geometry, a branch of computer science that deals with study of algorithms. Experimental results reveal that the trending topics in the field of computational geometry are detected efficiently by means of the proposed topic detection system.

Keywords. Topic detection, Trend analysis, Information retrieval, knowledge discovery, TVtree, Computational Geometry

Diagnosis of Age Related Macular Degeneration by Curve Fitting RPE Layer

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Abstract. Optical Coherence Tomography (OCT) of the retina allow high resolution and noninvasive imaging for diagnosis of macular diseases such as Age Related Macular Degeneration (ARMD). The aim of this work is to suppress the speckle noise, segment the retinal pigment epithelium layer and identify the possibilities for diagnosis of ARMD by curve fitting method. Speckle pattern, which is multiplicative in nature, degrades the quality of OCT images. Bilateral and homomorphic-wavelet filters are adopted to minimize the speckle noise in OCT images. The performance of these filters is tested on a set of OCT images collected from an open source database. The experimental results prove that homomorphic-wavelet filter is better in reducing the speckle noise. Structural changes of retinal pigment epithelium layer, a key factor of ARMD, is identified by Graph-based method, which is utilized further in diagnosis of ARMD by curve fitting method. The sum of squares due to error (SSE) values of ARMD images are very higher compared to normal images, which can be used as a feature for diagnosis.

Keywords. OCT, Age Related Macular Degeneration, Homomorphic-wavelet Filer, Graphbased Segmentation, Curve Fitting.

Extraction of Data from DataFrame using Pandas, Connecting Messaging Gateway as an API and Implementing CFD Monitoring Devices.

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Abstract:CFD Monitoring is about maintenance of Consumer Feedback Data which is installed in public toilets. These devices used to send the feedback about toilet cleanliness is good, very good or bad. Monitoring of this devices is currently is manual tasks. Software maintenance may require when the new requirement is going emerge and in case of change of business environment. When the software is deployed in client project user finds bugs or he comes back with new requirement in that case error must be repaired or fixed or the performance or reliability may have to be improved. In all the cases monitoring software has to be done. Changes are implemented by modifying the existing component or by adding new component to system. Maintenance cost more than development cost in large scale company so replacing manual tasks by automation can cuts down maintenance costs [1]. Automation is used to replace manual tasks. Using python technology we can automate the manual tasks. Automation is automating creation of process without human intervention. It is all about replacing humans by machine. It saves the cost and time and relieves the employee from repetitive and replicated work he can further concentrate on other activities [2]. This leads to increase of productivity and efficiency also hence company gains reasonable and healthier profit. Some of people think that automation leads to unemployment, automation does not take the job of people it relieves human from doing hazardous tasks and most repetitive tasks.

Keywords: Messaging Gateway, DataFrame, Pandas, Web scrapping and Haversine

Green House Vegetables & Fruits Environment Monitoring System using Intel Galileo and Sensor Network Based on IOT

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Abstract. Greenhouse for vegetable & fruit Cultivation is being developed to achieve good crops with less labor cost. Greenhouse is made up of Green ethylene sheet having a rectangular shape to grow the crops in a controlled environment even in unfavourable conditions. With automated control system, main parameters like humidity and water level and temperature which are necessary for the vegetable plant growth, can be maintained and controlled automatically. The thickness of the sheet can be varied according to the requirement that depends on the crop type to be grown. This model has developed with various nodes which are deployed inside Greenhouse and are controlled by IOT technology.

Keywords. Agriculture, environment monitoring, Greenhouse, Internet of Things (IoT), Sensors, Zig Bee, Android mobile Application, Intel Galileo, PHP, Web server, Arduino Introduction

Data Comparison and Study of Behavioural Pattern to Reduce the Latency Problem in Mobile Applications and Operating System

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Abstract. The innovation of cell phones has changed our lifestyle, as the expansion of telephone applications reached its peak worldwide. This has extreme social implications. The phones have progressed towards becoming instruments for instant correspondence and increased cooperation. Also, it is being used innovatively for business purposes and among youngsters. Meanwhile, the number of sensors installed in telephones and the applications running on them has increased considerably. In this paper, a detailed comparative study and analysis are made on behavioral patterns to reduce the problem in latency in operating system and mobile applications.

Keywords. Latency, Behavioural Pattern, JIT

Bluetooth Controlled Smart Trashcan Using Arduino UNO

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Abstract:Proper trash management is important for building sustainable and livable cities, but it remains a challenge for many developing countries and cities. Due to the increase in population we have an increase in garbage around urban areas. This is very difficult for people to live in this crucial situation. The absence of efficient waste management has caused serious environmentalproblems and cost issues. So in this proposed paper we develop a bluetooth enabled smart trash can with the help of android mobile app. The main attraction of this planned system using Arduino UNO is that it is a flexible trashcan and it is very helpful for disabled or senior people.The user gives the instruction through the android mobile app (Bluetooth RC Controller), which is installed with the help of play store.This has accessibility with a bluetooth module that is connected with Arduino UNO. Based on the user command, the mobile app will perform the assignedtask. The BO motor and wheels move in different directions that are forward,backward, left and right with the help of user instruction.Under this pandemic situation without touching the lid ofthe trashcan we can transfer the trash. Here we use an ultrasonic sensor and servo motor which help us to open the lid automatically. Another benefit is that when the rubbish will reach maximum level, a notification will be sent to the user via GSM, and then the user can take further steps to empty the bin.So this is helpful without opening the lid to know the content.

Keywords. Arduino UNO,Bluetooth,RC Controller

ArCDEx Construction Solution

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Abstract. In previous existing construction solution service-related project were providing selective limited construction service and also contracts were handled and recorded manually. Some application was frequent delay of the large construction project has been a remarkable and it effects the implementation of the strategic planning. One of the major drawbacks was cash flow and financial difficulties faced by customer's, contractor's poor site management, inadequate contractor experience, shortage of site workers and ineffective planning and scheduling by contractors which made customer trust deficit in this sector. To overcome this ArCDEx made goal to ease out the business for our consumers to get the complete construction as a single package with effective costs. This project is to bring a professional service that uses specialized, project management planning, designing from its beginning to its end. It has a team of architects, structural engineers, landscape designers, consultant and construction related services. It also provides features and functionalities on managing construction works from inceptions to project close out with features to monitor the various stages including the procurement of design services and contractors, construction methods and managing the construction process.

Keywords. ArCDEx, Architecture Designs, Turnkey and Single Aggregator.

Reversible Image Processing Using 'magical Triangle'

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Abstract. The original image is converted in to a reversible matrix values by discovery the values of the pixels using payload technique. The payload is to calculate the pixels values on reversible data hiding, we converting the image pixels into a value. Generating the matrix form is converting an image using matrix algorithm. Data Embedding is used to converting the values in to a matrix pixels, if we give an input value then it form the matrix by using that input value. Thus, Combination of two results the reversible matrix form.

Key words. Data Embedded, Reversible Image Hiding, Data Hiding.

CICERONE- A Real Time Object Detection for Visually Impaired People

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Abstract. Our work provides a solution to people who are suffering from partial blindness due to diseases of the eye or due to accidents. Unlike people who are born blind, they depend a lot on other people for doing their day to day activities. Our project is a boon to such people as our end product; a smart walking stick detects the trained objects that are used daily by the person and intimates the person using audio messages. This project changes the visual world into an audio world by informing the visually impaired of the objects in their environment. These people can use this particular prototype for self -navigating their way. A YOLO (You look only once) algorithm is used in our project. Real-time objects in an image are detected with their names represented on a bounding box and these names are converted to speech signals. The conversion to audio signals is done by using an e-Speak tool which forms Googles Text to Speech (gTTS) system. The prototype consists of several modules. The Raspberry Pi camera module takes the image and transfers it to the Raspberry Pi desktop. Then, real-time object detection is carried out by using YOLO network. The detected image is converted to speech by using the gTTS module and the audio result is provided to the user through a headset. For achieving the required portability, the battery backup is being used.

Keywords. e-Speak, gTTS, Raspberry Pi, Self-navigation, Text to Speech (TTS), Visual impairment, YOLO

Dynamic Multi-agent Real Time Scheduling Framework for Production Management

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Abstract. Production scheduling is a complex problem. The problem becomes more complex in open, uncertain, dynamic environments and distributed productions. The existing static scheduling methods are not efficient to deal with this problem efficiently. This paper proposed multi agent based real time scheduling in production management to efficiently manage production. The proposed scheduling optimizes the performance of production management in dynamic uncertain environment. Dynamic multi agent based real time scheduling agent collect and analysis the production data in real time and ensure real time response to emergency events. Real time scheduling agents increase the resource utilization in production management by using real time feedback.

Keywords. Production management, Dynamic, Real time scheduling

Implementation of Multivariate Logistic Regression model for Cerebral Palsy Identification using prenatal, perinatal risk factors

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Abstract. Cerebral palsy (CP), a static, neuro and motor disorder caused by brain injury in the time period of prenatal, perinatal and postnatal, is the major developmental disability affecting children's function. CP is cannot be cured completely but quality of life can improve with the help of treatment such as surgery and therapy. Early identification is important to the CP children for starting the treatment. There are numerous Machine Learning (ML) algorithms used in health care for prediction and classification. One of the ML algorithms called Logistic Regression which is used for binary classification using univariate and multivariate. This study, is of interest to enable early identification of CP using prenatal and perinatal risk factors with help of Multivariate Logistic Regression.

Keywords. Cerebral palsy, Risk factors, Birth weight, Gestational age, Birth asphyxia.

One Hop Neighbor based Broadcast Method for ReactiveRouting in Mobile Ad-hoc Network

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Abstract. To overcome redundant issues of routing messages for the reactive routing protocolis become research challenge. In general, to discover route or path reactive routing protocolsbroadcast routing messages which may leads congestions and degrades battery powerunnecessary. Though, to resolve the challenges several efficient broadcast methods have beensuggested. Each method has its own procedure and results sort of advantage and disadvantages.The motive of the paper is to presents a method which is proposed to minimize redundant issueof routing messages resulted by broadcasting. Proposed method uses one hop neighbor'sknowledge to broadcast routing messages for the purpose of route discovery. Proposed methodexperimented through simulation software that named as NS-2. An experimental accomplishcertain factors like number of nodes, routing protocol, MAC protocol etc. Proposed methodevaluated on the basis of different criteria such as throughput, control overhead, routingefficiency and node remaining battery power.

Keywords. Adhoc metworks,MAC,Broadcast routing protocol

A Mechanism to Perceive and Tracing on Twitter

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Abstract. A breaking news occasion detector primarily based on the time collection of the wide variety of positive, negative and impartial tweets acquired from a sentiment analysis classifier is proposed. The detector collects real-time tweets associated with candidates and transforms them into phrase embedding's using the Fast Text algorithm. Using area adaptation, the sentiment evaluation classifier is trained based on a convolutional neural network (CNN) called TextCNN. The quantity of positive, terrible and impartial tweets in a time frame effects in a time-collection, which is monitored via an unsupervised time-series anomaly detector. The results display that the sentiment analysis classifier achieves an accuracy of 74% for the three classes, and the detector correctly detects enormous breaking news within the 2018 Brazilian presidential election.

Keywords. NLP, Twitter, Convolutional neural network, Embedding's, Event, Sentiment

Text detection and recognition in natural scene images and video: A survey and foundation for research

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Abstract. In recent years, user applications related to digital image processing have become more popular. It is all because of digital cameras embedded in consumer products such as mobile phones, tablets, PCs and many other electronic gadgets. With the rapid increase of multimedia data, textual information in image has become a very important source of information. So detecting and recognizing the text from scene images deserve greater attention. Accurate detection and recognition of the text is a challenging task, because text in such images may have arbitrary orientation, variation in size, shape, background noise and illumination. A large number of methods have been proposed to solve the above discussed issues. This paper provides an in-depth survey of all reported methods and evaluation metrics in the literature about detection and recognition of the text in natural scene images and video and also serves as a foundation for research.

Keywords. Text localization, Text detection, Text recognition, Scene images.

DoS Attack Prevention using CPHS and SHCS Algorithms

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Abstract. In the present world, transmission of data through wireless networks is an upcoming trend. Since wireless networks are prone to intended intrusion attacks, the transmission leads to congestion in the network. The familiar attack that is faced during the transmission of data is Denial-of-Service (DoS) attack. This kind of attack is intended to render a machine or resource in the network unavailable to the target users to momentarily or indefinitely disrupt or suspend services of a host that is connected to the Internet. Typically, the external threat model addresses jamming. Yet, opponents who possess the network secrets and are aware of the protocols can deliver efficient and guaranted to. In this paper, we propose to implement a Cryptographic Puzzle Hiding Scheme (CPHS) and Strong Hiding Commitment Scheme (SHCS) to prevent DoS attacks.

Keywords. Cryptographic Puzzle Hiding Scheme (CPHS), Strong Hiding Commitment Scheme (SHCS), DoS Attack.

A review of high utility itemset mining for transactional database

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Abstract. High utility itemset mining (HUIM) is an extension of frequent itemset mining (FIM). Both of them are techniques to find interesting patterns from the database. The interesting patterns found by FIM is based on frequently appeared items. It only considers presence or absence of items in database and ignores the utility of the items. Whereas the patterns will be more meaningful for the user if the utility is considered. The utility can be quantity, profit, cost, risk or other factors based on user interest. HUIM is another approach to find interesting patterns by considering utility of items. It uses minimum utility threshold to determine whether an itemset is high utility itemset (HUI) or not. There are several challenges to implement utility from traditional pattern mining to HUIM. Lately, there are many research that proposed different algorithms to solve these issues. This paper tried to review some algorithms in this area of study. The results can be used as a consideration of further research.

Keywords. Data mining,HUIM, HMiner, ULB-Miner, SPHUI-Miner

Development of a transformer winding machine for laboratory work

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Abstract. This paper describes the work of design and development of a transformer winding machine which is used for laboratory purpose. In this two DC motors and one stepper motor are used. The transformer core gets rotated using one DC motor and another DC motor holds the bobbin surrounded by copper wire of suitable gauge. The stepper motor pushes moving head after every one rotation to fit the copper winding one after another. For smooth and correct windings, proper synchronization is maintained between the movements of DC motors and stepper motor. Focus is given on good accuracy and optimized design.

Keywords: Transformer,Arduino, Winding machine

Development of virtual model for emotional sustainability for psychological support

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Abstract. Presently the whole world is passing through the phase of uncertainty due to COVID 19 pandemic. Everyone is focusing on survival and there is a feeling of insecurity. In this pandemic, many families suffered sudden shock due to loss of their family members or close friends, relatives. Family members find it difficult to survive emotionally as they have lost the pillar. In this context there is a need for designing a model for sustainability of ethics, virtues and family values because in society; ethics, values and culture are passed on from one generation to next i.e. sustainability. The model described aims at virtual support system by sharing the thoughts, giving appreciations, giving motivational thoughts at different situations. These messages will be stored digitally and will be shared as per need. The process of model is described with the block diagram. It will also share expectations from the family and extend the virtual support in difficult situations. Support from the model will help the members to work efficiently and making physical, cognitive, psycho motive and emotional processes in everyday life easy. The model can be used for doctors also if need arises. But negative thought sharing, legal aspects need to be studied further. At this situation this digital model will be able to create sustainable virtual reservoir of emotions of lives, family culture, and individual behavior resulting in positivity in the society.

Keywords. Emotional sustainability, Psychological support, virtual model, family support, covid 19

Performance Analysis of Circular Shape Microstrip Antenna for Wireless Communication System

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Abstract. In this paper proposes a broadband circular strip antenna based on numerical techniques. For the operating frequencies, a circular patch antenna is installed on FR-4 substrate material 4.2. The proposed antenna uses the finite element method to design an operating frequency from 2 GHz to 10 GHz. Substrate height is 1.6 mm. The circular patch has a circumference of 8.82 mm. The antenna displays good output below -16dB is the return loss value and the antenna gain is obtained in the range from 2.4dBi to 10.02dBi. The proposed circular patch antenna is designed and analysed the various parameters like VSWR, Gain, Return Loss, Directivity and Radiation pattern.

Keywords. Circular Patch Antenna, Gain, VSWR, Directivity, Return Loss and Transient Mode

Segmentational Color Map Analysis to Identify Retinal Detachment

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Abstract. The recent perilous times entails the importance of good health for humans. This can be pertaining the maintenance of good health in various organs of the human body. With the increase of digital platforms, and the necessity to stay longer hours with gadgets and electronic devices, the human eye takes a toll in terms of absorbing radiations that maybe harmful. An imperative check of the eye is essential from time to time, as the luminous membrane that aids in vision needs to hold firm to the various components within itself. Although there are various treatments associated with the detection of eye detriments, several gremlins tend to loom at large. These eye diseases can arise from numerous reasons ranging from genetic disorders to accidents and vision loss due to stimulated injuries, infections and dysfunctional development of tissues/cells/nerves within the eye. Retinal detachment (RD) is one of the profound problems that persist amongst many individuals scaling over a diverse range of ages. The risk in relevance to untreated detachment of the eye leads to purblind and sometimes complete loss of vision. The previous paper concerning retinal detachment of human eye has focused on various algorithmic and post-processing approaches, but failed to identify the origination and symptoms that could aid in meticulous diagnosis. The indagation in this paper pivots on the unsheathing of attributes that explicates the disassociation of the retina from the underlying layers of the eye using the fundus image with cost-effectiveness and swifter analysis. An important characteristic that is emphasized in this study is the segmentation of eye floaters in the vitreous fluid of the eye. These eye floaters are color mapped to identify the presence of detached tissues in the eye. The histogram analysis using the grayscale thresholding value further aids in providing a detailed distinction of the normal eye from the detached eye. The simulations are carried out in MATLAB, and the results have been obtained successfully.

Keywords. Color-map segmentation, Eye detriments, Eye floaters, Fundus Image, Histogram analysis, Retinal Detachment, Vitreous fluid, MATLAB.

Extraction of Data from DataFrame using Pandas, Connecting Messaging Gateway as an API and Implementing CFD Monitoring Devices.

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Abstract:

CFD Monitoring is about maintenance of Consumer Feedback Data which is installed in public toilets. These devices used to send the feedback about toilet cleanliness is good, very good or bad. Monitoring of this devices is currently is manual tasks.

Software maintenance may require when the new requirement is going emerge and in case of change of business environment. When the software is deployed in client project user finds bugs or he comes back with new requirement in that case error must be repaired or fixed or the performance or reliability may have to be improved. In all the cases monitoring software has to be done. Changes are implemented by modifying the existing component or by adding new component to system. Maintenance cost more than development cost in large scale company so replacing manual tasks by automation can cuts down maintenance costs [1].

Automation is used to replace manual tasks. Using python technology we can automate the manual tasks. Automation is automating creation of process without human intervention. It is all about replacing humans by machine. It saves the cost and time and relieves the employee from repetitive and replicated work he can further concentrate on other activities [2]. This leads to increase of productivity and efficiency also hence company gains reasonable and healthier profit. Some of people think that automation leads to unemployment, automation does not take the job of people it relieves human from doing hazardous tasks and most repetitive tasks.

Keywords: Messaging Gateway, DataFrame, Pandas, Web scrapping and Haversine.

A robust approach for people counting in dense crowd images using deep neural networks

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Abstract. People counting in dense crowd images with deep neural networks are proved to be effective. The models like RCNN are able to predict the crowd count by head detection using the CNN and selective search algorithm, but these approaches are very slow, as they involve computing convolutional operation for 2k regional proposal, involving no shared computations, besides the selective search algorithm itself is slow. In this approach a Faster R-CNN for head detection which uses a Regional Proposal Network (RPN) has been used. The region proposal network is a Fully Convolutional Neural Networks that generates region proposals, these regional proposal were fed in to RoI pooling layer and subsequently classified and localized, Thus Faster- RCNN reduces computation cost of convolutional operations by passing a image only once, sharing the convolutional operations and also using RPN for regional Proposals. Using the Faster R-CNN MAE and MSE are reduced compared R-CNN.

Keywords: RCNN, Regional Proposal Network, MAE and MSE

Robust Segmentation and Classification of Moving Objects from Surveillance Video

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Abstract.Object segmentation and classification in the video sequence is a classical and critical problem that is constantly addressed due to vast real-time applications such as autonomous vehicles, smart surveillance, etc. Segmentation and classification of moving objects in video sequences captured from real-time non-constraint sequences is a challenging task. This paper presents a moving object segmentation and classification method for video sequences captured in a real-time environment. The key contributions of the paper include a method to detect and segment motion regions by applying the non-parametric Kolmogorov–Smirnov statistical test in the Spatio-temporal domain and a probabilistic neural network-based classification method to classify the moving objects into various classes. Promising results are obtained by experimentation using benchmark IEEE PETS and IEEE Change Detection datasets. Further, a comparative analysis has been made to corroborate the efficacy of the proposed method.

Keywords. Moving object segmentation; Video surveillance; Moving object classification, Spatio-temporal; Kolmogorov–Smirnov test; PNN classifier;

Analysis of android malicious software detection techniques and tools

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Abstract. The custom of Smartphone is expanding the prevalence of Android is additionally expanded very fast. At present Android offers a cumbersome figure of uses in liberated from cost to be downloaded and accessed.The private and classified data put away in Android phones are more vulnerable to malware. Here the investigations of various types of malware and their identification methods with advantages and disadvantages and their possibility scope. To discriminate malware from a great many Android applications muddled static and dynamic investigation apparatuses to consequently distinguish and characterize pernicious applications. It is thusly imperative to imagine significant methods to look at and distinguish these dangers. This article presents an extensive stage on driving Android malware examination and disclosure techniques, and their sufficiency against creating malware. The danger introduced by convenient malware convinces the progression of powerful and exact assessment strategies. The system can be improved to redesign security and exactness later.

Keywords. Android, Mobile malware detection, Dynamic code loading, Static analysis, Dynamic analysis.

Performance analysis of Word Embeddings for Cyberbullying Detection

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Abstract. Cyberbullying activities are increasing day by day with the increase of Social Media Platforms such as Facebook, Twitter, Instagram etc. Bullies take the advantage of these large online connected platforms due to which it became as a big challenging task in Natural Language Processing (NLP). In this paper, we compare the performance of various word embedding methods from basic word embedding methods to recent advanced language models such as RoBERTa, XLNET, ALBERT, etc. for cyberbullying detection. We used LightGBM and Logistic regression classifiers for the classification of bullying and non-bullying tweets. Among all the models, RoBERTa is outperformed as compared to state-of-the-art models.

Keywords. cyberbullying, word embeddings, natural language processing, machine learning.

Optimization of Process Parameters by Hybrid Taguchi-Grey Relational Analysis for Thermal Behaviours of Lubricating Oil of Worm Gearbox

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Abstract. In this research work, the major focus is given on thermal behaviours of lubricating oil of worm gearbox. In worm gearbox due to sliding motion between teeth's of worm and worm wheel cause friction energy loss. The friction energy loss is converted into heat energy and that heat energy is dissipated into lubricating oil of worm gearbox. The performance of lubricating oil is decreasing due to an increase in the temperature which causes decreases in the overall performance of gearbox. To observe thermal behaviour of lubricating oil of worm gearbox Lubricant Heating Time (time required to raise the temperature of the oil from 35°C to 50°C) and the Viscosity of oil (at 50°C) is taken as response parameters while Load on the worm(L), Volume of oil(V) and Type of oil(T) are taken as process parameters. Every process parameter is varied at three different levels. Taguchi optimization technique (L9) is used for the optimization of experiments for this Minitab19 software is used. Grey Relational Analysis(GRA) is used to find optimum levels of process parameters. The optimum levels of process parameters for maximum Lubricant Heating Time and maximum Viscosity are L1V2T2 i.e. the lowest level of Load on the worm, intermediate level of Volume of oil and Type of oil B. ANOVA analysis carried out to determine the relative contribution of process parameters on Lubricant Heating Time. ANOVA results show that Type of oil is the maximum influence parameter (98.26%) followed by Load on the worm (0.99%) and Volume of oil (0.72%) on Lubricant Heating Time.

Keywords. Tribology, Lubricating oil, Thermal behaviour, Worm Gearbox, Grey Relational Analysis, Taguchi Method

Implementation of Fuzzy Logic In Identification Of Calcification In Mammogram Images

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Abstract. Mammogram is specialized medical imaging to find the presence of Microcalcification in the women's breast. Microcalcification is an initial form of breast cancer. A mammogram image helps the doctor to understand the approximate amount of calcifications idetifid in the breast. Many analytical methods have been proposed so far to identify the extent of MC in the mammogram image. Those analytical methods can help in Computer Aided Detection (CAD) of MC. To encircle the Microcalcification locations many Commercial software's have been developed. The proposed system uses Fuzzy logic for segmentation, Gray Level Co-Occurrence Matrix is used to extract features based on texture for identifying MC from the mammogram images. Comparison of ground truth image with the extracted features is done to find the segmentation Accuracy.

Keywords. Fuzzy logic, Gray Level Co-Occurrence Matrix, Mammography, Segmentation Accuracy.

Data Security at Cloud End Using DNA based Symmetric-Dynamic- Encryption

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Abstract. Cloud computing is one of the ruling technologies of 21st century and is being adopted in to the mainstream due to the ever increasing number of devices that access internet. The wide acceptability of cloud is owing to the high availability, on-demand services, pooled resources and easy maintenance. As the cloud usage increases day by day, the threat of cloud data security is also growing exponentially. The secure storage of data is a main concern as the major part of data produced daily is stored in cloud environment. Even the data transferred over the internet need to be highly secured. Cryptography is one of the main technique to ensure data integrity and confidentiality. This paper presents a simple and secure cryptosystem for user authentication while accessing file. Second algorithm is for encrypting the data at cloud end using the concept of DNA sequences. The data is first converted to octal system and then to binary. Then the concepts of DNA sequences is applied in this algorithm to make the data invisible. This algorithm is an improved version of DNA based insertion algorithm by using reversing technique instead of insertion

Keywords. Terms Cloud data Security, DNA based encryption

TRACK 4:

ICT (INFORMATION AND COMMUNICATION TECHNOLOGY)

A Security Management Model for Cloud Environment

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Abstract. Security is the most important factor in cloud computing for ensuring client data is placed on secure mode in the cloud. For any organization, Data is very valuable assets but as number of users and quantity of data is increasing day by day, which cause the need of data security on cloud. For cloud computing there should be various security and privacy measures like identity management, physical personal security, availability, application processing authentication, atomic transaction etc. Security is mostly broken when any one doesn't follow certain security measure or not being attentive for threat and vulnerabilities. Dealing with "One Cloud" providers is predicted to become minor popular with customers due to risks of service availability failure and the possibility of malicious insiders in the one cloud. In this research paper we have also dealing with a security key management model for cloud environment or cloud of cloud.

Keywords. Cloud Computing, Security Model, Data Security, Cloud Environment

An Intuitive Remote Monitoring Framework for Water Quality in Fish Pond using Cloud Computing

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Abstract. Accuracy in prediction of water quality is a recent research domain gaining popularity in smart aquaculture. In aquaculture, the modifications in water quality parameters possess nonlinearity, dynamicity, unstableness and complexity due to the open environment with its surroundings. Conventional prediction methods have several disadvantages like poor generalization, lower accuracy and high time complexity. By considering these issues, a Novel water quality prediction method interfaced with (IoT)Internet of Things termed as Low Cost Real Time Monitoring System (LCRTMS) is proposed to predict water temperature, pH, DO, and Ammonia. Multi-sensors and Blynk private cloud integrated framework are used for collecting data in real-time and enhancing the remote monitoring capabilities. Experimental results indicate that the accuracy in predicting temperature, DO, pH and ammonia can attain 98.56% in 0.257 seconds and 98.97% in 0.301seconds in the shortterm prediction.

Keywords. Aquaculture, water quality parameters, IoT, LCRTMS, Bylnk, remote monitoring

Analysis of Security Parameters and Network Infrastructure on Cloud

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Abstract. This paper pertains to an analytical approach towards establishing standards for network performance on the cloud. Cloud being the most promising domain, is yet hindered by the lack of standardization. To resolve this issue we propose a methodology suitable for all essential protocols in contrasting network architectures[1]. In extension to this, security breaches also severe the threat to cloud data and its privacy. To bridge the two imperative aspects of a cloud service, we intend to deploy a deep learning classification model on Google collab, acting as an interface between the cloud database and client-server. Essential parameters including throughput(X), average delay(æ), loss function(l) and accuracy. We extend to present our results as the optimized cloud standards.

Keywords. Deep Learning, Security parameters , Network performance

A Task Scheduling and Workload Forecasting Approach for Cloud Environments

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Abstract. With increasing demands for data storage, processing and advanced computing, cloud computing has become almost indispensable in different domains of engineering and technology. However, cloud based platforms are resource constrained and need to distribute the tasks in such a way that the workload is balanced. This becomes more streamlined if the estimate for cloud workload are available beforehand. Hence task scheduling and workload forecasting are non-trivial tasks which need to be executed meticulously. In this paper, a heuristic approach for task scheduling has been proposed along with a machine learning based approach for workload forecasting. The performance of the task scheduling approach has been evaluated based on the response time and CPU utilization. The performance of the workload forecasting approach has been evaluated based on the regression, mean absolute percentage error, mean square error and number of iterations for training.

Keywords. Cloud,Machine learning,CPU

Enhancing the load balancing efficiency in Cloud Computing environment using Virtual Machine Migration

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Abstract. Load balancing for cloud computing is very essential and fascinating research area. It is a substantial area which guarantees that all devices and processors connected to the cloud will perform equal amount of work in equal time. The growing demands for the storage and access of applications over the cloud emphasize cloud virtualizations. Load balancing algorithms in cloud computing are evaluated using several parameters such as resource utilization, throughput, performance, scalability, response time and fault tolerance. Based on these parameters a load balancing algorithm achieve the goal for higher user satisfaction. It also guarantees the maximum usage of available resources along with rational computing resource allocation. Appropriate load balancing impacts the working of cloud. The main characteristic of cloud is the usage of virtualization. Virtualization in cloud can be achieved by plentiful virtual machines processing parallelly. The competence of virtual machines can degrade if the workload does not get equally distributed to machines. Virtual Machine Migration can achieve load balancing efficiently by migrating the task from overloaded virtual machine to underloaded virtual machine. Therefore, a substantial load balancing technique is required to compute the working of cloud resources in terms of efficiency. A bio-inspired load balancing algorithm has been proposed in this paper for Live Virtual Machine Migration to accomplish better QoS for end users. The foremost aim is to increase the performance of virtualization that has been evaluated based on total migration time.

Keywords. Load balancing, Cloud Computing. QoS

TRACK 5:

THEORETICAL COMPUTER SCIENCE

Soft morphological filtering using hypergraphs

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Abstract. A new framework of soft mathematical morphology on hypergraph spaces is studied. Application in image processing for filtering objects defined in hypergraph spaces are illustrated using several soft morphological operators- openings, closings, granulometries and ASF acting (a) on the subset of vertex and hyperedge set of a hypergraph and (b) on the subhypergraphs of a hypergraph.

Keywords. Morphological filters,Hypergraphs.

Review of an Intelligent Approach for Ensuring Linear Time Parsing

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Abstract. Bryan Ford presented Parsing Expression Grammars (PEGs) as an alternative to specify rules for programming language, along with a Packrat parser, based on an idea of memoization. The idea proposed by B. Ford guarantees parsing of grammar written using PEGs in linear time in spite of backtracking. The primary aim of the paper is to highlight the details of PEGs followed by various challenges existing for a better understanding of the readers. From the entire overview presented, it has been observed that PEGs address the issue of undesired ambiguity in grammar for computer-oriented programming language, by not allowing any ambiguity in rules itself at the first place. However, the guarantee of linear time execution comes with a cost of large heap consumption, making it infeasible to implement for large inputs. Optimizing the resources required for memoization, may allow us to utilize the benefits offered by PEGs.

Keywords. Parsing, Packrat Parsing, Parsing Expression Grammars, PEGs, Memoization. Liner time Parsing

Constructive Characterization of Graphs Using Distance DegreeSequence

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Abstract. The distance d(u, v) from a vertex u of graph G to a vertex v is the length of a shortest u to v path.The degree of the vertex u is the number of vertices at distance one. The degree sequence ofgraph G is the enumeration or listing of degrees of vertices of G arranged in non decreasing order.Thedistance degree sequence of a vertex is a generalization of its degree sequence. The distancedegree sequence (dds) of a vertex v in a graph G is a list of the number of vertices at distance 1,2, …e(v) in that **order**, where e(v) denotes the eccentricity of v in G: Thus thesequence{5ØQÜi0, 5ØQÜi1, 5ØQÜi2, … 5ØQÜij , … } is the distance degree sequence of a vertex vi in G where dijdenotes the number of vertices at distance j from vi. In this paper we have considered a distancedegree sequence and proved that there exists a graph that realizes the distance degree sequence.Also for various different distance degree sequence, correspondingly there exists different graphsrealizing the sequences. The same is explained using algorithm.

Keywords. Distance degree sequence, n – sun graph, n – partial sun graph.

Lucky and Proper Lucky Labeling of Quadrilateral Snake Graph

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Abstract. The labeling is said to be lucky labeling of the graph if the vertices of the graph are labeled by natural number with satisfying the condition that sum of labels over the adjacent of the vertices in the graph are not equal and if vertices are isolated vertex then the sum of the vertex is zero. The least natural number which labelled the graph is the lucky number. The Lucky Number of graph5Ø:Ü is denoted by 5Øß(5Ø:Ü). The labeling defined as proper labeling if the vertices of the graph are labeled by natural number with fulfilling the condition that label of adjacent vertices is not the same. The labeling is defined as proper lucky labeling if labeling is proper and also lucky. The proper lucky number of graph5Ø:Ü is denoted by 5Øß5Ø]Ü (5Ø:Ü). Here we obtain a lucky number and proper lucky number for family of quadrilateral snake graph such as quadrilateral snake graph, double quadrilateral snake graph, alternate quadrilateral snake graph and double alternate quadrilateral snake graph.

Key words. Lucky Labeling, Proper Lucky Labeling, Quadrilateral Snake Graph, Double Quadrilateral Snake Graph, Alternate Quadrilateral Snake Graph, Double Alternate Quadrilateral Snake Graph