



ICRDSET '21

Proceedings of the
International Conference
on
Research and Development in
Science, Engineering and Technology

organized by
St. Anne's
College of Engineering and Technology

in association with



INSTITUTION'S
INNOVATION
COUNCIL
(Ministry of Education Initiative)

Proceedings of
International Conference on Research and Development
in Science, Engineering and Technology

ICRDSET ‘21

05th March 2021

Organised by



St. Anne’s College of Engineering and Technology
Panruti, Cuddalore District – 607106.
Tamilnadu, India.

PREFACE

Globalisation, privatisation and digitalization today have dramatically reshaped the education system in India and have created tremendous opportunities for internationalisation, especially transnational or cross-border education. Various educational institutions have partnered with foreign institutions to provide best form of education to the students. However, many challenges and obstacles are being faced in the strategic planning and the mechanics of bringing internationalization of the education system into action. We wish to discuss and deliberate on the dynamics of Internationalisation of Higher Education in the country and across borders.

St. Anne's College of Engineering and Technology feels proud in its consistent progress to introduce the First international Conference on Research and Development in Science, Engineering and Technology (ICRDSET '21) on 5th March, 2021. ICRDSET '21 aims to bring together leading academic scientists, researchers and research scholars to share and exchange their experiences and research results on various aspects of Science, Engineering and Technology. It also provides an interdisciplinary platform for policy makers, top managers, researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns as well as practical challenges encountered and the solutions adopted in the fields of Science, Engineering and Technology. ICRDSET '21 assures to be both informative and stimulating with a wonderful array of keynote and contributions of eminent speakers from all over the world.

This conference is jointly organized by the Departments of Mechanical Engineering, Electrical and Electronics Engineering, Electronics and Communication Engineering, Computer Science and Engineering and Science and Humanities in association with Institution's Innovation Council (IIC), Indian Society for Technical Education (ISTE).

The proceedings of the conference are published with ISSN. It is believed that the research papers included in these proceedings will create a solid background for useful discussions during the conference and for further research. It is also hoped that these proceedings will provide valuable reference material and a source of information on academic achievements and current debate in Engineering and Technology education. After peer review, the editorial board selected 162 papers from the 200 papers submitted. The selected papers covered a wide range of topics: Advance Trends in Intelligent Materials, Recent Methods in Manufacturing, AI and Deep Learning, cyber security, IoT and Networking, 5G wireless Communication, Smart agriculture/health sector, Smart Grid technology, Renewable energy Engineering, New functional materials and Recent Advancements in Applied Mathematics.

All the presentations were much impressive with high level of professionalism, and in many cases original ideas and activities have been proposed and accomplished in various respect. Efforts taken by peer reviewers contributed to improve the quality of papers through constructive and critical comments; improvements and corrections to the authors are gratefully appreciated. We are very grateful to the International/National advisory committee, Session Chairs who selflessly contributed to the success of the conference. The organizing committee likes to congratulate all the authors for their interests and efforts. The committee thanks all the participants for their support in making the conference a great success.

Convener

Dr. Sr. S. Anita, M.Tech., Ph.D.

Professor and Head,

Department of Electronics and Communication Engineering,
St. Anne's College of Engineering and Technology.

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MESSAGE FROM CHIEF GUEST

A heartfelt congratulations is in order to the St. Anne's College of Engineering and Technology for organizing a conference on research and development in science, engineering and technology, particularly bringing together great minds in the field of science and engineering. The conference has all major research clusters covered in various tracks where the various scientific and engineering field come together to offer solutions to a better world.

In this challenging time while we are still facing the Covid-19 pandemic, it is encouraging to connect and interact with participants online. The presentations and discussions with every participant will definitely result in further development of the solutions presented here. I am confident in the fruitful outcome of this event, and I wish the organizers the best for the success of the conference.

Dr. Muhammad Rafiq Mirza Bin Julaihi

Swinburne University of Technology
Malaysia

MESSAGE FROM SECRETARY'S DESK

In this globalised and technological scenario, knowledge as power, quality education, super-fast communication systems, and higher-level jobs have been some of the concepts which direct the world. In this context, St. Anne's College of Engineering and Technology, a distinguished centre for modern learning, aims at character formation, excellence in teaching, learning, research and placement, empowerment of rural youth, and has grown in all directions with its Motto: To Build a Holistic Society. The commitment and continuous hard work of our Faculty instill originality and creativity in teaching, learning and research and one such fruit of their effort results in conducting an **International Conference on Research and Development in Science, Engineering and Technology 2021 (ICRDSET'21)** every year. I deem it a great joy to congratulate the Principal, organizers, committee members and all the Faculty and Non-teaching staff for their involvement and cooperation to conduct this ICRDSET. This International Conference, ICRDSET '21, provides ample opportunity to the Faculty, Industrialists and Students to exhibit their research articles, share and exchange their views and aspirations and learn novel methods and approach in their respective field. I congratulate all the eminent Faculty and erudite Scholars as well as the young Engineering Students from various Institutions who contributed for the Proceedings of the ICRDSET which comprises the articles with novel themes like Cloud, Soft and Green Computing, IoT and Networking, Smart Grid, Renewal Energy Systems, Computational Field Dynamics, Designing Tool and Cutting Materials, Composite Materials, Alternative Fuels, VLSI, Medical Signal Processing, Advanced Antennas, Environment Science, Crystalline Materials, Material Science and Chemistry, Mathematical Analysis and English Language Teaching Methodology. I wish and pray for the fruitful deliberation of this Conference. May the Lord Almighty inspire and enrich every participant to acquire more wisdom, insight and knowledge through this Conference!

Rev. Sr. Dr. Y. Yesu Thangam, S.A.T.

Secretary

St. Anne's College of Engineering and Technology

MESSAGE FROM PRINCIPAL

It gives me immense pleasure that St. Anne's College of Engineering and Technology is organizing an International Conference on Research and development in Science, Engineering and Technology on March 5th, 2021.

Research activities across all the Engineering fields pave the way for the industrial world to strive forward with huge advancements. St. Anne's CET provides an opportunity for sharing knowledge, innovative ideas and to have interaction intensively in the thrust areas of Mechanical, Electrical and Electronics, Electronics and Communication and Computer Science among researchers, academicians, industrialist and Scientists in various fields of Science, Engineering and Technology.

The eminent key note speakers will cover the reality of recent developments in research in their domain from different perspectives. The proceeding of the conference will help the next generation researchers to gain insight in their area of interest.

I congratulate the organizing team, staff members, students, participants from the host and other institutions for their efforts in organizing and participating in this conference and wish the conference all the success.

Dr. R. Arokiadass, M.E., Ph.D.,

Principal

St. Anne's College of Engineering and Technology

MESSAGE FROM VICE-PRINCIPAL

St. Anne's College of Engineering and Technology has borne the mantle of excellence, committed to ensure the students their own space to learn, grow and broaden their horizon of knowledge by indulging into diverse spheres of learning. In our endeavor to raise the standards of discourse, we continue to remain aware in order to meet with the changing needs of our stakeholders.

Research activities across all the engineering fields pave the way for the industrial world to strive forward with huge advancements. As an educational institution, encouragement and support to research can be provided by establishing a suitable platform for the research community, to interact with each other and to share the knowledge. Having this objective, an International Conference on Research and Development in Science, Engineering and Technology - 2021 has been planned to provide the learning experience to all the participants. The Conference aims to bring different ideologies under one roof and provide opportunities to exchange ideas face to face, to establish research relations and to find global partners for future collaboration.

Sessions on different domains, key note addresses from eminent professors and opportunity to network with the researchers will help the participants immensely in their research career. This proceeding of the conference has been documented with utmost care. I believe strongly that, this will stand as a great source of knowledge to all the researchers.

I would like to congratulate the organising team, staff, and the students for their contribution in successfully organising this event.

Sr. Punitha Jilt, SAT

Vice Principal and Head
Department of Computer Science and Engineering
St. Anne's College of Engineering and Technology

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An Effective Covid-19 Vaccine Distribution Plan Using Machine Learning Models

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Abstract

Corona Virus Disease 2019 (Covid-19) virus is a communicable disease. Currently most of the pharmacological researchers revealed the vaccine to prevent Covid-19 infection. However, the vaccine distribution has got many challenges like identification of distribution centre and providing preferences to the people based on the affected cases in a particular area including front line staff members. In the proposed work, researchers identified a novel machine learning model that can be used by the required authorities to vaccinate the people based on the prioritization of populations and corona affected cases recorded in a particular area. Researchers designed a novel COVA clustering algorithm by improving the pitfalls present in the K-Means Clustering. Areas present in the locations are identified as nodes. The proposed approach calculates the centroid of the cluster by considering both the distance and correlation between the nodes.

Keywords: Covid-19, Correlation, COVA clustering algorithm, K-Means Clustering.

Enhanced Duck Traveler Optimization (EDTO) Algorithm with Multilevel Thresholding, Region of Interest and K-Means Clustering for Mammogram Image Segmentation to improving accuracy

Krishnaveni A¹ Shankar R² Duraisamy S³

Abstract

Research about breast cancer consciousness has discovered that social and strict issues imply that ladies don't get to health administrations, are reluctant to counsel male specialists despite the fact in their relatives particularly couldn't discuss with husbands also. Breast tumor analysis is rarely simple; it is particularly hard when the lady is in her age of 30's and has recently begun arranging a future for herself and her family. Hence, a new Meta heuristic Duck traveller optimization algorithm is used to segment the breast tumor to help the doctors to disease diagnosis. Methods: Selecting the best duck from given duck flock is an example of optimization. Optimizing the threshold values EDTO based multilevel thresholding (EDTO-MTH) algorithm is introduced to segmenting the cancer. Desired region of the breast is determined by using EDTO based Region Growing (EDTO-ROI) to highlighting the tumor region. To improving the segmentation results DTO with K-Means Clustering is proposed (EDTO-K means). Results: The performance results of EDTO are evaluated by using the quality metrics accuracy, precision, recall and f-measure. Conclusion: It is assessed that high mortality because of breast tumor in India would increment throughout the long term. Hence, these calculations discover a terrible requirement for starting essential and auxiliary counteraction measures for the control of breast tumor in our country.

Keywords: *Bio Inspired Algorithm, Enhanced Duck Traveller Optimization, Breast Tumor, Multilevel Thresholding, Region, Clustering, Segmentation, Accuracy*

Eyeblink Detection for Liveness Detection Using Deep Convolutional Neural Network

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Abstract

Spoofing attacks on biometric systems are one of the major disorders to their use for secure applications. In case of face recognition, it is not easy for the computer to detect whether the person is live or not. In this paper, we implemented a novel approach to detect face liveness using Deep Learning. Eye Blinking is an action represented by the image sequence which consists of images with close and open state. ROSE-YOUTU datasets for liveness detection is given as the neural network input for the model training and testing. We analyse the effects of different neurons activation function on the neural network with the accuracy of the eye blink detection. The experimental result shows that ReLU activation function has the more accuracy than Sigmoid and Tanh activation function for our liveness detection model.

Keywords: *Spoofing attacks, Liveness detection, eye blink detection, activation function.*

A Comparative Study on Liver Disease Prediction using Machine Learning Approach

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Abstract

Data mining makes use of algorithms to find out interesting information. Data mining tasks involve Classification, Clustering, Sequence discovery, forming Association rules, etc. Data mining techniques have been generally used in the procedure of disease identification, drug development etc. Few examples are the prediction of liver disease, prediction of heart disease, etc. The use of machine learning technique in early disease identification is very much supportive for medical practitioners and to medical-related people. Classification algorithms are widely used to accurately predict the item belongs to a particular class or not. Classification algorithms play a foremost role in determining the accurate prediction of diseases. Classification is of two types- binary classification or multiclass classification. In this era of advanced technologies, the use of machine learning approaches is highly appreciable and it takes the problem-solving method to a higher level. A comparison between different approaches is carried out here and it was found that the Random Forest approach is the best while using Weka Tool and Ensemble Bagged Tree is best while using the MATLAB tool.

Keywords: *Classification, decision stump, J48, RepTree, LWL, RandomForest, IBK, Kstar, Quadratic SVM, Bagged Trees*

Construction of Question Answering System for Optimized Knowledge Graph

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Abstract

The success of search engine depends on user satisfaction of results for the given query. These results are based on the keywords given for search. The user can obtain a suitable answer for their enquiries only when the user and knowledge bases are linked. The aim is to provide the precise answer to the query by using knowledge base. To obtain precise answers directly, a question answering system is modified Optimize knowledge graph for RDF repository with Calculated Semantic weightage using optimized Knowledge Graphs and paths in a knowledge base.

Keywords: Artificial Intelligence Mark-up Language, Calculated Semantic Weightage, Optimized Knowledge Graphs Matching

Detection of Black Hole Attacks in Manets by using Principle of Exclusion and Inclusion

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Abstract

A mobile ad-hoc network (MANET) is a self-configuring network of mobile routers related by wireless links the amalgamation of which form an capricious topology. Black hole attack is a variety of attack in which a malevolent node deceives the source node and advertises itself for having the unswerving path. In this way the source node than establishes a route to malevolent node and sends its complete data packet to the malevolent node. By doing this, the malevolent node can divest the traffic from the source node. In this paper we have discussed about the loom for detecting black hole attack in MANET using neighborhood based method. This method can effectively detect black hole attack.

Keywords: *AODV, black hole attack, neighbor set method, MANET, security, attack, throughput*

Heart Disease Prediction using Machine Learning

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Abstract

Heart is an important organ in every living organism. Heart disease diagnosis and prediction should be done with perfection, whereas little mistakes can cause us many problems and even death related to heart disease and increasing day by day. To come out of this problem we need a prediction system to make awareness of these diseases. Machine learning is a part of artificial intelligence. It contains many algorithms which are useful to predict each and every event in natural happening. We can calculate the accuracy by using machine learning algorithms for prediction of heart disease. For this prediction algorithms such as k-nearest neighbor, decision tree, random forest, support vector machine and so many algorithms can be used to predict the accurate machine learning model by using the datasets which are available at the UIC repository. We can implement these algorithms in python programming anaconda or google colab notebook which is online software available at google platform. Google colab notebook is the best one for implementation because it contains many types of library, header files which are useful for predicting the accuracy. In this paper, we are going to predict whether the patient has heart disease or not by using four types of classification algorithms and by comparing those algorithms and find the highest accuracy model among them to predict the results.

Keywords: *Heart disease, machine learning, UIC repository, algorithms, prediction.*

A New Technique for Image Compression using Linear Algebra with Python Algorithm

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Abstract

In recent days, the data are transformed in the form of multimedia data such as images, graphics, audio and video. Multimedia data require a huge amount of storage capacity and transmission bandwidth. Consequently, data compression is used for reducing the data redundancy and serve more storage of data. In this paper, addresses the problem (demerits) of the lossy compression of images.

This proposed method is deals on SVD Power Method that overcomes the demerits of Python SVD function. In our experimental result shows superiority of proposed compression method over those of Python SVD function and some various compression techniques. In addition, the proposed method also provides different degrees of error flexibility, which give minimum of execution of time and a better image compression.

Keywords: *Image Compression, Singular Value Decomposition, MSE, Lossy image compression, PSNR.*

Mathematical Analysis and Wavelength Transformation process for secure data-hiding in images

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Abstract

Wavelet Transforms method can be used for image processing issues, medical image applications and their visual methods. The objective of this paper is to provide secure transmission in between sender and receiver. In this paper we provide data hiding techniques by using encryption and decryption transmission process for maintaining security issues. In this method we embedded the original image with secure information by using lossless data hiding method. We apply Discrete Wavelength Transform (DWT) for encrypting the input messages and at receiver side, when the message is arrived then we apply decryption technique using Inverse Discrete Wavelength Transform (IDWT) algorithm to get the original image and secret information. Reducing Noise ratio when to compare to existing system of various watermarking levels using DWT and IDWT algorithm. PSNR (Peak – Signal Noise Ratio) is high when compared to existing system, so noise ratio is very low.

Keywords: *Data hiding, Wavelet transformation, Digital imaging process, Mathematical functions*

An Automatic Attendance Monitoring System using Python

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Abstract

Monitoring and recording attendance on a real-time basis in a technologically enhanced era seems to be a difficult task nowadays. There is a problem regarding analyzing the statistical attendance data as most of it is not accessible outside the educational campus. With an intention to keep students safe while fulfilling their basic rights to education, a design has been proposed that automatically updates the attendance of a student in the database and simultaneously sends information to the parent, class advisor and Head of the Department. This method has been designed to be implemented specifically in college, the approach of taking the attendance on daily and hourly basis is a reason for students to behave disciplined. Sometimes the traditional method was complicated and there are ways where a student can dodge and if taken physically it leads to more time consumption and can be prone to human errors. Hence several automated techniques were devised like fingerprint, Radio Frequency Identification (RFID), Iris recognition etc. these techniques have their own shortcomings, here a framework called Automated Attendance Tracker using Firebase Real-time Database is proposed. The attendance is taken by placing a web camera inside the classroom that endlessly captures the images of the student, identifies the faces in image and updates the attendance. The updated attendance is sent to the parent and class advisor through Short Message Service (SMS) and via Electronic-mail to the Head of the Department (HOD) and Administration wing. This highly improves the efficiency of system and is found to be less time consuming.

Keywords: *Automated Attendance Tracker, Firebase Real-time Database, Haar Cascade Algorithm, REST API*

A Novel Analysis on Outliers

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Abstract

This paper presents a novel analysis of outliers using FCM (Fuzzy C-means Clustering method) that aims to analyse the outliers using 4 datasets by z-curve graph. The effectiveness of the method is based on pre-processing, which removes noise and inconsistent data using techniques like aggregation and sampling. FCM is an iterative process where the data values result in objective function (OF) that is compared with the threshold value to identify as “Outliers”. Outlier detection, which are less sensitive to the presence of outliers provides an useful and interesting analysis information. This method enhances accuracy and improves the performance of detecting outliers assessed over four datasets. Thus the paper reveals an augmented study of modified fuzzy clustering approach to detect the unusual outliers. Experimental results and z-curve output shows the effectiveness of detecting perpetual outliers.

Keywords: *Outliers, fuzzy, Clustering, FCM, OF*

Modified Non-local Means Filtering Techniques to Remove Various Noise Types from MRI image

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Abstract

In this article, we proposed a modified non-local means (MNLM) technique to discard a rician noise from the magnetic resonance imaging (MRI) scans. MNLM method is also adaptable for generalized images to remove Gaussian noise salt and pepper noise. The implementation of the MNLM algorithm depends on the grayscale difference of images (GDI). Based on this GDI, we modified the traditional NLM algorithm in the Central processing unit (CPU) processor and also using a parallel processing technique with Compute Unified Device Architecture (CUDA) model. The main difference between traditional NLM and proposed MNLM algorithm is SWS, i.e, traditional NLM has fixed SWS like 3×3 or 7×7 and proposed MNLM has adaptive SWS (ASWS) like 3×3 and 7×7 and 9×9 . Hence, we have implemented the MNLM method by adaptively changing the SWS based on the GDI to remove noise effectively, and MNLM preserves the edge details in the image compared to existing methods. To prove the preservation of edge, we implement a new matrix-based edge detection algorithm. Brain web and IBSR datasets are used for experiments and evaluation. The results are compared with some existing denoising techniques using the performance evaluation metrics such as PSNR, SSIM. The experiments show that our proposed work yields the best results on the higher noise levels.

Keywords: Denoising, non-local means, parallel processing, GPU.

A Novelty Approach of Exact String Matching

Armstrong Joseph¹ and C.R. Rene Robin ²

Abstract

In this research we present three consecutive characters based exact string-matching algorithm. A new idea is introduced a shift by three consecutive characters in text. In pre-processing phase our algorithm creates a shift table by three consecutive characters in text. First two of three is right most character of text over pattern and the last one is the next character of these two characters is on text. The time and space complexity of pre-processing phase of our exact string matching is $O(m+\sum^3)$ and searching phase takes $O(mn)$ time complexity. The proposed algorithm is effective than the number of existing algorithms in many cases. In this paper we present experimental results for string matching algorithms which have exact string matching in a single cycle. Of these algorithms are he Boyer-Moore and its derivatives, they are famous for their speed in practice, We have evaluated the algorithms by counting the number of comparisons made and by timing taken to complete a given search. With these experimental results, we were able to introduce a new string-matching algorithm and compared it with the existing algorithms by experimentation. These experimental results clearly show that the new algorithm is more efficient than the existing algorithms from our chosen data sets. Using the chosen data sets over 500 separate tests were conducted to determine the most efficient algorithm.

Keywords: *string searching; string matching; text editing; algorithms onward.*

Understanding Awareness Regarding Cyber Security and Preference for Advanced Protection Among Young Netizens

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Abstract

Social engineering, which is also referred to as ‘human hacking’ is the activity of making people reveal their sensitive and private information for the purpose of obtaining illicit access to their accounts. People are lured with unbelievable offers and many people fall prey to the evil intentions of hackers. They end up clicking links and/or downloading malwares and thereby providing confidential information. The incidents of cybercrimes are booming. This paper studies the awareness regarding cyber security. It also studies the preference for advanced protection i.e. paid antivirus software. In conclusion, measures are suggested so that people can combat the increasing number of incidents of cyber-crimes and not fall prey to the cyber criminals.

Keywords: *Illicit access, booming, awareness, malwares.*

An Intelligent Algorithm with Feature Selection for Thyroid Disease Classification and Diagnosis Using Data Mining Techniques

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Abstract

Absurd potential for healthcare services is held by Data mining because of the aggressive proliferation in the massive amount of electronic health records. In the conventional time, health providers and physicians hold patient information manually. The data was very tedious to maintain. New techniques are introduced to reduce the human efforts by Modernizing and digitalizing the data and made available in an easily accessible way. The Main task is to detect disease diagnosis at the early stages with higher accuracy. In health care services, data mining plays a vital role in the part of Classification concept. Diagnosing the diseases and providing the necessary treatment for the patients becomes a primary challenge for the health care services. In this paper using enhanced data mining algorithms and classification system thyroid disease is being detected with higher accuracy which is more important in diagnose a chronic illness such as thyroid. This paper enlightens the issue of Dimensionality reduction for which Feature selection algorithms are used which considered one of the main tasks in feature engineering. An algorithm is proposed which gives the solution to sort out the problems in the existing system of classification

Keywords: *Data mining, Thyroid, Dimensionality reduction, Feature selection algorithms.*

Automatic Product Billing through Camera using Artificial Intelligence and Edge Computing

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Abstract

Modern science and technology have increased the way of life for people. All of us incline toward quality in items we use in everyday lives. These results in the huge groups at the shopping centre and malls which prompts long lines at the charging counters where the shop keeper needs to filter each item in the scanning machine and enter into the record to bill those products. The framework above is a bit tedious. There are much research works for the smart billing of products. The proposed work concentrates on designing a therapeutic electronic item to solve this issue. The object detection algorithm called the YOLO algorithm detects the items which allow the retrieval of information using Edge Computing stored in edge servers. The products placed in the conveyer belt are detected and stored in the cart and the information are shown in the screen. The information and the quantity of the products are calculated and the bill is generated automatically.

Keywords: *object detection, YOLO algorithm, Edge computing.*

Mitigation scheme can effectively manage DDOS attack in cloud computing / Prevention technique of DDOS attack in cloud computing

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Abstract

Cloud computing is the modern technology within the field of data IT. It's speedily turning into a distinguished technique due to its growing and revolutionary nature in recent times. It assures to deliver a large number of resources like architecture, scalability, availability, fault tolerance, power of computation, huge storage and software application to consumers in the low cost. In other hand we have many issues with its security. This paper presents a stronger understanding of cloud computing and its security and threats, and identifies the mitigation scheme and their impact on its security.

Keywords: *Cloud Computing, Security, Mitigating Techniques, Concept Matrix*

Auto MPG Data Analysis using Machine Learning

Ashwin.R.A¹ Barath kumar.G² Swetha.B.P³ Sneha.R.S⁴

Abstract

Information mining has been used in a couple of examinations to uncover covered information inside dataset and to predict results after utilization of data. In this assessment, neural association was changed as data mining instrument where coordinated multilayer perceptron which is the plan with back expansion learning counts was used on vehicle information after use of bunching to eliminate anomalies in the unique auto mpg informational index. The reason for existing was to order the city fuel utilization of various vehicle cars as proficient, moderately effective and less productive. The indicators of the model are accumulated over fixed window sizes of distance voyaged. Distinctive window sizes are assessed and the outcomes show that a 1 km window can foresee fuel utilization with a 0.91 coefficient of assurance and mean outright top to-top percent mistake under 4% for courses that incorporate both city and parkway obligation cycle sections.

Keywords: *Watchwords—Classification, Data Mining, Automobile, Artificial Neural Network, auto-mpg dataset, miles per gallon (mpg).*

Short Text Sentiment Classification with Word Embeddings using LSTM Approach- A Survey

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Abstract

Slant order procedures have been broadly utilized for investigating client feelings. In traditional regulated learning strategies, hand-created highlights are required, which requires a careful comprehension of the area. Since online media posts are normally exceptionally short, there's an absence of highlights for compelling grouping. Accordingly, word installing models can be utilized to learn distinctive word uses in different settings. To recognize the conclusion extremity from short messages, we need to investigate further semantics of words utilizing profound learning strategies. In this paper, we explore the impacts of word inserting and long transient memory (LSTM) for assessment arrangement in web-based media. To start with, words in posts are changed over into vectors utilizing word inserting models. At that point, the word arrangement in sentences are contribution to LSTM to gain proficiency with the significant distance context oriented reliance among words. The exploratory outcomes indicated that profound learning techniques can successfully become familiar with the word use in setting of online media given enough preparing information. The amount and nature of preparing information significantly influences the exhibition. Further examination is expected to check the exhibition in various online media sources.

Keywords: *Sentiment Classification, Deep Learning, Long Short-Term Memory, Word2Vec Model.*

Adoption of WhatsApp and Telegram in India

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Abstract

Social media has become a vital source of communication worldwide from human-to-human, human-to-machine, machine-to-machine and machine-to-human. Different forms of these communications have a variety of quality parameters and they are used in various application scenarios. Earlier started as a text exchange medium now has support for all forms of digital media. Race in computing speed and communication bandwidth leverage the growth of the social media. Particularly in India the revolution started when Orkut entered the market in 2007. Even though there was constraint in latest hardware technology and network bandwidth in India, the huge market place it has attracted developers to tune their applications for the available technological resources here. Today there are quite a good number of social media competitors in India. Features offered to customers by these social media vary in spite of their growth. People have different choices to use with. This article analyzes the penetration performance of WhatsApp and Telegram in India. The focus is to create technology awareness among the users of these two competitors.

Keywords: Social Media, MAU, Telegram, WhatsApp, Orkut, Digital Technologies

A New Discovery of The Network Navigation using Datamining

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Abstract

Due to increasing the act of Applied science College in Tamilnadu, the level of competition for admission price is also increased. By implementing some dynamic strategies only the academic introduction s can meet their own competition. One survey clearly commonwealth that more than 75% of the Engineering Colleges their forcefulness is less than thirty % of their actual intake. Hence the surveillance is the job for the insane asylum s. One more survey shows that every year 10% of the applied science college' windup their affiliation and blessing due to lack of admittance, and 5% of the engineering college have decided to sell due to lack of strength. With the strong effort and dynamic strategy framed by the institution, the nominee finds admission in an institution only when their own orientation matches exactly, otherwise the candidate continues to go by the next alternate in the list of preference [1]. This paper clearly emphasis some factors influenced to identify the pattern for getting the potency of the bookman to meet at least the breakeven point. In plus to the above, the Populace Wide Web in cyberspace plays an important role to store, part and distribute data about the academic innovation. A social survey states that more than 65% of the admissions gained by their effective network pages. The exponential ontogeny of the World Wide Web has provided an excessive prospect to study the potency student and their deportment by using WWW accession logs. If the institution's web sphere clearly contains the information required for the potential educate, surely they can attract the above by which they can get more number of admissions even beyond our jurisdiction.[2] Some of the attractions from the potential students

while accessing the web site for getting the admission are: get the required information by clicking minimum act of hits from the vane Page, no network traffic occurred while accessing and navigating the college World Wide Web website. Search interrogation will be rectified within a short period of answer time by implementing the practice of search railway locomotive optimization, search engine spiders. Always use fastest and latest browsers and operating systems in their WWW and not to display much more web server erroneousness while navigating the college web site.

For attracting the counseling class and other state students, this network Thomas Nelson Page swordplay an important part. World Wide Web usage Mine lying is the practical application of data excavation techniques to very large data deposit to selection pattern radiation diagram. In general every World Wide Web server keeps a record book of all Synonyms/Hyponyms (Ordered by Estimated Frequency) of noun transaction needed for the potential students and act as a bridge between the potential students and introduction. The record contains full phase of the moon contingent about every user click to the entanglement documents of the entanglement site. The useful record 5 senses of detail needs to be scrutinized and inferred to gather knowledge about actual potential student and their parent preferences in accessing WWW pages. In recent years several method acting s have been proposed for mining web logarithm data. This theme its main intention is to use the statistical method of Poisson statistical distribution analysis to breakthrough out the higher probability session episode and also comparability the efficiency of our developed algorithm with Poisson value. The subject field of large volumes of click stream data demands the employment of data mining method . Conducting data mining on records of web host contains the determination of frequently occurring access sequences. A statistical method of toxicant distribution clearly shows the probability of oftenest of specific consequence when the norm probability of a single natural

event is known. Here the probability of poison value is compared with the efficiency of our developed algorithm. For more bit of transactions, our developed algorithm its performance is better than poison value[3].Because our algorithms excerpt the authority tier as dependent rather independent. The Poisson distribution is used in this paper to find out the probability frequency of particular page is visited by the user as independent, but the result of the developed algorithm is dependent

Keywords: *Matrix-theoretic Approach, Sequence Alignment Algorithm, Appropriate Model, Statistical Methods, Data Mining Methods, Log Transactions.*

SIRD Model Simulation for Corona pandemic in Tamil Nadu

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Abstract

In this paper, Forecasting and spreading of Covid-19 in Tamil Nadu state is demonstrated by simulating an epidemiology model Susceptible-Infectious-Recovered-Demised (SIRD) model. Implicit analytical solution is applied for some parts of the model and for other parts finite difference methods are used. On the basis of SIRD model, values of coefficient of infection, coefficient of morality and coefficient of recovery can be found. In addition to the calibration of the model the ratio of the average rate of death to the average rate of recovery for the pandemic in Tamil Nadu is calculated. For this model, data is collected from Tamil Nadu Health and Family Welfare Department. The data has number of infected cases, death cases, recovered cases and hospitalized cases per day in Tamil Nadu State. The prediction results give good analysis and better understanding of the spread of the disease in the state. Based on the results, it is obvious that as the number of days increases that cumulative count of infected patients is also increased. But in the pandemic a fall would be expected after certain period of time. However, this prediction model enables us to make quick response of the pandemic and get more insight about the data.

Keywords: *Forecasting, Epidemic model, SIRD model, Analysis, Pandemic, Prediction*

Sentiment Analysis with Unsupervised Machine Learning and Natural Language Processing

Rahul Pandya, Suraj Moolya, Sujal Charak, Shivani Naik

Abstract

Sentiment Analysis has been a very important part of analytics for data scientists over the years. It has been a very detailed and an important area of research and development which enables the user to find the acknowledgement factor for the area of interest. Social media is always evolving and the most interactive media of individual communication and broadcasting. Sentimental analysis of is the best alternative for peer reviewing in terms of a certain criterion. This paper deals with an analytic study over a twitter based dataset which involves pulling of certain number of tweets using API linking and then performing the polarity check on the number of tweets pulled with respect to that particular keyword. An approach involving unsupervised machine learning algorithms along with natural language processing generates significant results in the task over the traditional lexicon method used.

Keywords: *Sentiment analysis, Twitter, Machine Learning, Social Networks, NLP*

Authentication to Improve ATM Security By Using Internet Of Things

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Abstract

Our venture proposes a made sure about ATM (Automated Teller Machine) framework utilizing a card filtering framework alongside LINK framework for improved security. Common ATM frameworks don't contain the LINK highlight for cash withdrawal. On the off chance that an aggressor figures out how to get hold of ATM card and the pin number, he may effectively utilize it to pull back cash deceitful. So, our proposed framework bolsters the ATM card filtering framework alongside a LINK framework. This client may filter his card and login to the framework. In any case, after client is through with this confirmation, he may see subtleties yet is approached to enter LINK when he clicks cash withdrawal alternative. At this stage the framework produces and sends a LINK to the enrolled portable number to that specific client. The secret phrase is produced advertisement sent to the client cell phone. He now needs to enter the LINK in the framework so as to pull back cash. In this way our framework gives an absolutely secure approach to perform ATM exchanges with two level security structure.

Keywords: IOT, RFID tag and reader, ATM link

Mango Image Feature Extraction for Quality Grading (A Pilot Study-1)

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Abstract

The proposed work developed some feature extraction techniques for mango quality grading systems using image processing operations. The primary features such as size, color, and shape are extracted from the given mango images. The size of the mangoes is counted as the number of pixels within the mango surface. For the color feature, the mango skin color is analysed and used to separate into normal skin and defected skin areas. The shape features such as length and width are measured. They are used to define the mango pose and orientation for further processing. This proposed work supports to development of a machine vision-based learning models for grading the fruit qualities in food processing and agricultural applications.

Keywords: *Mango features, size, color, shape, image processing, quality grading*

Healthcare Management Using Big Data

Vishnu Prakash S¹, Vibin Gowtham A²

Abstract

The information in this document presented at “International Conference on Recent Developments in Science, Engineering and Technology (ICRDSET - 2021)”. The conference would be held at the St. Anne’s College of Engineering and Technology, Panruti during March 5th, 2021. ‘Bigdata’ can make wonders. In the healthcare industry, medical record of patients and hospital records are part of IOT. Research in biomedical industry derives a meaningful information which requires proper analysis and management. Using bigdata analysis with great computing knowledge we can solve a lot of challenges. This is the reason why hospitals are needed to be improved with good infrastructure in analysis for improving the health of public. This also can be a very good financial advantage for the healthcare industry. There can be a revolution in healthcare industry with this bigdata analysis in healthcare.

Keywords: *Biomedical research, bigdata analytics with IOT, healthcare, Quantum computing and Image analysing.*

Speech Recognition Using Python

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Bannari Amman Institute of Technology

Sathyamangalam

Abstract

Nowadays, Speech Recognition has become an increasing concept and popular in recent years. If the document to be written is too long, it is difficult to type within the given time and it makes the user bored to type. And also reading text is difficult for the people who have Dyslexia and other inabilities. Speech recognition helps the computer to translate the speech signal into text or commands through the detection and comprehension process. By the help of Speech Recognition, it makes the user time flexible and allows them to create the documents by recognizing the voice as an input and the document will be created faster as soon as possible when compared to a person typing the document. Speech Recognition involved in many fields like psychology, signal processing and even body language of humans. The main objective of speech recognition is to attain normal communication between human and the machines. In this paper we explain how the voice has been recognized and how it will be translated into text by the requirement of the end user and also the problems faced at the time of implementation. Using a microphone, we can get the user's input and PyAudio converts speech to string.

Keywords: *Speech, Recognition, Communication*

Guarded Electronic Voting System Using Blockchain Technology

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Abstract

The voting process takes the significant part of every countries and their citizens. Digital recording electronic systems are implemented replacing the paper ballots. Now a day, the election commission uses Electronic voting machines which need more power, time-consuming and also they are less trusted. The most issues which is faced by the Election Commission is No proper confirmation regarding the acknowledgement of casting the ballots, illegal casting and missing of outside people vote who belong to native constituency. The Electronic voting system caters for integrity of the polling process in terms of the requirements. This paper focuses the embedded in the design of process in well-secured authentication processes for the electors information such as fingerprint are will be match with database through the use of biometrics. Of atmost importance are the requirements for correctness, robustness, coherence, consistency, and security. In this paper, to develop the online voting is more ease way to poll the ballot for the outside people from their location. A new polling process which makes use of block chain technology which has improved trustworthy and transparency over currently used systems.

Keywords: *Biometric, Blockchain, Electronic voting system, Fingerprint*

Diabetic Retinopathy Retinal Vessels Classification Using Deep Learning Techniques

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Abstract

Diabetic retinopathy (DR) is an important causes of blindness worldwide[2]. However, DR is hard to detect in early stages and the diagnostic procedure can be time-consuming even for experienced experts[3]. Therefore, a computer-aided diagnosis method based on deep learning algorithms is proposed to automated diagnose the referable diabetic retinopathy (RDR) by classifying color retinal fundus photographs into two grades. In this work, A novel Convolutional neural network model with Siamese like architecture is trained with transfer learning technique.

Keywords: *Diabetic Retinopathy,Deep Learning,Fundus Images,Trainingdata,Test data*

A Multi Tasking Agriculture Robot Using Internet Of Things and Raspberry Pi

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Abstract

Agriculture is the backbone of our country. Robots are playing an important role in field of agriculture for farming process autonomously. The proposed system aims at making the agriculture smart by using automation and IoT technologies. Agri-robot is a robot designed for agricultural purposes to minimize labour and energy consumption. The highlighting features of this project includes Raspberry Pi based remote controlled robot to perform tasks like Seed Sowing and Automatic Irrigation. The efficient mechanism of the disperse seeds are led to fall into the soil through the seed dispenser and it includes smart irrigation with pump automation and intelligent decision making based on accurate real time field data. The farmers can able to control the robotic actions by switching onto the desired modes through dashboard from the mobile connected to Internet. These operations will be performed by interfacing sensors, motor, smart phone Wi-Fi and actuators with Raspberry Pi. It is designed to minimize the labour wages in addition to increasing the speed and accuracy of the work. Thus the multitasking robot keeping the ideology that multiple small autonomous machines could be more efficient than traditional large tractors and human effort.

Keywords: *Internet of Things, Raspberry Pi, Robot, smart phone.*

Attribute-Based Access Control with Data in Cloud Storage

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Abstract

Attribute Based Access Control (ABAC) uses attributes as building blocks in a structured language that defines access control rules and describes access requests. Attributes are sets of labels or properties that can be used to describe all the entities that must be considered for authorization purposes. ABAC is a “next-generation” authorization model that provides dynamic, context-aware, and risk-intelligent access control. It helps achieve efficient regulatory compliance, effective cloud services, reduced time-to-market for new applications, and a top-down approach to governance through transparency in policy enforcement. Attribute Based Access Control (ABAC) models are designed with the intention to overcome the shortcomings of classical access control models (DAC, MAC and RBAC) and unifying their advantages. ... OWL can be used to formally define and process security policies that can be captured using ABAC models. In this paper we proposed for an attribute-based access control with data in cloud storage, here we give a data confidentially for the particular persons based on attributes of data/person.

Keywords: *Access control, Authorized search, Cloud storage, Data sharing, Key-policy attribute-based encryption*

Preserving Sensitive Health Care Data in Distributed Cloud Using Block-Chain Concept

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Abstract

In the modern era, Cloud computing is a boon for computing and technology development. Government and private sectors, education and research, banking, healthcare and other fields generating the huge amount of data every day. Data is sensitive and playing a key role in each sector's growth. Data compromise cannot be acceptable due to natural disaster, stealing, tampering, human error, viruses, malware, power failure, physical damage or automatic failure. Data may be financial or technical or something else, if data is lost, the organization is lost. So, data back-up and security is the major concern. To conquer this issue, moving data towards the cloud will be the appropriate way to preserve data of the specific organization. The advantage of cloud solutions is substantial. Even though Cloud has the vulnerability for data integrity from external and sometimes internal breaches. So, putting raw data into the cloud is the highest risk. In this context, it is important to have latest and reliable systems in place to secure essential sensitive information. This paper proposes an approach for secure data storage is blockchain technique, which can offer global authenticity and security for data and transaction of any kind, diminish the cost and complication by eliminating centralized trust systems and creating data tamper-proof. The experiment is done by using healthcare data and sharing it via blockchain technique. Thus, the results and analysis proving the efficiency of this approach.

Keywords: *Cloud Computing, Data back-up, Data Security, Integrity, Healthcare, Blockchain*

IoT Based Automated Safety Industrial System

N.Kumar¹, K. Kamali², K. Sivasankari³, E.Sowmiya⁴

Abstract

This project illustrates a precarious industrial environment monitoring and control for this monitoring information concerning safety and security. The proposed system uses a combination sensor network node with a system architecture and concept implementation, which are described mainly for an industrial safety monitoring scenario. The information is gathered by the deployed sensor network with focus on four main conditions: temperature, fire, gas leakage and Air pollution. This Project also enables an easy to use user interface and the accessibility of data through standards-based web server technologies. It is the most effective and most economical means of equipment safety monitoring.

Keywords: *Wireless sensor network (WSN), internet of things (IOT), gas, fire, air pollution, temperature*

Deep Learning Based Identification of Novel Corona Virus Using Lung (LUS)

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Abstract

Theoretical—Deep learning (DL) has demonstrated effective in clinical imaging and, in the wake of the new COVID19 pandemic, a few works have begun to examine DLbased answers for the helped conclusion of lung infections. While existing works center around CT filters, this paper contemplates the use of DL methods for the investigation of lung ultrasonography (LUS) pictures. Specifically, we present a novel completely commented on dataset of LUS pictures gathered from a few Italian medical clinics, with names demonstrating the level of infection seriousness at a casing level, video level, also, pixel-level (division covers). Utilizing this information, we present a few profound models that address applicable assignments for the programmed examination of LUS pictures. Specifically, we present a novel profound organization, inferred from Spatial Transformer Networks, which at the same time predicts the infection seriousness score related to an info outline and gives limitation of neurotic ancient rarities in a feebly administered way. Besides, we present a new strategy dependent on uninorms for viable casing score conglomeration at a video-level. At last, we benchmark state of the craftsmanship profound models for assessing pixel-level divisions of COVID-19 imaging biomarkers. Trials on the proposed dataset show acceptable outcomes on all the thought about errands, making ready to future examination on DL for the helped conclusion of COVID-19 from LUS information.

AI in Agriculture

Kapil yaswanth S B¹, Karthick R², Mohanakrishnan V², Nagaraj K³

Abstract

By 2050 the world population will reach more than 9 billion which requires a substantial amount of increase in agricultural production. The conventional methodology of agriculture has a reduced production rate due to issues like environmental changes, soil health, weeds, lack of proper irrigation system, weather conditions, etc. But these issues can be solved by applying several AI techniques like increasing crop productivity by the assistance of a planting application controlled by AI which will give a higher yield of 30%. [1] Using thermal cameras with AI models to monitor soil health and optimizing water usage on agricultural lands [3] using smart irrigation systems and pests, weeds can be controlled by using the ‘see and spray’ technique implemented by using AI models and using drones for spraying in an irrigation system powered by AI. The above techniques are briefly explained in this paper and also give an idea of how AI helps in Agriculture to increase food production.

Keywords: Agriculture, Methodology, Environmental changes, and AI models.

Performance Analysis of Nature Inspired Optimization Algorithms for Virtual Machine Migration Problem in Cloud Environment

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Abstract

The virtualized framework among the terminal user and the computer platform was generated by the software called virtual machine (VM). End users are managed and for the fundamental bare hardware an identical interface was obtained by the virtual machine software. For the cloud infrastructure and cloud computing services, simulation and modeling are given by an extensible simulation tool called CloudSim. During migration of virtual machine the following challenges occurs; Transfer rate, Page resend, Missing pages, migration over WAN network, large applications, Resource availability, Address wrapping and migration in high speed LAN. Scheduling in cloud computing is required to reduce task completion time and to boost the effective use of the resources. It allocates the particular work to the particular resource at particular time. The resource allocation cloud computing is required for assigning the available resources to the required cloud application over the internet. It allows the service provider to control every individual module resources. To get quasi-optimal solutions several meta-heuristic procedures are implemented with Cloud simulator.

Keywords: *Virtual machine, Resource Allocation, Modified grey wolf algorithm, meta-heuristic, service level agreement, Virtual machine migration, Virtual Machine Scheduler, Service level Agreement Violation, Energy Consumption..*

Automated Software Testing Using Genetic Algorithm

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Abstract

Software Testers waste a lot of their time in the process of software testing. It also has been seen in the industries that a lot of money is depleting on the software process. In software testing process we apply test cases as input and check for final output. So our first concern is to choose the appropriate test cases for the software testing process. To give the correct output, it is very difficult to choose test cases. So generation of the test cases is a NP problem. To generate automatic test cases many nature inspired optimization algorithms have been used. These nature inspired optimization algorithms help to generate appropriate test cases. In this paper for generating automatic test cases genetic algorithm and mutation analysis had been used.

Keywords: *Genetic Algorithms (GA), Software Testing, Automatic Test Case Generation*

A Machine Learning Approach to Predict Air Quality in India

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Abstract

The foreseeing air quality is a mind-boggling task because of the unique nature, instability, and high changeability in reality of toxins what's more, particulates. Simultaneously, having the option to demonstrate, foresee, and screen air quality is getting increasingly important, particularly in metropolitan zones, because of the noticed basic effect of air contamination on residents' wellbeing and the climate. In this paper, we utilize a mainstream AI strategy, Support Vector Regression (SVR), to estimate toxin and particulate levels and to foresee the Air Quality Index (AQI). Among the different tried other options, outspread premise work (RBF) was the kind of piece that permitted SVR to get the most exact expectations. Utilizing the entire arrangement of accessible factors uncovered a more effective system than choosing highlights utilizing head segment examination. &e introduced results exhibit that SVR with RBF portion permits us to precisely anticipate hourly toxin focuses, similar to carbon monoxide, sulfur dioxide, nitrogen dioxide, ground-level ozone, also, particulate matter 2.5, just as the hourly AQI for the province of California. Classification into six AQI classes defined by the US Environmental Protection Agency was performed with a precision of 94.1% on inconspicuous approval information.

Keywords: *Air Quality Index (AQI), Support Vector Regression (SVR)*

Execution of Cloud Computing Education in Current Scenario in the World Countries

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Abstract

Education helps in the money related improvement of a country. Instruction has the ability to kill the destitution in a country. The undeniably perplexing foundation climate the board, improvement objectives and quickly changing innovation present new sorts of difficulties to instruction area. In this advanced time, the higher instructive organizations focus on most recent advances and devices to investigate learning. At mean time, the instructive assets dissemination may be lopsided across the nations. Cloud computing carries different advantages to coordinate into the scholastic field. There are hazard issues for receiving cloud in putting away and executing restricted information. This paper studies to dissect utilizes, issues in following cloud computing for the personnel, staff and students in college area. It likewise centres on security issues, hazard divisions. The survey perceived the zones in which cloud computing can have an impact in schooling and College field. Besides, this paper plans to examine about security the executives and the difficulties looked by the education area in non-industrial nations subsequently encouraging specialists to locate the significant issues, in which they can centre their endeavours.

Keywords:- *cloud computing, cloud computing architecture, cloud computing education, challenges.*

Mobile Camera-Based Assistive Text and Product Label Reading Using Android for Blind Persons

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Abstract

The number of visually impaired persons is increasing due to uncontrolled diabetes, age related causes, eye diseases, traffic accidents, and other causes. Cataract is leading cause of blindness and visual impairment. Mobile applications that provide the support to visually challenged person have become an essential device in visually challenged person's life. Recent advances in mobile technology, digital camera, computer vision and camera-based application make it possible to support visually challenged persons by developing camera-based application that combine computer vision with other existing technology such as optical character recognition (OCR) system. The main focus of our research is that the visually challenged person can get information about printed text, text boards, scene text, hoardings, and instructions on traffic sign boards in audio form. With this point of view, the system design for a camera-based reading system that extract text from textual board and identify the text characters from the captured image and finally, textual information will be converted into speech.

Keywords: Visual impact, Blindness, Optical character recognition (OCR), Text reading, Text to speech (TTS), Audio output, Android

Farmer Trade Using Android Application

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Abstract

Farmer Trade Application is an android application developed for farmers/seller's and retailers. This application gives support to the village farmers who want to use this facility and who want to learn how it is possible and how they can use - e farming to sell their products Which will help farmers from to sell their products to different cities through online. Farmers can use this facility and can learn how it is possible and how they can use e-farming to sell their products. They can know how they can open this site, register with it, and sell their products online etc.,

Keywords- *Trade , Market Rates, e - Farming*

The Impact of Big Data Analytics in Information Technology Sector

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Abstract

Big Data is the present day, the newest buzzword around, and with the quantity of data being generated every minute by clients, and businesses universal, there is enormous value to be found in Big Data analytics. Companies are starting to realize the importance of data accessibility in bulky amounts in order to make the right decisions and sustain their strategies. With the enlargement of new technologies, the Internet and social networks, the making of digital data is continuously growing. The word “Big Data” refers to the assorted mass of digital data formed by companies and individuals whose characteristics as large volumes, unusual forms, speed of dispensation requiring particular and increasingly complicated computer storage and analysis tools. Internet data requirement per day 1 PB Facebook data per day, 500 M tweets per day (200 B tweets/ year), and Google processes 24 PB day. In this study collected as secondary data only. This article intends to describe the concept of big data analytics; tools, information technology, futures, applications, as well as the importance of big data analytics. Visual data information innovation tools will be growing 2.5 times faster than take it easy of the Business Intelligence marketplace. This investing in this enabler of end user identity service will turn into a necessity for all organization and industry. The useful of latest digital technologies of big data like social media, smart city, transportation, the hospital for check-up patient, live road mapping for autonomous vehicle, discovering consumer shopping habit, and space researcher.

Keywords: *Information, Internet, Security, Storage and Software.*

Performance of a Knight Tour Parallel algorithm on Multi-core system Using OpenMP

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Abstract

Today's computers, desktops and laptops were build with multi-core architecture. Developing and running serial programs in this multi-core architecture fritters away the resources and time. Parallel programming is the only solution for proper utilization of resources available in the modern computers. The major challenge in the multi-core environment is the designing of parallel algorithm and performance analysis. This paper describes the design and performance analysis of parallel algorithm by taking the Knight Tour problem as an example using OpenMP interface. Comparison has been made with performance of serial and parallel algorithm. The comparison shows that the proposed parallel algorithm achieves good performance compared to serial algorithm.

Keywords: *Knight-Tour problem, Parallel algorithms, Multi-core Architecture, OpenMP, Performance analysis*

A Blockchain-enabled Paradigm to Share Electronic Health Records using IPFS

Sagar Lachure¹ Dr. Ashish Tiwari¹

Abstract

The next important asset for patients is precise, complete, & up to date medical data. In medical services, the protection of privacy and the firm storage of medical data remain critical issues. For the general population, safe-storage and the extensive use of individual medicinal reports have always been an issue. The resurgence of blockchain-technology created a great opinion to tackle this issue. Blockchain-technology can be applied to securely accumulate individual therapeutic data as a hash-chain including the features of decentralization, verification, and permanent. In this paper, a blockchain-enabled EHR (Electronic Health Records) system was developed to ensure reliable, practical, and interoperable access by all the actor's patients, doctors, and third-party to therapeutic documents while conserving the secrecy of the data of the sensible sufferer. To store records that have the advantage of being distributed, to store records that have the advantage of being distributed, we ought to use IPFS (interplanetary file system) to achieve record immutability. The suggested model also preserves the disease statistics without breaching any patient's privacy.

Keywords: Blockchain, EHR, IPFS, security.

Face Mask Detection and Person Identification

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Abstract

Face veil recognition had seen critical improvement in the areas of Image handling and Computer vision, since the ascent of the Covid-19 pandemic. Many face locations models have been made utilizing a few calculations and methods. The proposed approach in this paper utilizes profound learning, TensorFlow, Keras, and Open CV to identify face veils. This model can be utilized for wellbeing purpose since it is very asset effective to convey. The SSDMN2 approach utilizes Single Shot Multibox Detector as a face finder and MobilenetV2 engineering as a structure for the classifier, which is extremely lightweight and can even be utilized in installed gadgets (like NVIDIA Jetson Nano, Raspberry pi) to perform continuous cover location. The strategy sent in this paper gives us an exactness score of 0.9264 and a F1 score of 0.93. The datasets gave in this paper, was gathered from different sources, can be utilized by different analysts for additional high-level models like those of face acknowledgment, facial tourist spots, and facial part recognition measure.

Whale Optimized Adaptively Regularized Kernel based Fuzzy C-Means for Multi-Objective Images Segmentation

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Abstract

Most important key technologies of image processing are segmentation. The literature surveys have been proposed many clustering methods based on optimization technique to overcome the sensitivity to noise and initial values, very high in local optima entrapment. The effectiveness and simplicity of Fuzzy C-Means clustering procedures are widely used for image segmentation. The Whale optimization is to find the position of the search agent that is the selection of centroid. The proposed Whale Optimized Adaptively Regularized Kernel based Fuzzy C-Means for Multi-Objective Images Segmentation method to improve the performance of image segmentation of multi-objective images which was measured by the parameters such as Peak Signal to Noise Ratio (PSNR), Mean Square Error (MSE) and Root Mean Square Error (RMSE) for the WANG dataset. The outcome of the method was compared with the existing segmentation methods and reflects the best segmentation result

Keywords: *Image, Segmentation, Fuzzy C-Means, Clustering, WANG*

Fake User Identification on Social Networks

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Abstract

Social networking websites engage millions of users around the world. The users' interactions with Twitter and Facebook have a tremendous impact and occasionally undesirable repercussions for daily life. Twitter is an Online Social Network (OSN) where users can share anything and everything, such as news, opinions, and even their moods. Several arguments can be held over different topics, such as politics, Particular affairs, and important events. When a user tweets something, it is instantly conveyed to her followers, allowing them to outspread the received information at a much broader level. With the evolution of OSNs, the need to study and analyse users' behaviours in online social platforms has intensity. Spammers can be identified based on: fake content, URL based spam detection, spam in trending topics, and fake user identification. And with the help of machine learning algorithms, we are going to identify the fake user and spammer in twitter.

Keywords: *spammer's identification, fake user detection, Classification machine learning, online social platform.*

Opinion Classification for Tourists Reviews Using Support Vector Machine

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Abstract

The sentiment analysis has increased its significance in modern days. People had enhanced their approach of exposing their suggestions about any places of interest or any tourist paces of suggestions in Social media networks or travel platforms. Users express their experiences or feelings by reviews or by using some specific symbols like emoji, stickers etc. Social media networks or World's largest travel platform make available of a peoples' feelings or experiences on topics like most visited places. The World's largest travel platform like Booking.com, TripAdvisor, Airbnb etc., help to choose most visited places and share their experiences and feelings about visiting places. This paper proposed a framework to find the scores of the feelings or experiences and then using the scores derive final conclusions. The classification of feelings or experiences is called opinion mining, whereas generating the scores for those feelings or experiences are called sentiment analysis. In this paper Support Vector Machine is used as Classification techniques for opinion mining, finally concluded with the polarity detection and then by creating word cloud images. This system uses machine learning techniques which scrutinize the score result and then by classifying sentiment analysis of most visited places to travel and tourism

Keywords: *Sentiment Analysis, Social media network, Web Pages, Text mining, Opinion mining, Score, Word cloud*

A Measurement Analysis of Website Attackers Using Onionbots

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Abstract

The Onion Router (Tor) is one of the significant organization frameworks that give mysterious correspondence and restriction circumvention. Peak empowers its clients to ride the Internet, talk, and send messages namelessly; be that as it may, digital assailants additionally misuse the framework for dodging crime identification. As of late, different methodologies that forestall or moderate maltreatment of Tor have been proposed in the writing. This paper, which presents one of the methodologies, addresses an IP traceback issue. In our model, onion switches that deliberately take an interest in assailant following recognize assault bundles recorded in the log files by offering essential data to an assaulted worker over an Ethereum blockchain network. The discovery calculation in this paper utilizes the insights of parcel travel furthermore, transfer times and yields assault parcel competitors. The proposed strategy appends a dependability degree to every competitor, which depends on the upper limits of its Type I and II blunder rates. A savvy contract running on the blockchain network positions the discovery results from onion switches as per the unwavering quality degrees.

Keywords: *Tor, Onion bots, Ip traceback, blockchain*

Secure Scheme for Medical Image Storage in Cloud

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Abstract

Nowadays, medical care establishments depend on clinical imaging in the analysis of clinical cases, where there are colossal measures of clinical imaging information that are produced every day. A portion of these cases are needed to be divided between numerous specialists for teleconsultation or tele-conclusion purposes. The dependence on the nearby stockpiling frameworks doesn't ensure the accessibility of adequate stockpiling zones. Hence, the distributed storage innovation is presented that gives versatile capacity online access office. Nonetheless, far about that, information putting away in the cloud brings numerous security issues. Thus, in this paper, the cloud based framework is proposed for putting away and sharing the clinical pictures in secure way. The proposed framework dependent on number of cryptography methods to make better security for the clinical pictures over the transmission connect and on the cloud. Elliptic Curve Cryptography (ECC), Advanced Encryption Standard (AES), and Secure Hash (SHA-3) calculations are utilized here. For limiting the calculation over-burden on the customers' gadgets, the outsider examiner is utilized for checking clinical pictures respectability and legitimacy prior to putting away it in cloud.

Keywords: *Cloud, medical image, ECC, AES, SHA*

A Subsystem for Network Traffic Analysis using Deep Learning

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Abstract

The application of classical machine learning (CML) and deep learning (DL) architectures are employed for network traffic data analysis and proposed scalable deep learning based framework. The Internet and its applications mainly peer-2-peer (P2P), voice over Internet protocol (VOIP), multi-media are following constant transformation. Thus, the patterns of traffic are very dynamic. This indicates that the traffic of present day protocols or applications is entirely different than the traffic of 2 years ago. The present day traffic may require either an additional feature sets or entirely new feature sets for machine learning based system to accurately identify the nature of the network traffic. The methods are widely growing applications and it can be future work for the Cyber Security researches

Keywords: *Deep Learning, peer-2-peer, voice over Internet protocol (VOIP), multi-media*

Integrated Level Aggregation Method for the Identification of Apps in Top Charts

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Muthukumaran N²

Abstract

Each platform of mobile devices has its own app store which is the source for apps, games, movies, books etc. The apps are categorized under predefined labels based on the rules formulated in app store. The apps has been ranked based on the ratings, reviews, downloads and no. of installs. It helps the user to download the top ranked app in a specific category. That ranking of an app makes them think that it will work better than others in an effective way. The evidence aggregation of the above attributes have less variation that doesn't reflect the current status of an app which influences the ranking. For that, the attributes that have been frequently changed due to developer and user actions to be collected for a specific category in top charts. The attributes includes version, last updated date, features of an app and keywords will undergo an independent process that produce the following levels: 1. Version change level, 2. Keyword matching level and 3. Feature matching level. Each value of a level have to be consolidated and aggregated to produce the final ranking of apps in a specified category. The actual ranking has been compared with the obtained ranking to find the deviation value and the false ranked app in the app store.

Keywords: *Evidence aggregation, Version change level, Keyword matching level, Feature matching level*

An Enhanced Hybrid Algorithm Using Levy Flight, Simulated Annealing and K-means Algorithm for clustering high dimensional datasets

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Abstract

Simulated annealing is a simple hill climbing technique which is guaranteed to escape from local optima. Data clustering is done using simulated annealing algorithm in the literature. In this paper, we propose an enhanced version of simulated annealing algorithm to solve data clustering problem. The proposed work is the combination of simulated annealing, Levy flight and K-means algorithms, called LSA-K, which can discover better cluster centroids. Levy flight is a random walk in which the steps are made in terms of the step-lengths, which have a certain probability distribution, with the directions of the steps being isotropic and random directions. The algorithm was initially tested and compared with other approaches using two synthetic and seven real life data sets. The experimental results show that the proposed algorithm is robust and efficient for data clustering.

Keywords: *Simulated annealing, clustering, global search, convergence*

Integrity and privacy preserving of data for secure cloud storage using Third Party Auditor

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Abstract

Cloud is a common place for storing data as well as sharing of the data. However, preserving the privacy and maintaining integrity of data during public auditing remains to be an open challenge . The cloud must have to ensure data integrity and security of data of the user. Using cloud services, anyone can remotely store their data and can have the on-demand high quality applications and services from a shared pool of computing resources, without the burden of local data storage and maintenance. To overkill this issue, we are giving public auditing process for cloud storage that users can make use of a third-party auditor (TPA) to check the integrity of data. Not only verification of data integrity, the proposed system also supports data dynamics. In this paper, we introduce a third party auditor (TPA), which will keep track of all the files along with their integrity. Task of TPA is to verify the data, so that the user will be worry free. Verification of data is done on the aggregate authenticators sent by the user and cloud service provider (CSP). For this, we propose a secure cloud storage system which supports privacy-preserving public auditing and Blockless data verification over the cloud.

Keywords: *Blockless data verification, data integrity, cloud storage, third party auditor(TPA), privacy preserving, public auditing.*

DISDet: DODAG Information Solicitation Attack Detection in IPv6 based Low Power Lossy Networks

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Abstract

Internet of Things (IoT) is an innovative trend which promotes technological and industrial developments. The special resource constrained characteristics of IoT and its voluminous inclusion technology tend to be more challengeable. RPL is the protocol used in Low power Lossy Networks which is prone to cause several security challenges and attacks. RPL constructs a Destination Oriented Directed Acyclic Graph (DODAG) to transmit the packets. Control Messages are the basic building blocks for constructing the DODAG. By altering the control message information, many attacks can be created by the internal and external attackers. DODAG Information Solicitation is a control message used by a new node to join the DODAG. The DIS attacker continuously feeds with a lot of DIS messages to its neighbours. It consumes more network resources and also leads to Denial of Service (DoS). To address this issue, in this paper, the negative impacts of the DIS attack are analysed in terms of the control overhead and energy consumption. This paper also proposes a technique called DISDet which alerts the administrator whenever it encounters any attack and also it mitigates the DIS attack to safeguard the network resources. DISDet detects almost all DIS flooding attacks with less false alarm rate.

Keywords: *IoT, RPL, Control Message, DODAG, DIS Attack, DISDet*

Integration of A Chatbot With Education for The Smart Learning

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Abstract

Chatbots are software agents used to interact between a computer and a human communication. Chat bots use natural language to communication with human users. Chatbots are used a lot in customer interaction, marketing on social networks sites and instantly messaging the client. Many conversational agents (Bot) are developed to answer users questions in a specialized domain. In everyday use of Bot user experience may extend beyond satisfying information needs to the enjoyment of conversations with Bot, some of which represent playful interactions. Intelligent bot systems interact with users in natural language. There is a growing excitement around conversational agents (CAs) or "chatbots". From tech giants' core products such as Apple Siri, Amazon Alexa, IBM Watson.

Keywords: *chatbot, knowledge base, AIML*

Computer-Aided Detection System for Mammogram Screening A Review Using Image Processing and Machine Learning Techniques

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Abstract

This paper aims to review the previously developed Computer-aided detection (CAD) systems for mammogram screening because increasing death rate in women due to breast cancer is a global medical issue and it can be controlled only by early detection with regular screening. Till now mammography is the widely used breast imaging modality. CAD systems have been adopted by the radiologists to increase the accuracy of the breast cancer diagnosis by avoiding human errors and experience related issues. This study reveals that in spite of the higher accuracy obtained by the earlier proposed CAD systems for breast cancer diagnosis, they are not fully automated. Moreover, the false-positive mammogram screening cases are high in number and over-diagnosis of breast cancer exposes a patient towards harmful overtreatment for which a huge amount of money is being wasted. In addition, it is also reported that the mammogram screening result with and without CAD systems does not have noticeable difference, whereas the undetected cancer cases by CAD system are increasing. Thus, future research is required to improve the performance of CAD system for mammogram screening and make it completely automated.

Keywords: *Breast cancer screening CAD system Classification Medical imaging systems*

Segmentation

Crop yield prediction based on phenotype applying time series analysis

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Abstract

Agriculture has vital role in growth of nation's GDP. Indian economy is widely influenced by crop production. Our civilization is due to agriculture. All trading and businesses have agriculture as its key support. Crop selection plays a vital role in agricultural planning system. It depends on certain parameters like MSP, rate of production and certain government policy so based on above facts it can be concluded that several changes are required in agriculture/farming for increase in Indian Economy. It can be achieved by implementing various machine learning strategies in agricultural sector. Along with a great advancement in agricultural equipment and various modern cropping strategies used in farming, correct and precise knowledge about certain factors like seasonal variations, amount of rainfall, humidity, soil conditions, land variations and several other factor plays a vital role in crop selection and getting maximum yield from a minimum expenditure and wise planning of harvesting.

Keywords: *Machine Learning Algorithms, Crop Harvesting, modern crop selection strategies*

Design of Low Power Capable Logic Circuit using Adiabatic Performance

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Abstract

The heat produced by the circuit itself can bum the whole integrated circuit. The power dissipation of the conventional static CMOS logic is bounded by the charging and discharging processes of the gate capacitance. The Power dissipation in traditional CMOS circuits can be minimized through adiabatic method. The adiabatic technique is highly dependent on parameter variation. The energy consumption is analyzed by variation of parameter with the help of MICROWIND tool. In analysis, two logic families, ECRL (Efficient Charge Recovery Logic) and PFAL (Positive Feedback Adiabatic Logic) are compared with conventional CMOS logic inverter and Multiplexer. Power consumption plays a major role in present day VLSI design technology. The demand for low power consuming devices is increasing rapidly and the adiabatic logic style is said to be an attractive solution. Power dissipation in circuits and systems is the critical factor for most of the researchers and industries. Many power dissipation techniques have been proposed but most of these techniques have some trade-offs. This logic makes use of charge recovery technique to achieve comparatively low power consumption to the CMOS logic. The new technology can be used to drive and be driven by conventional static CMOS logic directly. As the size of the integrated circuit grows and more devices are fabricated per unit die area with the technology progress, the power dissipation of the integrated circuit becomes a very important concern.

Keywords: CMO, ECRL, Integrated Circuit Power Consumption, PCFAL.

An Effective Optimization Technique of Extracted Watermark Image using Particle Swarm Optimisation

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Abstract

Nowadays the presence of noises in the extracted image is a major constrain in the Image Processing environment. An ultimate goal of this paper is to optimize the watermark image using particle swarm optimization. Earlier, the research focused on the video watermarking process where the watermark image is embedded into the video as invisible and can be sent to the receiver side for an extraction. While at the extraction stage, the image what embedded was not been retrieved at the receiver side due to the presence of various noises and occurrence of errors in the medium. Hence while comparing the extracted image with the original image, the accuracy was poor and non reconstructable. So this paper serves solution for the above said problem using Particle Swarm Optimization Technique. As the end, the extracted image can be reconstructed to the maximum extent as equal to the input image. This scheme can be widely used in the Medical Imaging application, Defence, etc.

Keywords: Video Watermarking, Particle Swarm, Embedding, Extraction, Image reconstruction, Optimization.

Tumble Gear based Smart Vehicle for physically challenged people

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Abstract

In this paper we design and implement the motor bike with reverse gear system whichs helpful for physically challenged person to take reverse their bike from parking without another person help. Here we used "tumbler gear " mechanism for our prototype model the gear usually used to change the direction of geart consist of two gear which placen parallel by changing their position with motor direction of rotation can be changed butn real time application we need to used gear system with gear box also the bike consist of ultrasonic sensor which work based on echo signals to give alert on taking reverse to avoid collision between other objectt consist of "GPS" which help their family to locate their position easily in case of any emergency and no boards used to control all these electronic modules whichs pre-programmed to do this operation of ultrasonic and GPS module and relay driver circuits used to drive the motorn our prototype.

Keywords: Reverse Gear System, Smart Vehicle, Tumble Gear, Ultrasonic sensor, Motor, GPS, etc

A Circular Shaped DGS for Coplanar Waveguide Transmission

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Abstract

In this paper, we designed and manufactured the circular-shaped DGS for coplanar waveguides. The CPW DGS technology is mainly used because of its band performance which does not require holes in the shunt and series connections and they provide the attenuation to poles at both higher and lower band ends in-order to improve the bandwidth. The purpose of designing the CPW is they are widely used in the WiMAX applications and selection of the DGS is depending upon the bandwidth requirements. Therefore, to reduce the loss in the bandwidth performance of the circular shaped DGS for a coplanar waveguide with the one column, hence we introduced a two-three column circular-shaped DGS which improves the transmission coefficient by 0.8066 that is (-1.10 dB). This simulated and fabricated results shows that this structure outperforms than the existing designs.

Keywords: *coplanar waveguides, DGS, wi-max, transmission coefficient, bandwidth.*

Resource Allocation Scheme based on NOMA in OFDM

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Abstract

This paper describes a model to deduce the usage of power by the user in the demand condition to the power allocation to the system. It is required source since the effect of frequency of the selective channel is ignorable which are by using the NOMA it entrances the future network capability. This paper proposes the technique, which is used to provide the resources techniques. The purposes of the allocation scheme made its allocated the power as per the users in the system to give the equal amount of the power to the users resources allocation scheme. The calculation of the resource allocation is done by number of users, sum rate and the power allocated during the transmission. Therefore, here the MATLAB software is used to give the simulation results and the NOMA proves better when compared the OFDM. From the proposed system, the total co-efficient increases by 50% in terms of power and the 20% in the indicator in terms of the users.

Keywords: *OFDM, NOMA, 5G, matlab*

Design of dielectric coupled line resonator with Defected Ground Structure in Linear wave filter

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Abstract

In microwave communication, Microwave Integrated, circuits (MIC), there are various methods and techniques, which are used for designing a Defected Ground Structure (DGS). In recent years, Microwave and mm-Wave frequency transmission plays a major role in wireless communications. so we are using a Microwave Band pass filter to reduce noise and a circuit is smaller. In this paper, we designed a dielectric coupled line resonator based on Defected Ground Structure (DGS). The hole is created in a defective structure, which improves a current dispersion. The level of frequency response, which is high with a uniform level and to protect a signal which is, received under an electric and magnetic field (E&H) variation over the desired band. The design of a Dielectric coupled line resonator (DGS) is widely used to improve a Signal to Noise Ratio (SNR) and reduces another signal distortion in the circuit. The simulated results show the proposed designs outperform the existing DGS designs.

Keywords: *Dielectric, coupled line resonator, microwave frequencies, Band pass filter, Magnetic and electric field.*

Advanced Handwritten Signature identification system with use of HU's moment invariants

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Abstract

This paper introduces a system of Fuzzy Min-Max Neural Networks signature recognition and evaluate the impact of moment invariants on the identification of signatures by analysing the precision of the identification. In addition, the database is also being evaluated for signature recognition by fuzzy min-max neural networks, resulting in more accurate measurements. In the person recognition method developed through MATLAB, image processing and fuzzy neural network toolboxes have been used. For the recognition of signatures, the database is generated with thirty iterations for five individuals. By scanning the photographs and then transforming them to regular binary images, these signatures are pre-processed. The characteristics are picked and collected, presenting details about the signature structure. The efficiency of the model by implementation of fuzzy min max neural networks classifier is also investigated in this paper.

Keywords: *CNN, Fuzzy min max neural networks, handwriting signatures, artificial neural network, HU's seven moment invariants.*

Energy-Efficient Adaptive Encoding for Off-Chip Communication

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Abstract

The data transfer has an increasing effect on the total system energy as technology scales, often overtaking computation energy. To reduce the power of interchip interconnects, an adaptive encoding scheme called adaptive word reordering (AWR) is proposed, which effectively decreases the number of signal transitions, leading to a significant power reduction. A novel circuit is implemented, which exploits the time domain to represent complex bit transition computations as delays and thus, limits the power overhead due to encoding. The effectiveness of AWR is validated in terms of decrease in both bit transitions and power consumption. AWR is shown to yield higher power savings compared with three state-of-the-art techniques reaching 25% and 65% during the transfer of multiplexed address-data and image files, respectively, at just 1-mm wirelength.

Keywords: *Encoding scheme, energy efficiency, interconnects, low power, off-chip communication, switching activity.*

Optimization and Simulation of Capacitive Pressure Sensor with Improved Parameters

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Abstract

Asset of this paper is to style and simulate the pressure sensing element victimisation using COMSOL Multiphysics and analyse the performance of the pressure sensing element. There are different kinds of pressure sensors like piezo resistive and capacitive pressure sensors; this paper is targeted on the capacitive pressure sensor. Generally, the MEMS capacitive pressure sensor sensing elements have gained benefits over the piezoresistive pressure sensor because of high sensitivity, low power consumption and unchangingness of temperature. MEMS sensors have the advantage of terribly tiny size, this implies they answer tiny changes in pressure. This paper shows the characteristics of the capacitive pressure sensor sensing element. the current work demonstrates the planning of MEMS primarily based capacitive pressure Senor victimisation Multiphysics. It permits elaborate image of varied structures and indicates the distribution of stress and displacements and provides big selection of simulation choices. In this work strain of the capacitive pressure Senor is also computed. The capacitance measuring value has been computed through simulation for a capacitive pressure sensor. The new capacitance value is $1.88659e-13F$. This increased capacitance provides more sensitivity which may use in medical applications.

Keywords: Capacitance, COMSOL, Pressure Sensor, Displacement, Poisson's Ratio, Young's Modulus

Early Diagnosis of Parkinson's Disease using Convolutional Neural Network

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Cardamom Planters' Association College, Tamilnadu.

Abstract

Early-stage diagnosis of Parkinson's Disease (PD) is still a challenging task to the neurologists. An effective system is used for volume-based slices of Single Photon Emission Computed Tomography (SPECT) image to diagnose early PD. 16 slices which has significant region of interest are taken out from the SPECT images which is called as two-dimensional volume-based slices (2Dvs) for the analysis. The normalization technique called bilateral filter is used to enhance the Striatum of 2Dvs which make the architecture simpler. A deep learning technique called modified VGG16 architecture is used as a neural network to learn significant features from 2Dvs which could be able to discriminate Early PD from healthy control (HC). The architecture offers highest accuracy for discriminating Early PD from HC based on 10 cross fold validation. These techniques are practiced to develop a promising diagnostic model for early diagnosis of PD.

Keywords: *SPECT, Early PD, VGG 16, Deep Learning*

Investigation of ZnO as substitute explicit materials in Sensor Innovation

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Abstract

Essential focal point of this paper is to show the significant social difficulties and their answers through MEMS innovation. Here the purpose for picking the MEMS innovation is interminable on the grounds that it has parcel numerous applications with special highlights. In this paper certain investigation has been finished utilizing diverse detecting materials. Perhaps the main material utilized here is ZnO. Different mechanical boundaries has been tried in multiphysics climate. As a yield as far as uprooting through this examination report it has been acquired as $6.98 \times 106 \mu\text{m}$ and $4.28 \times 106 \mu\text{m}$ while profundity and tallness is variable respectively. This sort of exploration is extremely helpful for organic applications like early discovery of daises. Microcantilever is taken as a design here on the grounds that it is quite possibly the most basic and delicate gadget at miniature level. Utilizing this design some stunner focuses has been examined in this paper about how it tends to be valuable for gas finding and related work.

Keywords: MEMS, Micro cantilever, Sensor, Toxic Gas, Zinc Oxide (ZnO).

Approaches on Different Power Management Techniques for IoT enabled 5G Communication – A Survey

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Abstract

The Internet of Things (IoT) hassles new challenges in deploying the IoT ecosystem with diverse sensor platforms connecting billions of heterogeneous objects over the internet. Power Reduction is one of the major challenges in expanding the network of IoT connected devices. Mostly Low-energy sensors are used to transmit data sporadically or continuously. While considering billions/trillions of sensors connected together with various user applications, their energy efficiency becomes a major issue. This survey discusses the future IoT enabled 5G technology from a bird's eye view covering all its statistical/architectural trends, challenges, use cases and future enhancement. This study gives various approaches and design strategies that have to be developed for reducing Power consumption and power management techniques to increase the reliability in devices connected in IoT Networks. The major contribution of this study will significantly contribute to the Internet of Things (IoT) for Next-Generation (5G) Smart Systems.

Keywords: *Internet of Thing (IoT), Fifth-Generation, Power Management Techniques, Challenges in IoT, Power Consumption*

Design of low power Magnitude Comparator Using GDI Technique

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Abstract

In recent trends there is an increasing demand for portable devices which are battery operated and designing these devices with low power is very essential. Comparator is one of the most fundamental component that performs comparison operation in circuits. In this paper an efficient and low power Multiplexer based 2 bit Magnitude Comparator circuit is designed using GDI(Gate Diffusion Input) technique. This technique reduces power consumption, propagation delay, and area consumption of digital circuits at the same time maintaining low complexity of logic design when comparing with the traditional circuit. The performance analysis of proposed 2 bit magnitude comparator is compared with the existing technology. The simulations are performed in Tanner EDA tool.

Keywords: *Magnitude Comparator, GDI(Gate Diffusion Input), GDI-Cmos Hybrid Design, Tanner EDA*

Real Time Fabric Flaw Detector Using Arduino

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Abstract

Textile industries are one of the most growing and competitive markets worldwide and form a major part of manufacturing, employment and business operations in several developing countries. Among the numerous failures faced by textile industries, fabric flaws constitute more than 85%. So extra efforts are taken in manufacturing improved quality of fabrics. Defects in textile fabric are a major threat to textile industries. So, defect detection becomes an essential step in the manufacturing process of textiles. But the process of detection of fault in fabrics includes only manual inspection strategy. This traditional human visual inspection leaves the process to be inefficient and time consuming. The image processing technique is used to spot the faults as simulation output and Arduino kit is used for fault detection. Here automated fabric inspection system has been proposed to enhance the accuracy of fabric defect detection. This system is made using MATLAB with image processing techniques and this idea is implemented on Arduino kit for real time applications. Neural Networks with Back Propagation algorithm is used as a finest classifier for classification of faults. Recently, Arduino has become a liable target for the execution of algorithms suited to Microcontroller based processing applications. Whenever the software notices a defect in the fabric it sends a signal to the microcontroller and it halts the system for a while to eradicate the flawed fabric part. And the buzzer is switched ON then the detected fault is displayed in the LCD. And the speaker will give the voice alert after noticed the fault.

Keywords: *Arduino, Fabric Fault classification, Image processing, MATLAB, Morphological operators.*

Smart Health Tracking Band – A Curator for Well Being

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Abstract

In the current world, discovering time to see the specialist to affirm your wellness is not really conceivable. Due to the increase of COVID-19 cases across the world day-by-day, it is difficult to treat a huge number of patients in hospitals. In order to witter the viral infection rate and to monitor patient's health who stay in hospitals; also to monitor the patients who are in need of home hospitalization, this integrated sensor network is quite helpful in various aspects. This paper proposes about the monitorization of bed-ridden patients or who can't approach a caretaker, with the smart health monitoring band which is embedded with the sensors that are helpful in tracking the health condition of the patient. This system plays a great evolutionary role in the healthcare sector to relax the mental health of patients as well as the doctor's stress level.

Keywords: Hospitalization at homes and clinical centers, smart wearable band, integration of sensors, ease of patient's health monitorization.

Segmentation of Retinal Fundus Images for Global Eye Disease Diagnosis

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Abstract

Diabetic retinopathy is a common disease who having with long standing diabetic. Early detection of this disease protects patients from losing their vision. At first, diabetic retinopathy does not cause any kind of symptoms or solely delicate vision issues. Diabetic retinopathy symptoms may include Blurred vision, colour blindness, dark wool and Vision loss. Diabetic retinopathy usually affects both eyes. The condition can develop in anyone who has type 1 or type 2 diabetes. Type 1 is a chronic condition in which the pancreas produces little or no insulin and type 2 is a long term metabolic disorder that is characterized by high blood sugar and insulin resistance. It occurs mostly due to the less control over the diabetes and less care taken to control it. In this project is discussed about the methods of diagnosing of diabetic retinopathy using artificial intelligence. The retinal image samples are collected from hospitals or captured using fundus camera. The retinal image of the deceased is segmented to find the diabetic levels of the patient through which the stage of the disease is diagnosed. Initially the image of the deceased is segmented and pre-processed using image processing. The segmented image is classified and identified using Artificial Intelligence (AI).

Keywords: *Image processing, neural network, medical image processing, fundus camera, classification*

Monaural Speech Separation by means of Video Stream Digital image processing

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Abstract

In real life scenario, speech heard by the listener gets affected by the addition of more than one noise source. This addition affects the quality of speech and increases the listener's fatigue. The human auditory system successfully separates speech from the noisy sound sources. However the machine implementation of the same fails to perform as human beings. This has a lot of possible claims such as involuntary speech recognition, Voice identification, audio retrieval etc. The current speech separation systems uses acoustic features performs well under a controlled environment and failed to perform in a noisy environment. Recently researchers started to use visual features along with the acoustic features to separate the target speech from the noisy speech mixture. This of course increases the speech separation accuracy in terms of Voice quality and perspicuity.

This project aims to develop a computational auditory scene analysis (CASA) based speech separation to separate the target speech from the noisy speech mixture using the visual cues. The visual cues will be extracted by the mouth detection using Viola Jones Algorithm and the lip movement tracking using Kanade Lucas Tomasi (KLT) algorithm. Finally, the extracted visual cues will be used to suppress the noisy speech and retain only the target speech with good quality and intelligibility.

Keywords: CASA, KLT, BSS, IBM, ROI, AV

Hybrid System Design Of FSO- Tech And RF Signals in Spacial Communication

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Abstract

Free-space optical communication (FSO) is an optical communication technology that uses light propagating in free space to wirelessly transmit data for telecommunications or computer networking. Li-Fi is a wireless communication system which makes use of Free Space Optics to transmit and receive data instead of traditional RF as in Wi-Fi. This paper gives a comparison between FSO and RF wireless communication signals in terms of efficiency, transmission rate and capacity in Space communication. It gives the introduction to Hybrid System which can be used in Spatial Communication.

Keywords: *FSO, Radio Frequency Signals, Hybrid System, Satellite Communication*

Raspberry PI Based Automatic Vehicle Speed Detection Warning and Control System

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Abstract

Now days, people used to drive vehicle very fast and thus there is occurrence of accidents in the critical zone such as school, college, hospital, residential area increases even though speed breakers, warning alerts are provided. Moreover many people do not have passion to follow the traffic rules, hence we need a system that automatically detect the pedestrian density/traffic density in critical zones and to measure the vehicle moving speed and to warn the driver, if the driver goes beyond the speed limit. The proposed system not only warns the driver but also provides real time automatic vehicle speed control if the speed limit breaches. The objective of this project is to develop a system to keep the vehicle secure and protect the human life. The main aim of this project is to design and develop a system automatic speed control of vehicle and accident avoidance using Raspberry Pi processor and IR sensor.

Keywords: signboard detection, raspberry pi, Open CV, image processing, pedestrian density

Safety System for Automobiles Through Vehicle –To-Vehicle Communication Using LiFi

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Abstract

The new vehicle execution has been persistently improved and the examination results identifying with the well being of vehicle driving have additionally been consistently announced and illustrated, it is attempting to discover an equalization point between the advancement of vehicle speed limit and the assurance of driver's security. Li-Fi is a VLC, visible light communication innovation that manages move of information through enlightenment by removing fiber from optics by sending information through a LED light that fluctuates in the force quicker than a human eye can pursue. In this undertaking we attempt to build up a framework to give the before mishap data to the vehicle control unit with the goal that it empowers the vehicle to anticipate the occurrence of mishap. Vehicle to vehicle correspondence is the be arrangement that has been utilized so as to decrease vehicles' mishaps. The proposed utilization of Li-Fi innovation in this task involves the light emitting diode (LED) bulbs as methods for network by sending information through light range as an optical remote vehicle for signal engendering. Truth be told, the use of LED dispenses with the need of complex remote systems and conventions.

Keywords: *Light Emitting Diode; Photodiode; Vehicle to Vehicle Communication; Visible Light Communication*

Design and Implementation of Miniature U-slot Patch antenna for 5G Communication

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Abstract

In this paper Compact size and high gain U-slot rectangular microstrip patch antenna for 5G wireless communication is proposed. The U slot antenna concept has been used in patch antenna designed to reduce antenna size. In fact 5G wireless communication system requires a compact size, low profile and simple design structure to make sure the reliability, mobility and high efficiency. The proposed antenna is designed on a compact Rogers Substrate RT duroid with relative permittivity ϵ_r of 2.2 and loss tangent δ value 0.0009. The proposed design provides a very high gain of 10 dBi at resonance frequency of 30 GHz which is one of the distinct features of the proposed antenna. The proposed antenna is designed and fabricated to meet the best possible result using a simulation software: Ansoft HFSS (High Frequency Structure Simulator) software version 15.0. Microstrip patch antennas are widely used because of their several advantages such as light weight, low volume, small size and low fabrication cost. The proposed antenna was measured and compared with the simulation results to prove the reliability of the design. The performance of the designed antenna was analyzed in term of gain, return loss, VSWR, and radiation pattern at frequency is 30 GHz.

Keywords: *compact size, High gain, High Efficiency, millimeter wave, Low profile, 5G, HFSS*

Smart Saline Monitoring Device using LoRa Technology

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Abstract

In the Hospital during medication processes there is a common practice to treat patient with saline for dehydration and other medical illness to improve their health condition. In many hospitals, the nurses are responsible for monitoring the level of saline bottle but due to negligence and unusual condition, the exact timing of removing the needle from the patient's vein is ignored which causes serious problems and may lead to death also. Therefore, to prevent this type of issues due to the ignorance of nurses and to provide remote surveillance, we have proposed a Low cost smart saline level monitoring device which includes the combination of weight sensor and LoRa (Long Range) technology. LoRa wireless communication technology allows facilitating the development of data communication network over a large-area, improving sensing reliability, extending battery life as well as reducing total system costs. Our proposed system continuously monitors the weight of the saline bottle, if the level is low then it alerts the care taker in the room with the ISD1820 playback module and also nurse using our device remotely with the alarm sound. If no action is performed for a particular time then the system will close the saline flow using a solenoid valve connected to the bottle, thus help to monitor the safety of the patients.

Keywords: *Saline, Weight Sensor, Lora Technology, wireless sensor networks*

A Survey on GPS Based Smart Speed Control for Electric Vehicle in Speed Restricted Zone

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Abstract

Electric vehicle (EV) is a thrust area of research in the recent trends due to the increase in the green house effect . Electric vehicle refers to the vehicles that runs only on electricity. It requires an electric motor to run instead of burning a mix of fuel and gases. It helps in reducing global warming , low maintenance, zero emission, greater convenience and low maintenance. EVs works on the principle of transducing effect. By 2030, the government aims to make India a 100% EV nation. It has proposed that two wheelers below engine capacity of 150cc sold in country after March 31, 2025 and three wheelers sold after March 31, 2023 should be EV. So, it is beneficial to use Electric vehicles. This papers gives a detailed survey on various types of electric vehicle available and the various types of speed control techniques that have been used for various applications.

Home Automation for Paralyzed People Using Eye Blink Sensor

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Abstract

The constant demand to improve daily living standards for paralysis patients or general people serves as a motivation to develop newer technology. The tasks once performed by big traditional computers are now solved with smaller smart devices. The study here talks about the development of a blink sensor device which used for automated home designs for disable people. This sensor is able to detect an intentional blink from a normal blink, which is useful for the paralysis patients especially Tetraplegic patients to regulate their home devices at ease without any help. This helps save a lot of electricity and can be installed into automated home devices easily.

Keywords: Microcontroller, Tetraplegic, Average Flux, Home Automation

Automatic Detection for Diabetic Retinopathy Using Deep learning in Modified AlexNet CNN Architecture

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Abstract

Diabetic retinopathy is a kind of vascular disorder where the fluid leaks from blood vessels into the retina which causes retinal damage .and the main cause of blindness is among working age population therefore the retinal images of the both gender patients with ages in the range of (18-35) years are taken from all over Tamil Nadu. For detection of diabetic 155 images from DR category and 35 images from normal category are used. The Exciting methodology for the detection of DR in retinal images has three techniques. Among that the image pre-processing, feature extraction, feature selection. The Proposed methodology directly raw images are taken in this project. The texture feature which is related to diabetic is extracted to differentiate between the normal and DR images using convolution neural network in Modified AlexNet architecture. we proposed a diabetic retinopathy Interpretable classifier which is capable of classifying retinal images in different levels of disease severity and of explaining its results by assigning a value for every point in the input and hidden space, calculating its contribution to the final classification in a smooth way.

Keywords: *Diabetic Retinopathy, deep learning. Convolution Neural Network, Alex Net*

Design and Analysis of a Lab IP Spy Camera and Alarm System using Raspberry Pi and ATMEGA328P

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Abstract

Security is a very important thing to be concerned in our day-to-day life. Everyone wants to be secured as much as possible. Knowing our home or office is secure provides us peace of mind. With the increasing concern over better protection of people and assets, security departments are required to provide a higher level of security than before: proactive prevention, better situational awareness, earlier detection, quicker identification and prompter action. Now many organizations are continually reevaluating and enhancing their video surveillance to provide optimal daily security and operational efficiency. As the technology is advancing day by day, there are various alternatives occurring for the already present or previous technologies. Internet of Things (IOT) is an upcoming technology that makes use of Internet to control/monitor physical devices connected to the Internet. The basic premise is to have smart sensors collaborate directly without human involvement to deliver a new class of applications. IOT gives user the ability to control more than one digital thing easily through a comfortable Graphical User Interface (GUI) over the Internet. This paper aim to design an Embedded Real-Time Security System Based on Raspberry Pi for intruder observation that reinforces surveillance technology to provide essential security to the Lab equipment and associated control. And also to design a low cost Alarm system based on Microcontroller and ultrasonic sensor that takes proper measure to prevent intrusion, unwanted and unauthorized user(s) into the Lab. Ultrasonic sensor sense the presence of an intruder & Controller reads the signal from sensor, if intruder is detected, it turns on the buzzer. At the same time the live stream vide of the intruder can be monitored, and also the IP spy camera control system will

send an image of the intruder via Gmail to the user. The designed system has been proven to be a reasonable advancement in access control and security system technology.

Keywords: *IOT, Raspberry Pi, IP Camera, Microcontroller, Ultrasonic sensor, Gmail notification, Security.*

Integrated Technique for Data Integrity and Confidentiality

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Abstract

The dispatch of power at minimum operational cost of thermal energy sources has been a significant part of research since decades. Recently, with increasing interests in renewable energy resources, the optimal economic dispatch has become a challenging issue. This paper presents combined emission economic dispatch model for a solar photo voltaic integrated power system with multiple solar and thermal generating plants. We formulate mixed integer binary programming problem subject to various practical constraints. A decomposition framework is proposed where the original problem is split into two sub-problems. Particle swarm optimization, Newton–Raphson method, and binary integer programming techniques are exploited to find the joint optimization solution. The proposed model is tested on the IEEE 30 bus system. The simulation results demonstrate the effectiveness of the proposed model.

Keywords: *Economic dispatch, power systems, photo voltaic, PSO*

Smart Irrigation Monitoring System using Lora Technology

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Abstract

This paper explains smart methods of agriculture using technology from the Internet of Things, which increases yield and ensures less human interference for agricultural work. High accuracy and Low- power are the prime factors to make any IoT arrange favourable and allowable to the Ranchers. In this project we have designed the controlling mechanism for the flow of water in to agriculture farm depends on the wetness of the soil which is required for the specific crops. The Humidity and Temperature value will be sensed for the specific action by the farmer. The long range data transmission of the sensed data is possible as projects adopt LoRa technology.

Keywords: *Smart Agriculture, Internet of Things, LoRa Technology, Ranchers.*

A Source-Location Privacy in Wireless Sensor Networks Using Multi-Sinks

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Abstract

Identification of source node is a major problem in WSN. Why because they are deployed in different places randomly. We know that the source node sends the valuable information about the targeted destination but due to traffic in the network targeted destination is affected easily. So, in our paper CPSLP Scheme is proposed to address the issues in the source location privacy for each and every node transmission. Here Cloud shaped fake hotspot is introduced to add a fake packets more flexibly and it may confuse the adversary mode. Therefore for the hotspot locating adversary node finds difficult to route the information through the path. IN our paper the simulation results are illustrated by using the CPSLP scheme to prevent this adversarial capture and at the same time it maintain the high level of security protection.

Keywords: *source identification, node privacy, wireless sensor network.*

IoT Based Automatic Ration Product Dispensing System

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Abstract

This paper proposes automation in ration distribution using smart card based on RFID and IOT technology. Using this technology, we can achieve secure and interactive approach for automation of ration distribution. In automated system, we replace the conventional ration card by smart card (RFID based), which contains the family member details. The customer needs to show this tag to the RFID reader and enter the password. The Arduino microcontroller connected to the reader will check for the user authentication. If the user is found authentic then the quantity of ration to be given to the customer according to the total number of family members will be displayed on the display device. After customer purchases the material, amount gets deducted from the registered bank account. This smart ration card is free from theft as the information about the delivered ration will be sent directly to the customer using global system for mobile communication (GSM) and also updated in the government database without manual feeding using IOT technology. The database can be accessed by both consumers and by the government main stream invigilators for distribution centres from their head office. Therefore, this project ensures corruption free ration centre working system which will also enhance the direct communication of the consumers with the government and will definitely provide transparency.

Keywords: *RFID tag, IOT, Authentication, Automation, GSM, Cloud database.*

Driver Drowsiness Detection and Alert System

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Abstract

In recent few years, there has been rapid increase in road accidents across worldwide and India as well. The most significant reasons for the accidents are driver drowsiness and fatigue. The conventional vehicle safety system and the sensor-based detection for drowsiness are often very late in detecting and preventing fatalities on road. To detect the driver drowsiness of driver, currently many systems are being developed; among them the computer vision- based detection system proved to be best in detecting driver drowsiness. In the existing system, only the drowsiness of the driver is detected, no method is suggested or used to wake him up from drowsy state. The proposed system uses Raspberry pi3 processor to detect the driver drowsiness through eye closure level using eye detection algorithm. The system not only detects the drowsiness but also provide alertness to the driver through buzzer. In addition, the system also tries to wake up the driver from drowsy state by providing mild vibration to driver and sprinkling water on driver's face.

Keywords: raspberry pi, Open CV, image processing.

Intravenous Flow Monitoring System Using Lora technology

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Abstract

The Automated Glucose Stream Control and Observation System is associated with monitoring the progression of glucose as a result. At any point, if patients have a lot of fatigue, the medical caretaker will put the glucose for patient recovery at any time. She just needs to monitor the progression of the amount of glucose while placing the glucose bottle. In the event that the glucose bottle is unfilled, the container should be replaced or evacuated by a medical caretaker. In case nurse is not there that time in invert bearing, body blood patients will flow into the container. We can screen the glucose stream by utilizing this observing framework. We'll consider the weight of glucose bottles in the Glucose Monitoring System. We use the Weighing Scale for the weight of the bottle. The flow will control the progression of glucose, as indicated by the weighting scale. The stopper will close the valve so that blood will not come back into the bottle on the off chance that the container has been unfilled.

Keywords: *Arduino microcontroller, Solenoid Valve, Load Sensor.*

Reconfigurable H-Shaped Dielectric Resonator Antenna

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Abstract

A Reconfigure Dielectric Resonator Antenna (DRA) using a H shaped Aperture Slot. The slot Aperture designed has been analysed over different slot dimensions with input impedance. This antenna can be used for wideband applications at 5G frequency band. The slot aperture feed used to neglect spurious radiation to resonator antenna and also RT duroid has low dielectric constant ($\epsilon_r=2.2$) compared to FR4 substrate. By using substrate and feed technique to achieved gain above 5 dB. The proposed antenna is designed to meet the best possible result using a simulation software: Ansoft HFSS (High Frequency Structure Simulator) software version 15.0. The proposed antenna was measured and compared with the simulation results to prove the reliability of the design. The performance of the designed antenna was analysed in term of gain, return loss, VSWR, and radiation pattern.

Keywords: DRA, 5G, HFSS, VSWR, Gain.

Design of Low Power Hybrid Full Adder Using XOR/XNOR Circuit

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Abstract

In now days, electronic devices usage was increased in our life day, it can be designed with higher speed and more reliability. the full adder has consumes more power, it can be rectified by design of new XOR-XNOR gates. Simulation results are performed in tanner tool. Four new XNOR, XOR gates are proposed in this paper. These new XOR/XNOR circuits are designed to have high speed and less power consumption compared to other XOR/XNOR gate circuits. This is possible due to less output capacitance. Each one of the proposed new hybrid full adder circuit has its own advantages of speed, power consumption and driving ability. From results, proposed circuits are found to be better than novel XOR/XNOR gate circuits. The novel structures of XOR - XNOR gate are 6 transistors. the design of hybrid full adders with low power, high speed and less PDP. The proposed new hybrid full adder has superior speed against other full adder circuits with less number of transistors.

Keywords: CMOS XOR-XNOR Gate, Hybrid Full Adder, Low Power, High Speed, Less Transistors.

Design and Analysis of RF LNA With Transistor Configurations

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Abstract

In radio frequency (RF) the major role is played by low noise amplifiers (LNA). This paper elucidates the design of an LNA with optimizing its stability factor, gain and with different configurations of transistors in the frequency range of 5-6 GHz. Design-optimization of low noise amplifier has been performed with standard transistor (BJT and MOSFET) in circuit simulation software. For comparison we considered the following configurations of LNA: (i) a single stage BJT LNA, (ii) BJT and NMOS cascade LNA, and (iii) BJT and CMOS cascade LNA. Simulation results are compared to other configurations BJT-NMOS cascade LNA depicts the highest gain of 20.42 dB and the lowest noise figure of 0.25. On the other hand, BJT-CMOS cascade LNA demonstrates the highest stability factor of 1.07 followed by BJT LNA and BJT-NMOS cascade LNA configurations respectively. Further improvement in the LNA performance metrics is feasible by parametric optimization of transistor parameters and passive elements in the matching network.

Keywords: Radio frequency (RF), Low Noise Amplifier (LNA), Noise Figure, Gain, Stability Factor

Deep CNN Based Automated Diabetic Retinopathy Disease Identification System

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Abstract

Diabetes is the most widely found chronic disease present in people of various age groups having insufficient insulin production, which produces high blood sugar. Diabetic Retinopathy (DR) is an eye disease caused by diabetes, which results in damaged retinal blood vessels and may lead to vision loss. Many computer-aided diagnostics systems have been developed in the past, which used traditional techniques where handcrafted features are used. With the advent of Deep Learning, especially in medical image analysis, more accurate and robust results are produced, as it performs feature extraction task automatically. Convolutional Neural Networks (CNNs) are the most commonly used deep learning method in medical image classification.

Keywords: *Diabetic Retinopathy, Deep Learning, convolutional Neural Network*

Design of 4:1 Multiplexer Based Adder Using Various Logic Techniques

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Abstract

In recent trends, low power consumption and high speed has become an important consideration while designing any computational devices. Thus designing a circuit with high speed and with less number of transistors are the real challenges in VLSI. This paper introduces varying techniques for designing high speed 4:1 Multiplexer (MUX) based adder. The multiplexer is designed with different logic styles such as Pass Transistor Logic, Transmission Gate Logic and GDI technique and finally, using the design 1 bit full adder is designed and the results are being compared with the existing technologies. This paper thus presents, speedy and efficient multiplexer for low power applications like telecommunication system, computer memory etc. Simulations were performed using Tanner Tool(S-edit, T-spice, and W-edit) 250nm technology

Keywords: *Pass transistor logic, Transmission gate logic, GDI technique, 4:1 Multiplexer, Tanner EDA.*

Design and Implementation of Internet Controlled Switch Box

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Abstract

Nowadays the smart home technology provides security, convenience and energy management by allowing them to control devices by using a smart home application on their Smartphone or other networked connected device. As energy management is becoming a bigger issue all around the world due lack of awareness in implementing the emerging techniques and technologies. Therefore designing a low cost Smart Switchboard is becoming an essential thing to efficiently manage the devices thereby reducing the unwanted energy consumption. Our proposed system consists of a touch sensor, Node MCU, Liquid crystal Display (LCD), Temperature Sensor, Humidity Sensor and relay drivers to control the switch box. The traditional switch box can be easily converted to a smart switch box, so that home users can control and monitor it both manual and by using the Internet. We also can control light and control, speed of the fan and other electrical appliances in a home or office in a smarter way. Our system is low cost, more flexible and easily usable by all kinds of people, especially elderly and the disabled persons who live alone. It is more desirable for conservation and efficient use of energy.

Keywords: *Node Mcu, LCD, temperature sensor, touch sensor, low cost and flexible switch box*

Supervisory Control & Data Acquisition (SCADA) Systems in Power Stations

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Abstract

Supervisory Control and Data Acquisition (SCADA) Systems are controlling and monitoring critical plants of the nation's infrastructure such as power generation and distribution, oil, gas, water and waste management. SCADA is a system in which the message that are individuals are sends to the external world. In this presentation to understood SCADA concept in control operations and systems components and example of use. The application of SCADA are Supervisory computers, Remote terminal units, Programmable logic controllers, Communication infrastructure, human- machine interface alarm handling, PLC /RTC programming, PLC commercial integration, communication infrastructure and methods SCADA architecture development. SCADA systems can be relatively simple, such as one that monitors environmental conditions of a small office buildings or incredibly complex, such as system that monitors all the activity in a nuclear power plant or the activity of a municipal water system. From the wireless SCADA system which is proposed in setup the temperature of around 30 degree of Centigrade could be sufficiently recorded from remote location.

The properly designed SCADA system saves time and money by eliminating the need of service personal to visit each site for inspection, data collection or make adjustments. To understand four types of SCADA functions such as Data acquisition, Networked data communication, Data presentation and Control. At present, an evolution at SCADA systems is at a very high rate and it is also entering the market of plants with a huge number of input and output channels. UNIX, VMS and DOS are availed by the systems of SCADA.

PV Panel Cooling Using Stack Effect

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Abstract

Unsatisfactory performance of the solar panels is one in every of the foremost issues among the promotion of solar photo voltaic technology. A vital factor affecting cell performance is its operative temperature. The cell potential declines near linearly with a rise of the cell operative temperature. The temperature condition on the operating surface of a PV panel is usually 20-30 °C beyond the normal temperature conditions. On the premise of those issues, the potency of the solar panels will be refined by sustaining their operative temperatures as low as possible. This paper portrays a technique of Photo voltaic panel cooling using convection generated by the chimney effect. This paper considers the reduction of heat from the Photovoltaic panel for both active and inactive conditions.

Keywords: air cooling, convection, solar cell cooling, solar photovoltaic.

A Joint Optimal Algorithm Design for Envi-Economic Power Generation by Using Communicative Smart Grid

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Abstract

Distribution of Energy from numerous Resources involving small grids is growing trend for the economical technique of power generation or distribution to a bigger extent. The increasing penetration of distributed generation resources demands higher economic performance of small grids. Therefore EDP i.e., Economic Dispatch drawback should be handled in a very right method. The most objective of the economic dispatch is delineated because the technique for looking the best answers for the minimization of the generation value taking into consideration of the required constraints. A comprehensive environmental-economic dispatch technique for good small grids area unit projected, with the target for minimizing the summation of generation and emission prices within the system however providing the facility generated as per the required demand. Energy management systems (EMSs) and improvement strategies area unit most needed to effectively and safely utilize energy storage as a versatile grid plus that may give multiple grid services. A changed organic process Multi-objective improvement formula has been outlined within which, the good Grid Management is taken into account such every of the generators communicate regarding their generation value and therefore the demand still because the deviations to their neighbors. Utilizing such knowledge the generators ought to severally amendment their force yield to asymptotically eradicate the heap balance a minimum of expense. The results of the system are simulated and verified victimization PROTEUS..

Keywords: EDP, EMS, MEMO, NS2 and PROTEUS

Effect of DC Ripple and Commutation on the Line Harmonics of Current-Controlled AC-DC Converters

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Abstract

Line harmonics are usually predetermined under the simplified assumption that the dc current is sufficiently smoothed. However, in practical operation of controlled converters, e.g., feeding medium-size dc drives, it frequently happens that the dc ripple cannot be neglected. For the predetermination of line harmonics, this means that the operating point is specified by the emf and the mean value of the dc current, i.e., the associated control and commutation angles, are unknown. The consideration of the basic effects of commutation and dc ripple leads to line current harmonics that are separated into positive and negative sequence systems. Selected results of systematic evaluations show the amplitude and phase as a function of dc reactance as well as of the emf and mean dc current in the range of usual low-and medium-voltage supply networks. In comparison with the conventional pre calculation assuming sufficient dc smoothing, significant deviations occur in the case of higher dc ripple.

An Overview on Multiport DC-DC Converters for Integration and Energy Harvest from Renewable Energy Sources

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Abstract

It is well known fact that dc loads are growing drastically in past two decades and at the same time the fossil fuels are getting exhausted rapidly. So there comes the need of efficient energy harvest systems from various renewable energy sources to meet the increased load demand. In recent past, as a solution to this, the researchers and academic scholars have developed and are still developing various DC-DC converter topologies. Multiport converters are more efficient, reliable and have minimal complex structures compared to other converter topologies. This paper surveys various Multiport DC-DC converters, its design structures used in integration of renewable energy sources in the process of efficient energy extraction from various renewable energy sources in the event of meeting the load demand. Since the literature reports huge number of topologies and design of Multiport DC-DC converters trying to achieve higher performance, reliability and efficiency with reduced cost in this field, it is quite confusing and challenging to select the desired Multiport DC-DC converter topology for a specified application. This article highlights the advantages and limitations of various topologies and design structures and gives clear idea of selection of the converter for the specific application..

Keywords: *Multiport DC-DC converter, Renewable Energy Supply System, Isolation, Reliability, Gain*

Non-linear dynamical forecasting of electricity demands

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Abstract

Forecasting is a powerful methodology to study the complexity of the real world and predict the possible future outcomes in a more scientific way. This paper presents the process of forecasting the electricity demand for each day from the given data, from the year 2000 to 2008, utilizing the ARIMA, Dynamic Regression and Non-linear model analysis. A comparison of all the three models is done with the original data. The purpose of this project is to forecast the electricity demand for each day.

Keywords: *Forecasting, ARIMA, Dynamic Regression, Non-linear models, Autocorrelation, Multi-Layer Perceptron*

Pesticide Spraying Device Using Raspberry Pi For Agricultural Application

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Abstract

This paper presents the development of a smart sensor-based environment monitoring system, in remote villages especially for crop fields. Basically, it is difficult to monitor the environment, weather all the time, so we proposed this project in Crop field, to monitor the weather and any environment changes using IOT which having some sensors like Temperature sensor, Moisture sensor, humidity which measures respective parameters throughout the day. And also, parameters measured by sensors are sent through IOT. Using measured parameters, we can detect and prevent from diseases by spraying pesticides.

Keywords: *IoT, monitoring, spraying, image processing*

Design of 7 Level Multilevel Inverter With Reduced Switches

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Vivekanandha College of Engineering for Women,..

Abstract

A Multilevel inverter is a force electronic gadget that is utilized for high voltage and high force applications and has numerous favorable circumstances like, low exchanging pressure, low absolute consonant twisting (THD). Thus, the size and cumbersomeness of detached channels can be diminished. This work proposes another geography of a 7-level fell staggered inverter with decreased number of switches than that of traditional sort which has 12 switches. The geographies comprise of circuit with 7 switches for a similar 7-level yield. Hence with less number of switches, there will be a decrease in door drive hardware and furthermore not many switches will lead for explicit timespans. The SPWM procedure is executed utilizing multicarrier wave signals. The circuit is displayed and recreated with the assistance of MATLAB/SIMULINK..

Keywords: Cascaded Multilevel Inverter(CMLI), Diode Clamped Multilevel Inverter(DCMLI), Flying Capacitor, Pulse Width Modulation (PWM), Selective Harmonic Elimination

Group Leader Optimisation Algorithm Based Optimal Reconfiguration OF Distribution Feeder for Loss Reduction

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Abstract

This paper proposes the method of reconfiguration for loss reduction in distribution system in order to achieve the loss reduction for maximizing the operation of power system at a reduced cost. Reconfiguration is the process of re-routing the power flow in the distribution network. The process of reconfiguration is achieved by changing the on off status of circuit breakers in distribution network. Here Group leader optimization algorithm is used to determine the optimal status of network switches for maximum loss reduction. The proposed system is tested in IEEE 33 bus system and simulated in MATLAB software.

PV Based Switched Capacitor Converter for NPC Inverter in Grid Connected Applications

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Abstract

This paper proposes a grid connected solar Photovoltaic (PV) Systems with a new voltage balancing converter suitable for Neutral-Point-Clamped (NPC) Multilevel Inverter (MLI). The switched capacitors used in the proposed converter are able to balance the DC link capacitor voltage effectively by using proper switching states. The proposed balancing converter can be extended to any higher levels and it can boost the DC input voltage to a higher voltage levels without using any magnetic components. This feature allows the converter to operate with the boosting capability of the input voltage to the desired output voltage while ensuring the self-balancing. In this paper, the proposed converter is used for a grid connected solar PV system with NPC multilevel inverter, which is controlled using vector control scheme. The proposed grid connected solar PV system with associated controllers and maximum power point tracking (MPPT) is implemented in MATLAB /Sims Power System and experimentally validated using d SPACE system and designed converters. The simulation and experimental results show that the proposed topology can effectively balance the DC link voltage extract maximum power from PV module and inject power to the grid under varying solar irradiances with very good steady state and dynamic performances.

Keywords: Solar photovoltaics, NPC multilevel inverter, balancing circuit, dc-link voltage balancing, grid connected PV system

IoT Based Monitoring and Control of Distribution Transformer & Transmission Lines

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Abstract

To maintain the reliability in grid operation it is important to monitor real time transformer health and faults in the transmission lines. We know the importance of transformers in electricity distribution and transmission. They are the main components and constitute the large portion of capital investment of the distribution grid. Real time transformer health and transmission line fault detection systems help to replace the equipment before failure and continuity of the power will not be disturbed and also reducing the potential dangers that are caused due to any unforeseen circumstances. So, we need a system that can monitor the health of the transformer as well as the faults in the transmission line in real-time. So, that we can easily identify the faults and ensure the safety and reliability of the overall power grid.

IoT Based Non Intrusive Power Monitoring and Energy Alert

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Abstract

The advancement in automation of every activity is to a large extent and one such IoT (Internet of Things) based automation in the electrical distribution sector is proposed in this work. The consumption of electrical energy by all types of consumers is being recorded on a regular basis and the consumers are made to pay accordingly to their tariff slab. The process currently being adopted requires a human operator to record the readings of the energy meters located at the consumers premises that incur losses to either the utility or the consumer. IoT based non-intrusive load monitoring technique is proposed for commercial and domestic applications. The meter continuously measures the energy consumption and send the cumulative usage to the consumers on a daily basis so as to caution their usage. This recorded cumulative consumption over the billing period is also sent to the utility's centralized database. In addition, an online dashboard is made available to the user through internet that allows live monitoring of the energy consumption and the cumulative cost incurred during the billing cycle. The defaulters' electricity supply can be automatically terminated remotely from the service provider's office premises itself through internet.

Keywords: *IoT, PZEM sensor, ESP8266, Adafruit*

Analysis of a 21 Level Inverter with Reduced Switch Count

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Abstract

In recent day's Multilevel inverter (MLI) technologies become a incredibly main choice in the area of high power medium voltage energy control. Though multilevel inverter has a number of advantages it has drawbacks in the vein of higher levels because of using a greater number of semiconductor switches. This may lead to vast size and price of the inverter is very high. So, in order to overcome this problem, the new multilevel inverter is proposed with reduced number of switches. The proposed topology results in reduction of the number of switches, losses, installation area, and converter cost. These are accomplished by using asymmetrical cascaded-H- Bridge type and Selective Harmonic Elimination (SHE) technique. In this paper, the hardware implementation of the multilevel inverter in 21 levels has been done after verifying in MATLAB/ SIMULINK.

Keywords: *multilevel inverters, cascaded MLI, total harmonic distortion (THD), Selective Harmonic Elimination (SHE).*

Optimizing Combined Emission Economic Dispatch for Solar Integrated Power Systems

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Abstract

The dispatch of power at minimum operational cost of thermal energy sources has been a significant part of research since decades. Recently, with increasing interests in renewable energy resources, the optimal economic dispatch has become a challenging issue. This paper presents combined emission economic dispatch model for a solar photo voltaic integrated power system with multiple solar and thermal generating plants. We formulate mixed integer binary programming problem subject to various practical constraints. A decomposition framework is proposed where the original problem is split into two sub-problems. Particle swarm optimization, Newton–Raphson method, and binary integer programming techniques are exploited to find the joint optimization solution. The proposed model is tested on the IEEE 30 bus system. The simulation results demonstrate the effectiveness of the proposed model.

Keywords: *Economic dispatch, power systems, photo voltaic, PSO*

A Single Phase Bidirectional Electric Drive Reconstructed Onboard Converter For Electric Vehicles Applications

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Abstract

In this paper, an Electric-drive-reconstructed onboard converter (EDROC) based on a switching network in the DC side is proposed. The system can utilize the existing hardware of electric vehicles and does not need extra equipment. When the EDROC connects to the power grid through the power outlet at the office or home, there is not by additional equipment (relay) on the AC side. Compare with traditional EDROC, the proposed EDROC has advantages in cost and volume. The EDROC can realize the unity power factor in the charging mode and discharges to drive the motor in the driving mode. A proof-of-concept prototype has been built to verify the charging function and driving function of the proposed EDROC.

Keywords: Power conversion, electric vehicles, bidirectional converters, electric driver reconstructed systems

Enhancing LVAD Device Performance Using BLDC Motor

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Abstract

Nowadays, Left Ventricular Assist Devices (LVADs) have extremely used clinically to treat heart failure patients. Even though, it has major limitations of LVAD method. Meanwhile using a Blood Shear Stress Device (BSSD), it shows experimental development in reliable and quantifiable blood pressure. In this prevail system, enlarged air-gap drive motor in Blood Shear Stress Device, vital to avoid blood shear stress and reduce the motor torque which may lead to inadequate force to drive the entire system. Spick and span overcome those liability, Brushless DC(BLDC)motor was implemented in the proposed system to get various air-gap was evaluated on the torque speed constant changes. There by the simulation was experimental by Proteus software.

Keywords: *LVAD , BLDC , BSSD , Proteus*

Voltage Reference Control for Standalone PV Systems

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Abstract

The fast depleting rate of fossil fuels necessitates the need for alternate renewable energy sources to generate electricity. Electricity plays a pivotal role in the country's economic development and has a pre-eminent role to play. One way of converting the incident sunlight into electricity is by using PV cells. This proposed paper focuses on using the power generated from PV cells for supplying single phase AC loads. A boost converter with 0.5 duty cycle was fabricated and tested. The results obtained from hardware and software simulation is shown to have better efficiency. This concept is simulated using PLECS software. The boost converter fabricated has specifications of 24-48 V conversion and power rating of 96W. The efficiency was found to be 93%

Keywords: *Multi-level inverter, Harmonics, Total Harmonic Distortion (THD), Lower Order Harmonic (LOH), Fuzzy Logic Controller (FLC)*

Enhancement of Power Generation in Highway Wind Energy Conversion System integrating Solar PV by using Modified DC-DC Convertor

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Abstract

The renewable energy sources need to be extracted in a better means where a power converter is to be included on this stream. As the supply demand raised in seasons gives an intention to use renewable energy sources for providing a clean energy. This clean energy cannot be used on load directly due to fluctuating conditions, to solve this problem a modified DC to DC converter with a ripple free output is introduced. The Vertical Axis Wind Turbine (VAWT) and Solar PV combined together to form a hybrid clean energy conversion system in order to produce a 12 V DC output. A modified converter with ripple free output is used here for renewable energy applications. The simulation is made under MATLAB/SIMULINK and experimental parameters were measured using a nominal prototype.

Keywords: *Vertical Axis Wind Turbine (VAWT), Solar PV, Modified DC-DC Convertor, Voltage ripple*

A Review of Non-Conventional Energy Systems and Energy Regulation Technologies

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Abstract

A majority of the communities in the region of the globe rely a lot on oil, natural gas along with coal for their energy requirements. These fuels represent on plenty of resources to facilitate ultimately reduce, which in turn makes them too costly or too environmentally harmful to recuperate. This analysis commentary discusses the merits as well as demerits of non-conventional energies, consequently based on the benefits of these energy resources, the utilize of renewable energies as an alternative of fossil fuels will be a fine resolution in favour of the control of the ecological, societal along with cost-effective troubles of our communities. The globe is prompt appropriate a universal village suitable to the growing day by day necessity of energy with all population across the world though the earth in its appearance cannot modify. The need for energy with its correlated services to satisfy human social moreover economic growth, welfare as well as health is increasing. Persistent to renewable to assist mitigate weather change is an excellent approach which needs to be sustainable in order to meet energy demand of upcoming generations

Keywords: Renewable Energy Sources, Clean Energy, Environment, Sustainability issues, Green Energy, Clean Technologies, Solar Radiation

A Novel Design and Fabrication of Road Sweeper by using Photo-voltaic system

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Abstract

In our country, Governments are taking some actions towards the avoidance of accidents by placing dividers on the major roads of the city. But there is a usage of heavy trucks and loaded vehicles are polluting the roads by dust which is not a major concern but one of the issues that the bikers are skidded by the dust-sand enclosed along the dividers. Multinational companies are concentrating on this with high cost of Sweepers with Diesel Engines but this proposed scheme would help to solve in the case of low cost of manufacturing and effective way of renewable energy resource. This Photovoltaic based sweeper come with solar powered vacuum cleaner with spiral sweepers, automated divider tracker and a loader bag thus this total system is operated only using the renewable energy resource. This would make the platform that all the corners of the roads are clean with less traffic accidents and economical to the municipalities to change over with this efficient system

Keywords: PV-Photo Voltaic, PM-Particulate Matter

Plant Growth Algorithm based Load forecasting of a power System

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Abstract

In power system energy management system Load forecasting is the major part of the system. The exact load forecasting helps the electric utility to make unit commitment decisions, reduce spinning reserve capacity and schedule device maintenance plan properly. Apart from its plays a key role in reducing the generation cost, it is also essential to the reliability of power systems. In current scenario Load forecasting plays an important role in power system planning, operation and control. But for the proper Planning and precise operational applications of load forecasting requires a certain 'lead time' which is called as forecasting intervals. On the basis of lead time, load forecasting types fall into four different categories: very short-term forecasts, short-term forecasts, medium-term forecasts and long-term forecasts. In the present paper STL model is developed and executed using MATLAB 8.6 with a new optimization algorithm called Plant Growth Algorithm for the Andhra Pradesh Grid. By using the five-year load pattern of Andhra Pradesh Grid from the year 2007 to 2011 the forthcoming year's load pattern will be forecasted by using (PGOA) Plant Growth Optimization Algorithm.

Keywords: PGOA, STL, Load Forecasting

Minimization of Reactive power in Power System using Group Leader Optimization Algorithm

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Abstract

In this paper the MRPG problem is solved to make smooth real power flow in supporting to generators requirement with the help of GLO technique for IEEE 14-bus system. According to the problem criteria, minimization of reactive power generation brings a new corner in the field of deregulated power environment. MRPG problem is a very important aspect for the power generating companies as reward in terms of money is related to this. GLO is a very well-known soft-computing technique which is applied previously to solve similar problem like optimal power flow, reactive power dispatch etc. The application of GLO technique to solve MRPG problem raising a value of 3.5000MVAR from the base value of 5.89MVAR shows credibility. Due to sake of simplicity some parameters are neglected during the network analysis like voltage index and sensitivity analysis which may be included in future study. Furthermore, MRPG problem is considered as single objective problem which can be improved as multi-objective problem by incorporating cost or real power loss minimization in the future study. On account of novelty of the proposed issue, GLO based MRPG problem solved in this paper shows satisfactory performance.

Keywords: *MRPG; Group Leader Optimization*

Advanced Embedded Design Based Power System Maximum Demand Prediction and Controller for Efficient Power Management by Using Proteus

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Abstract

The demand for energy is increasing as a result of the growth in both population and industrial development. To improve the energy efficiency, consumers need to be more aware of their energy consumption. In recent years, utilities have started developing new electric energy meters which are known as smart meters. A smart meter is a digital energy meter that measures the consumption of electrical energy and provides other additional information as compared to the traditional energy meter. The aim is to provide the consumer and supplier an easy way to monitor the energy. Smart energy meters can also store and review our consumer energy consumption according to day, month and year wise. Smart energy meters can also sense and protect some electrical interference like, Magnetic interference, phase reversal, phase over voltage, phase over current. Smart meters will enable two-way and real-time communication between the consumers and the provider.

Keywords: MDI, Power factor, Penalty, Load management

Optimal Design of Energy Saving for Single Phase Induction Motor

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Abstract

This project presents the energy conservation and speed control of single phase induction motor using microcontroller. In this project we are designing a circuit for energy conservation for partial load machines. We can implement soft starting and speed control can also be achieved besides doing energy conservation. The advantages of this project are mainly 45-50 percent of energy conservation. Smooth starting of motor is also achieved. Speed control can also be done using this circuit. Our project deals with single phase induction motors, since they are mostly subjected to partial loads. By controlling the amount of voltage supplied to the induction motor and using a microcontroller it is possible to achieve energy saving and speed control. The energy conservation on single phase induction motors is simulated using MATLAB. The circuits for NO LOAD and FULL LOAD are simulated. The simulated results coincide with the experimental results. The voltage supplied to the induction motor is chopped off using the MOSFET, whose firing angle is determined by the microcontroller. The control circuit, power circuit & driver circuit are fabricated on general purpose PCB. The required amount of voltage which needs to be supplied when the motor is running at NO LOAD and FULL LOAD can be obtained from the circuits. Also, the simulation results coincide with the hardware results

Keywords: *induction motor, microcontroller, choppe , optical sensor*

Design and Implementaion of Solar Tracking System with Improvement of Voltage and Current Using Labview

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Abstract

As the world population is increasing gradually the need for energy is increasing equally. Every day people depend on energy for the purpose of electricity, hot water and fuel for automobiles. Majority of this energy come from fossil fuels, such as coal, oil and natural gas. The energy from fossil fuels are a non-renewable energy source, which means that if people use them all up, they can never get more during our life time, so it is important that they use other energy sources, like renewable energy sources these are energies that can be used again and again such as sunlight, water and wind. The main aim of this project is to absorb maximum solar energy from the solar panel. The solar tracker is the one which traces the sun's movement continuously, such that maximum amount of sunlight falls on the solar panel which we have designed. The design of hardware and the software are incorporated in this project. The hardware part includes servo motor, Arduino Uno, solar panel, LDR, Resistor and battery. PV (Photovoltaic) systems are one of in real-time manner is essential. The monitoring controller for solar cell with the use of Lab view. System is proposed in this project. It is a graphical representation and differs from other languages like C, C++, and JAVA etc. By using the Lab View software the system can monitor the function of solar tracking system and other parameters. It will reduce the man power and cost. This will improve the efficiency of the generation by orienting this PV cells in the correct direction to receive maximum sunlight from the sun.

Keywords: SolarPanel, CurrentSensor, LDR (Light Dependent Resistor), Arduino, DC Gear Motor, DC Supply System.

Grasshopper optimization algorithm for multi-fuel power dispatch

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Abstract

Electric power utilities aim to increase their economic efficiency for being more economical in the energy market and also aim for adhering to the environmental norms. This operational task is inevitable and the best way to achieve this operation situation is to schedule the generating units on their optimum output levels. In contrast with the existing multi-fuel option (MFO) power system models, a accurate operational is proposed by incorporating valve point loadings, CO2 emission and restricted operating zones in the optimization framework. As the developed model is a bi-objective, nonlinear and non-convex optimization problem, a stochastic optimization tool is needed to fetch the best compromise solution. Grasshopper optimization algorithm (GOA) is chosen as the prime optimization tool and is applied for the first time to address the optimal operation of the MFO power system. The intended optimization tool is implemented on standard 10-unit system. The applicability of GOA is verified by comparing the numerical results against other challenging methods and the statistical indices confirm the consistency and solution quality.

Keywords: *Multiple fuel option, Valve point loadings, Co2 emission, Restricted operating zone, Grasshopper optimization algorithm*

Optimal Setting of FACTS Devices using BAT Optimization Algorithm for Congestion Management Problem in Deregulated Power System

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Abstract

The Bat Algorithm (BA), which is a global optimization method, performs poorly on complex continuous optimization problems due to BA's disadvantages such as the premature convergence problem. In this paper, we propose a novel Bat Algorithm (BA) to improve the performance . Congestion Management (CM) is one of the technical challenges in power system deregulation. The optimal choice, location and size of Static Var Compensators (SVC) and Thyristor Controlled Series Compensators (TCSC) in deregulated power system to improve branch loading (minimize congestion, improve voltage stability and reduce line losses). Though FACTS controllers offer many advantages their installation cost is very high. Hence Independent System Operator (ISO) has to locate them optimally to satisfy a desired objective. This project presents optimal location of FACTS controller considering Branch Loading (BL), Voltage Stability (VS) and Loss Minimization (LM) as objectives at once using BAT algorithm. It is observed that the locations that are most favorable with respect to one objective are not suitable locations with respect to other two objectives. The proposed optimization problem is solved using the BAT algorithm. The effectiveness of the proposed CM approach is examined on IEEE 30 bus test system.

Keywords: Hybrid algorithm; Bat algorithm; Extremal optimization; Continuous optimization problems

Behaviour Modelling of Composite Glass Fibre and Epoxy Matrix in different angles

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Abstract

A tremendous usage of composite materials in our day-to-day life is going on rising trend. Because of advantages like light weight, high strength to weight ratio, the composite materials are plays vital role in Automobile sectors, Home appliances, Electronic gadgets etc., we are going to make composite sheets using Glass Fibre and Epoxy materials. Since composite materials are orthotropic, the prediction of material properties varies with direction and orientation of fibre. Determining bending and tensile stresses for various orientation of fibre will becomes challenging process. To reduce this exertion, we will have proposed to generate a behaviour equation by interpreting the ANSYS results of bending stress and tensile stress. From the regression analysis, we will formulate a general mathematical equation having variable as orientation angles of different layers. This equation gives bending stress and tensile stress directly by applying orientation angles of each layer without conducting test. Thus the prediction regression equation eliminates the time involved in testing the composites at different orientation angles. The prepared composites are tested in UTM to validate the equation.

Keywords: *Glass fibre, Epoxy, Regression, Ansys*

Experimental Investigation of the Correlation Between FDM Process Parameters and Dimensional Accuracy for Nylon Parts

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Abstract

For the last few decades, additive manufacturing is drawing the attention of researchers and industry professionals working in different fields. Fused deposition modeling (FDM) is a well-known additive manufacturing process for polymer parts. To improve the performance of any process, it is necessary to study the influence of various process parameters on performance measures. Hence, the effects of FDM process parameters like layer thickness, printing speed, raster angle, and % infill on the dimensional accuracy of nylon parts are investigated and discussed in this paper. Taguchi's L16 orthogonal array was used for the design of experiment and the significance of each parameter was identified by analysis of variance (ANOVA). It was found that print speed is the most significant parameter for the dimensional accuracy of nylon parts.

Keywords: *Dimensional accuracy, FDM, infill, layer thickness, print speed, raster angle, nylon*

Production of Biodiesel from Chicken Fat

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Abstract

In this study the high viscosity liquid fuel approximately 20 times that of diesel, produced from chicken fat used for the production of biodiesel in a two-step trans-esterification process. The first step called pre- esterification process was done by using 6% by weight of hydrochloric acid and methanol to oil molar ratio as 6:1 at 60°C reaction temperature and 120 minutes of reaction time to reduce the FFA level less than 1%. The second step called tras-esterification reaction is carried out using 6:1methanol to oil ratio along with Sodium hydroxide (NaOH) by 1% of the oil weight as alkaline catalyst at 60°C reaction temperature and 120 minutes reaction time to produce the bio-diesel. The lower viscous biodiesel produced through trans-esterification process is then blended with pure diesel in three different ratios by volume to know its suitability for the commercial engine. The study also includes measurement of both physical and chemical properties on the produced biodiesel, blended bio-diesel and the conventional diesel. The main objective of this paper is to recommend the best fuel among the produced bio-diesel as an alternative to the conventional diesel.

Keywords: *Animal Waste, Biodiesel, Free Fatty Acid, Pre-esterification, Trans-esterification*

Microstructural Investigations by using Friction Stir Processing

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Abstract

This work mainly focused on finding the optimal conditions for improving the efficiency of the dissimilar welded joints that were prepared using the Friction stir process. To carry out further research on Friction Stir Process, it is very much required to know the significant process parameters. As per the literature, tool rotational speed, weld speed and tilt angle are proved to be most significant hence are taken in the current investigations. Experimental design and Micro structural investigations is planned as per the Taguchi L9 orthogonal array. After doing the experiments, each output responses are measured at all the welding conditions and are tabled. This experimental data is used for optimizing the multi responses with the application of this method, it is quite possible to optimize the output responses more than one. So this method proved to be very effective in finding the multi responses which can yield the optimal results. Overall, this method finds suitable for optimizing the multi responses in FSW process.

Keywords: *Dissimilar Joints, Friction Stir Process, Microstructural Investigations*

Design and Analysis of Internal Combustion Engine Manifold using CFD Analysis

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Abstract

In today's world, major objectives of engine designers are to achieve the twin goals of best performance and lowest possible emission levels. Excellent engine performance requires the simultaneous combination of good combustion and good engine breathing. An internal combustion engine (ICE) is a heat engine where the combustion of a fuel occurs with an oxidizer (usually air) in a combustion chamber that is an integral part of the working fluid flow circuit. In an internal combustion engine the expansion of the high-temperature and high-pressure gases produced by combustion apply direct force to some component of the engine. The designing of exhaust manifold is a complex procedure and is dependent on many parameters viz. back pressure, exhaust velocity, mechanical efficiency etc. Preference for any of this parameter varies as per designer needs. Usually fuel economy, emissions and power requirement are three different streams or thought regarding exhaust manifold design. In this paper, an existing model of an engine Exhaust Manifold is modeled in 3D modeling software. The design of the exhaust manifold is changed. In existing model the bend radius is 48 mm and exhaust is on one side, Modified model has bend radius of 48mm and exhaust is at the centre of header, the models are model in CATIAV5R20.

Keywords: *Exhaust Manifold, Back Pressure, Exhaust Velocity, Mechanical Efficiency, CFD*

Investigating the Sliding Wear Characteristics of Zamak 5 Alloy under Dry and Wet Lubricating Conditions

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Abstract

Zamak is a group of alloys with Zinc as a base metal having various alloying element like aluminum, magnesium, and Copper. Although, Zamak alloy is part of the ZA alloy family it constantly have 4% aluminum composition. Zamak amalgam can be electroplated, wet painted, and chromate change covered. So ZAMAK alloy can be used as a replacement for aluminum alloys in various automobile applications. In the present study, the tribological characteristics of Zamak alloy was investigated by weight loss method with a use of Pin-on Disc apparatus. Zamak 5 samples were produced by Mechanical molding and machining. For a temperature study the samples were made with blind hole at the bottom. The experimental study is conducted on dry, wet and Nano lubrication conditions under various loads, Displacement and Speeds.

Keywords: ZAMAK 5 Alloy, Pin on Disc, Dry and Wet Lubrication.

Analysis and Performance Characteristics of Various Fluids used in Cooling System of Electric Car Battery with CFD Analysis Software

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Abstract

Electric cars are initially developed as an alternative option for the existing gas powered cars. It also shown good results in both performance and energy utilization. Usage of electric cars are encouraged due to its effect over global warming as there is no emission of harmful gases like CO, CO₂, NOX. Electric car is an automobile which is propelled by one or more electric motors, using energy stored in rechargeable batteries. This idea as coined in late 18th century, But it was in the 20th century when it started to roll on in roads. Even though we use battery as the energy source, we need a cooling system. It is to ensure the proper dissipation of heat which is emitted from the battery while transmission. Here we discuss about the cooling system of the battery in an electric car. We use three different liquids to analyze its effectiveness. Those fluids are Glycol, Fluorinert FC72 and NOVEC7200 (Ethoxy nonafluorobutane). We designed and drawn the model using CATIA V5 software and analyzed using ANSYS FLUENT software. This analyzed best Coolant for the battery cooling system.

Keywords: *Glycol, Ethoxy nonafluorobutane, Fluorinert FC72, CATIA V5, ANSYS FLUENT.*

Surface analysis and mechanical behaviour on Electroless Ni-P coating process on EN – 8 steel

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Abstract

Electroless Nickel (EN) is the major evolving surface coating technique employed in industries today. Various physical characteristics of EN coatings such as hardness, wear resistance, coating uniformity and corrosion resistance makes this coating as a choice for many engineering applications. The major advantages of EN coatings are uniform coating thickness, improved wear and corrosion resistance, hardness, ability to deposit on surface activated non conductors etc. Typical anionic surfactant and various passive chemical additives and nano additives such as ZnO, Al₂O₃ were added to the EN bath. In this project, Sodium Lauryl Sulphate (SLS) surfactant along with nano additives such as ZnO, Al₂O₃ were added to the EN bath. The effect of surfactant along with nano additives on surface properties such as surface roughness, microhardness and microstructure of electroless nickel-phosphorus (ENi-P) coating was investigated. The surface roughness of the coated specimens was measured using stylus instrument, microhardness was measured using vicker's hardness tester, microstructure was studied using Scanning Electron Microscope (SEM) and wear test was measured using Pin on disc machine. The result obtained from the above tests clearly indicates that the surfactant and passive additives improves the surface finish, microhardness, microstructure and wear rate of ENi-P coatings significantly. The complete experimental details, their results and analysis are reported in this project.

Keywords: *Electro less nickel coating; Nano Additives; Surfactants; Surface roughness; Microhardness; Microstructure; Wear.*

Micro Hardness and Surface Analysis of Polysiloxane Coating on Alloy Steel Substrate

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Abstract

This project deals about developing anti-scratch coating for automotive body. Automobiles undergo severe scratches on body and to some extend on the wind shields. An experimental investigation is carried out over automotive body to improve the scratch resistant using the newly developed polysiloxane coating. The coating process used is spray coating. Polysiloxane coatings are industrial protective and maintenance coating which is characterized by abrasion, chemical, extreme UV and high temperature. Scratch properties of polysiloxane coatings are critical in their application in many fields which require long-term protection and aesthetics. Critical input parameters of spray coating process such as nozzle distance, spraying time and pressure is optimized and corresponding output parameters are coating thickness, surface roughness, coating micro hardness, abrasion rate are studied. Taguchi's L9 orthogonal array and Analysis of variance is used to conduct the experiment for finding the optimum process parameter. The coated samples will be examined using scanning electron microscopy (SEM) for micro structure analysis. Phase and chemical composition will be carried out using XRD and energy dispersive x-ray spectroscopy (EDAX). Optical microscopy is used to examine the microstructure of the coated samples. The Vickers Hardness Test will be taken to measure the micro hardness of the coating .In addition to it the adhesion, corrosive, wear test will be studied.

Keywords: *Substrate coating, Spray coating, Polysiloxane coating, Optical Microscope, SEM, Vickers's hardness test.*

Reciprocating Sliding Behaviour of Solid Lubricant Coating over Modified Titanium Alloy Surfaces

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Abstract

Tribological behaviour of contacting surfaces rigid sphere is using flat plate the with influence of normal and tangential loading (shear traction) is analysed using FEA model and surfaces being coated on flat plate by Titanium Alloy, Aluminium Alloy Molybdenum Di-sulphide. The finite element model facilitates to Evaluating the surface variables like contact stress distribution with the surface level and surface, contact pressure, shear stress and displacement. The finite element solution is validated through the hertz solution and on the successful verification.

Keywords: *Flat plate ,rigid sphere, contact stress, contact pressure and Hertz solution*

Wear Simulation of Aluminum-Silicon Carbide Metal Matrix Composites

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Abstract

The main objective of this work is to find the wear rate using Archard's model in a finite element tool. The finite element model for the contact analysis of the disc and pin is built using ansys workbench. The material for the disc used is stainless steel and the pin material used is an aluminum alloy and its composites. A 3D surface-to-surface body-ground connection and revolute type element was utilized, under various circumstances, to display the behavior of the contact surfaces. Archard's model is utilized to simulate the wear using ansys. Outcomes demonstrated that the wear behavior can be simulated and the method can be used to anticipate wear issues for designing. The comparison of results of the wear simulation and experimental wear analysis has been carried out. From the comparison of results it is observed that, the experimental outcomes support the analytical outcomes.

Keywords: *Al6061/SiC, Wear simulation, Dry sliding wear, Archard's model, ANSYS.*

Experimental Investigation of EDM for Surface Roughness and MRR in Machining of Aluminium 2024

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Abstract

Electrical discharge machining (EDM) process is a non-conventional and non-contact machining operation which is used in industry for high precision products. EDM is known for machining hard and brittle conductive materials since it can melt any electrically conductive material regardless of its hardness. The work piece machined by EDM depends on thermal conductivity, electrical resistivity, and melting points of the materials. The tool and the work piece are adequately both immersed in a dielectric medium, such as, kerosene, deionized water or any other suitable EDM fluid. This project provides an important review on different types of EDM operations. A brief discussion is also done on the machining responses and time taken to finish the process. Al 2024 alloy is widely used in aerospace applications.

The aerospace application required close tolerances and accuracy in the machined parts. Henceforth non-conventional machining processes are widely used for different machining operations such as drilling through holes. In the present study, the Electrical Discharge Machining (EDM) process is used to drill through holes in 2mm thick Aluminium 2024 alloy material. With the aim of getting high accuracy and finish of the metal different parameters necessary set accordingly. Three input parameters such as Peak current (IP), Spark Gap voltage (SV) and Pulse on time were selected and the input values were given on required bases.

Keywords: Aluminium (2024), Aluminium Plate, Copper Electrode, Edm Machine, Working Of Edm,Roughness.

Optimization of Injection Molding Process Parameters for Improvement of Tensile Strength using the Taguchi Experimental Design

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Abstract

Tensile strength is an essential parameter for improving the quality of Injection-molded products. This thesis presents an experimental investigation into the impact of input variables of plastic injection molding process on the ultimate tensile strength of High Density Polyethylene. Depending on Taguchi quality design concept, a L₁₆ mixed-level array was implemented to evaluate the S/N ratio (dB), analysis of variance (ANOVA) and the ‘F’ test values for detecting dominant process variables influencing the injection molding performance and product quality. The ultimate tensile strength was improved with the optimum setting of input parameters. The input parameters were Injection Pressure, Melt Temperature, Cooling Time, Mold Temperature, Injection Speed, Holding Time, and Holding Pressure. Here, the room temperature was selected as a noise factor whereas the output response was ultimate tensile strength. Based on the experimental results and through ANOVA and ‘F’ test values, all the control parameters were observed to be significant but the room temperature was insignificant (P value .054). Considering these significant parameters, verification of the improvement in the quality characteristics of the product has been made through confirmation test concerning the selected initial parameter setting.

Keywords: *S/N ratio, Taguchi, ANOVA, F-test*

A Review of Multifunctional Composite Materials with Their Applications

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Abstract

Multifunctional composite materials and structures (MFCMS) is remarkably increased in the last decades. Multifunctional composite materials and structures review paper is done by many journal publications related to this title. Multifunctional composite means made of two or more materials that perform two or more functions in a manner that is constructive to the overall purpose of the structure' where there is no differentiation between structural or non-structural functions. Many of the recent developments focused on the applications of MFCMS such as High Altitude Airship (HAA), morphing aircraft wings, energy harvesting, nonmaterial's & nanostructures, smart structures, coupled field analysis, biomechanical etc. This paper also focused on the nonlinear mechanics of MFCMS because High Altitude Airship type of problems comes under geometrically and materially nonlinear case, so to analyze this type of problems one of the effective method called Variational Asymptotic Method is used. (VAM) is a powerful mathematical approach to simplify the process of finding stationary points for a described functional by taking an advantage of small parameters. Thus, approximate stationary points in the functional can be utilized to obtain the original functional. This paper concludes with a discussion of future scope and difficulties in design and analysis of multifunctional composite structures.

Keywords: *Multifunctional composite materials and structures, Variational Asymptotic Method, Carbon fiber reinforced polymer*

Laser Induced Ignition for Sustainable Environment in Internal Combustion Engines

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Abstract

Sustainability with regard to internal combustion engines is strongly linked to the fuels burnt and the overall efficiency. Laser ignition can enhance the combustion process and minimize pollutant formation. This paper is on laser ignition of sustainable fuels for future internal combustion engines. Ignition is the process of starting radical reactions until a self-sustaining flame has developed. In technical appliances such as internal combustion engines, reliable ignition is necessary for adequate system performance. Ignition strongly affects the formation of pollutants and the extent of fuel conversion. This paper presents experimental results on laser-induced ignition for technical applications. Laser ignition tests were performed with the fuels hydrogen and biogas in a static combustion cell and with gasoline in a spray-guided internal combustion engine. A Nd:YAG laser with 6 ns pulse duration, 1064 nm wavelength and 1-50 mJ pulse energy was used to ignite the fuel/air mixtures at initial pressures of 1-3 MPa. Schlieren photography was used for optical diagnostics of flame kernel development and shock wave propagation. Compared to a conventional spark plug, a laser ignition system should be a favorable ignition source in terms of lean burn characteristics and system flexibility. Yet several problems remain unsolved, e.g. cost issues and the stability of the optical window. The literature does not reveal much information on this crucial system part. Different window configurations in engine test runs are compared and discussed.

Keywords: *Laser ignition, spray-guided combustion, homogeneous combustion, high pressure, hydrogen, biogas, gasoline.*

Patient Health Monitoring System in Ambulance for Accident Management using Internet of Vehicles

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Abstract

Road accidents being a genuine general wellbeing challenge which builds the quantity of deadly and handicaps step by step. Accidents some of the time become a significant compromising component for living souls in which street mishap is generally unmistakable. With the expanding traffic on roads, emergency vehicle has an intense errand in taking the patient to clinic on time this prompts tolerant misfortune because of the substantial blood misfortune declining heart beat rate and so on, which prompts the reason for death likewise the truth of the matter is that Thousands of individuals are biting the dust since ambulances take excessively long to reaction to a crisis circumstance. We address this issue by proposing an answer utilizing the Internet of Things which is an advancing innovation. Here, we are associating the emergency vehicle with the IOT which has biomedical sensors like pulse rate sensor, heartbeat rate sensors, temperature sensor that will detect constantly the harmed person's health conditions and update these data to the close by clinic worker. This system helps in reducing the mortality rate caused due to road accidents by reducing the preliminary treatment time.

Keywords: *Patient monitoring system, accidents, mortality rate, Internet of Things, ambulance.*

Design and Analysis of Composite Spur Gear

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Abstract

Engineering components made of composite materials find increasing applications ranging from spacecraft to small instruments. Many types of gears use composite materials, however little literature is available on their use. In this project results obtained by static stress analysis of composite gears using a three-dimensional finite element approach are presented. Performance of these Composite gears are presented and compared with widely used steel Spur Gears. By introducing Composite materials, we are going to estimate the strength / weight ratio and also the stress induced during operation.

Keywords: *Steel Spur Gears, Titanium alloys, Aluminium alloy based metal matrix composites.*

Impact Behavior of Nano SiC reinforced AA7075 Metal matrix Composites, by FE Simulation Tests

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Abstract

The aluminum alloy is having one of the superior material properties which is used in different industrial sectors like aerospace, automobile and general engineering industries because of their favorable microstructure and mechanical behavior. Research shows that The Metal matrix composites of aluminum alloy reinforced with silicon carbide reinforcement have exhibited enhanced mechanical properties. In this work, Composites of aluminum alloy AA7075 reinforced with 500nm silicon carbide were fabricated by using popular method of stir casting techniques. Addition of Silicon carbide was made in weight percentage in the range of 0 to 8% respectively. Charpy Impact test was carried out for the MMC specimens. Results showed increase in energy and Toughness for the increased SiC content in the Specimens. FEM Analysis was carried out using Johnson cook material model for the MMC's, and Experimental and FEM results were compared in this work.

Keywords: *500nmSiC, AA7075, MMC's Fabrication, Charpy Impact test with FEA by using ABAQUS software, Johnson Cook Material constants*

Smart Freezing Technique Using Thermoacoustic Energy

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Abstract

Preserving things to save money has become a major idea and it provoked to an invention called "refrigerator". Refrigeration process in those refrigerators involves some gases, they combine together and releases CFC which has a major impact on ozone layer. In order to protect ozone layer. A compact and safest model of refrigeration could be done using the Thermoacoustic refrigeration systems. In this modern era, using sound energy which involves the conversion of heat into cold is a kind of unique kind of technology. Acoustic sound waves while getting oscillates it absorbs and releases heat. In the refrigeration system, the sound waves transfer the heat away from the system. This phenomenon is called the cooling effect. In this paper review, we incepted the history of evolution of thermo acoustic freezing system and concluded with the application of the thermo acoustic system.

Keywords: *Refrigeration, Acoustic sound waves, Cooling effect.*

Data Analysis and Prediction of Optimum Process Parameters for Cryo-cooled Near-dry WEDM Process

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Abstract

In this paper, data analysis and prediction of best process parameters level for cryo-cooled near-dry wire-cut electrical discharge machining (WEDM) process for the machining of Inconel 718 alloy material. The Box-Behnken method is used to design the experiments to collect the response data from trial tests. The voltage, pulse-width, pulse-interval, and flow rate are the controllable variables for response characteristics such as rate of material removal and surface roughness. After data collection from experiments, the sequential sum of square tests was performed to predict the order of the models. The mathematical models for each response were developed using significant individual, interaction, and quadratic terms. Thus, the models have been evaluated by carried-out the lack-of-fit tests. The response surface plots for each response related to interacted terms of variables. Based on these plots, the variation of each control parameter on the response parameters has been analyzed. It was revealed that increasing voltage, and pulse-width, the material removal rate(M) and the surface roughness (Ra), and conversely, the pulse interval minimizes the MRR and Ra. The highest M and Ra are attained by the maximum flow rate of the dielectric medium. The desirability principles were applied to find the combination of process variable values for the best solution for satisfying both responses. The predicted combination of results has been validated by data that were collected from confirmation experiments.

Keywords: *Box-Behnken, Design of experiments, Mathematical Models, Desirability, Data prediction*

A study of electro discharge coating and characteristics

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Abstract

Applications of coated surface are swiftly increasing in present industrial context. Recently, the electro-discharge route is being explored for surface modification in terms of alloying and layer deposition. Electro-discharge machining parameters and response to surface deposition is of the research interest in electro-discharge coating. In this regard, electro-discharged surface modifications have been characterized in the present investigations. The effect of relevant EDM parameters (current, Pulse duration, duty factor, density of electrode material) on various surface alloying responses such as surface micro hardness, chemical composition of the alloying surface, surface deposition layer thickness has been studied. The EDM electrode is specially made of tungsten die sulphide powder by semi-sintering process. Negative or reverse polarity is used for better results of layer deposition of electrode material of tungsten die sulphide powder and carbon particles within the dielectric liquid used for machining. Considering ample of general applications in engineering, work piece is of low carbon steel/HSS has been identified. It is observed that tungsten carbide layer has been deposited on the work piece which shows better functional characteristics for the applications. Low to medium current (2–5 A), Low density of electrode material (7.15–8.03 kg/cm³) and low duty factor (3–5) are favourable conditions for better deposition of the layer.

Keywords: *electro discharge coating, deposition, tungsten powder,coating characteristics*

Prediction of Tool life on CNC Turning of Aluminum alloy 6063 using Tungsten Carbide Tools

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Abstract

In the present study, investigate the influence of spindle speed (N), feed rate (f) and depth of cut (d) on tool life during CNC Turning of Aluminium alloy 6063 using Carbide Tools. Experiments were conducted through the Taguchi's Design of Experiments (DOE). Statistical model based on second order polynomial equation was developed for tool life. Analysis of variance (ANOVA) was carried out to identify the significant factors affecting the tool life. The surface plots were generated to study the effect of process parameters as well as their interactions.

Keywords: *CNC turning, Carbide tool, Tool Life, Taguchi method, Mathematical model, Anova.*

Fabrication and Characterization of Hybrid Aluminium MMC's

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Abstract

Aluminum Metal Matrix Composites (MMCs) sought over other conventional materials in the field of aerospace, automotive and marine applications owing to their excellent improved properties. The widespread adoption of particulate metal matrix composites for engineering applications has been hindered by the high cost of producing components. In this experimentation work Aluminium 7075 (98.41% C.P) SiC (2-3 μ m) and TiC (2-3 μ m) has been chosen as matrix and reinforcements materials respectively. Experiments have been conducted by varying equal weight fraction of SiC and TiC (0%, 2.5%, 5%, 7.5%and 10%) while keeping all other parameters constant. The scanning electron microscope (SEM) images and EDAX analysis reveal the homogeneous dispersion of SiC particles in the matrix. The mechanical properties like tensile strength, hardness and wear resistance have improved with the increase in weight percentage of SiC and Ti particulates in the Aluminium matrix.

Keywords: Al 7075 alloy, Metal Matrix Composites MMC's, Mechanical Properties, Microstructure, Silicon Carbide SiC and Titanium Carbide TiC

A Comparative Account of Antioxidants Activity of Ethyl Acetate, Methanolic and Aquaous Extract of Leaves and Bark of *Baccaurea Ramiflora* (Lour.) by Synthesis of Gold Nanoparticles and Other Method

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Abstract

In this work we have find out the antioxidant's activity of the ethyl acetate, methanolic and aquaous extract of leaves and bark of *Baccaurea ramiflora* (Lour.). The antioxidant activity of the extracts was measured by in vitro chemical analyses involving the assays of (1) Au nanoparticle formation potential (2) 1,1-diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity (3) ferric ion reducing power and (4) ferrous ion chelating activity. A simpler method has been created based on Au nanoparticles formation to assess the antioxidant activity of any plant extract. It was for the assessment of the antioxidant activity of all the extract of leaves and bark of *Baccaurea ramiflora* (Lour.). In all the assays, methanolic extract of leaves of *Baccaurea ramiflora* (MEBRL) and methanolic extract of bark of *Baccaurea ramiflora* (MEBRB) showed significantly greater activity over other extracts. This work provides a scientific support for the high antioxidant activity of this plant and thus it may find potential applications in the treatment of the diseases caused by ROS.

Keywords: *Antioxidants, Baccaurea ramiflora (Lour.), DPPH, Gold Nanoparticles(AuNps), MEBRL, MEBRB*

Correlation Studies in Fibre Reinforced Medium Strength Concrete

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Abstract

Concrete is very strong in compression but weak in tension. To make up the tensile stresses steel is reinforced in concrete. As such fibre reinforced concrete directly enhances the usage of fibres randomly in concrete emerged as a rapid trend. Lot of researches have been done in steel fibre reinforced concrete. In this paper an attempt has been made to study the usage of lathe scrap in medium strength concrete. The fresh and hardened properties of concrete reinforced with 0%, 0.5%, 1%, 1.5% and 2% of lathe scrap were studied. Based on the test results of mechanical properties of Fibre Reinforced Concrete the strength increases up to 1.5% addition of lathe scrap. The empirical relation between split tensile strength and compressive strength of Fibre Reinforced Concrete (FRC) was derived and the relation was compared with the predicted equation of previous literatures. The results predicted from the correlation studies coincides with the models obtained from various author works and the percentage of discrepancies fall below 5%.

Keywords: Lathe scrap, fibre reinforced concrete, correlation, split tensile strength, compressive strength

Study of Parametric Strength of Coconut Shell and Coir Fibres using Slump Test

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Abstract

Recent days natural fibres and natural products are more in use as construction materials. Coconut fibre is one of the best choices among all-natural fibres. This is freely available at all tropical reasons. Coconut shell as a natural fibre is effectively used in construction materials. It is helpful for enhancing strength of the matrix mix. As it is freely available as a raw material, it can be used using fly ash, cement and can be used in tropical reasons. This is an eco-friendly material. This can change the matrix mix by strengthening its holding capacity to the material mix. This can create an environment friendly material for the construction. In this paper Slump test is carried out to study the effectiveness and strength of the material mix. This can be better and sustainable product for the industrial as well as domestic work. This paper highlights the flexural strength and compressive strength of the coconut shell as a raw material for cementious product. This material makes very much economical for utilizations in constructions.

Keywords: *Coconut shell, Coir fibre, Flexural Strength., Slump test, Tensile strength*

Steady-state analysis of an M=M=2 queueing system operating in a multi-phase random environment subject to disaster and repair

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Abstract

An M=M=2 queueing system operating in a multi-phase random environment subject to disaster and repair is studied. The random environment has N phases and the k-th phase is exponentially distributed with mean $1/\eta_k$; $k = 1, 2, \dots, N$: The queueing system behaves like $M(\lambda_k)=M(\mu_k)=2$ while in the k-th phase. At the end of the k-th phase, a disaster occurs wiping out all customers in the system and the servers are taken for repair. Both the servers are repaired jointly and the repair time is exponentially distributed with mean $1/\eta_0$: Immediately after the repair completions the system moves to phase k with probability q_k : Customers are allowed to join the queueing system during repair time. The probabilistic behaviour of the system is studied in steady state by using probability generating function technique. Some performance measures are also obtained.

Keywords: *M=M=2 queueing system, disaster, wash-out, repair, random environment, steady state analysis*

Conservation of Natural Aggregate by Identifying Alternatives in Coarse Aggregate

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Abstract

In recent days, one of the key fields of researchers' concern has been the development of innovative waste management strategies. This is due to the need for the products to be reused to prevent exhausting renewable resources that are abundantly exhausted by the increasing population. This waste materials will be used in the building industry for manufacturing artificial concrete as the use of natural aggregates has become a serious concern, leading to the over use of these materials in this developing infrastructure. The use of plastic has been growing day by day in recent years. Several efforts have been taken to limit the use of plastic because it poses one of the biggest environmental issues, since plastic waste is non-biodegradable. Waste plastic as a concrete aggregate provides a good way to lowering material costs and addressing some of the environmental challenges of solid waste management. Apart from plastic waste many industrial by products are also been disposed in environment which cause severe problem in environment. These materials can be effectively used in construction industry. This research work deals about the manufacturing of an alternative coarse aggregate for concrete.

Keywords: Alternative Construction Material, Energy Conservation, Reuse

Mind Mapping: The Best Selective Tool for Learning and Teaching

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Abstract

The present world scenario of learning and teaching community runs on MOOCs due to COVID-19 but the methods for learning and teaching have been progressively depending on the IQ of everyone who wants to become a master of his / her own interested area of knowledge. Among a many number of learning and teaching methods since antiquity, one of the best pioneering methods is Mind Mapping which has been proven as the zenith method in the lives of world great personals in diverse fields to make the entire world rich and smart through generation by generation by inventing and discovering the worlds innovatively to generate the lives of humans smooth and smart.

Mind Map is one of the best ways for learning and teaching of one's ideas or thoughts to produce any kind of presentation successfully. It plays a pivotal role especially in the lives student community to learn any subject of their interest with proper ideology. An idea can be structuralized in the form of a diagram or a chart in any variety of models rolling around the central concept or subject to build an intuitive design or framework with words, tasks, concepts, items and so on.

Keywords: *Mind Map, MOOCs, area of knowledge, learning and teaching methods, ideology, tasks, framework or diagram, central concept or subject etc*

Analyses of Plant Diversity in a Sacred Grove of Ariyalur District, Tamil Nadu, India

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Abstract

Assessment on the plant diversity in Karuppusamy sacred grove near Thathanur in the Ariyalur district of Tamil Nadu, India, was carried out during 2019-2020. In the study, a total of 121 plant species were recorded belonged to 104genera distributed among 50 families, are Angiosperms. Fabaceae (8 species) is a dominant family followed by Asclepiadaceae, Mimosaceae (7 species), Euphorbiaceae, (6 species), and 5 species each from Rubiaceae and Poaceae. The diversity indices namely the Shannon -Weiner index, Simpson index, evenness index, etc., were analysed.

Keywords: *Sacred groves, Angiosperms, Diversity indices*

A Review on Applications of AHP and Fuzzy AHP in Geographical Information System

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Abstract

Analytical Hierarchy Process (AHP) is one of the frequently used techniques in multi criteria decision making methods and has been attracting researchers in solving spatial decision-making problems. It deals with crisp numbers to compare the decision criteria. Later on it was modified and adopted to consider fuzzy numbers instead of crisp numbers. Extent analysis method on fuzzy AHP using triangular Fuzzy Numbers was applied in many problems of decision making in Geographical Information System (GIS). In literature, applications of AHP and GIS were found in Land slide susceptibility mapping, Site Selection for artificial groundwater recharge, Water Reservoirs, Municipal Solid Waste Landfill, Solar Energy Sites etc. A review was done and various applications of AHP and Fuzzy AHP in GIS were presented as a table. Also, the importance of Extent analysis method on Fuzzy AHP using Trapezoidal fuzzy numbers was discussed.

Keywords: Multi Criteria Decision Making, AHP, FAHP, Extent Analysis method on Fuzzy AHP, GIS

Preparation and Investigation on Phosphor Materials

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Abstract

The nanostructured NaY(WO₄)₂:Pr³⁺ phosphor was rapidly synthesized at room temperature by mechanochemically assisted soNad state meta-thesis reaction method. The as-synthesized Nanophosphor possess scheeNate tetragoNal crystal structure with space group I41/a. Photoluminescent studies revealed that under the excitation of blue light (448 nm), a strong emission in the red region was observed at 647 nm due to the transition from populated 3P0 level to the 3F3 lower level of Pr³⁺ ions. The Nanostructured NaY(WO₄)₂:Pr³⁺ material could serve as excellent red phosphor candidate for soNad state Nagting appNacations.

Keywords: *Phosphor, Solid meta-thesis reaction, ScheeNate structure, WLED.*

A Novel Method for Biosynthesis of Cadmium Sulphide

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Abstract

Nanoparticles are of great importance because of their unique physical, thermodynamic and chemical properties, which are different from bulk materials. Nanostructure sulfides have been studied extensively with a view to establish a relationship among size, structure and optical properties. Currently, many workers have focused on cadmium sulphide because of several important properties. Size dependant properties are exhibited by CdS nanoparticles because of high surface to volume ratio. It also possessed high photosensitivity which enables them useful for optoelectronic devices and various other biological applications and because of these applications various part of plants are used in the bulk production of CdS nanoparticles.

Keywords: CdS, UV –Visible, XRD, FT-IR and Antimicrobial activity.

An Analysis of Obesity in School Children during the Pandemic COVID-19 using Plithogenic Single Valued Fuzzy Sets

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Abstract

The objectives of this research are to examine the perception that school children with obesity, when excluded from organised academic performance and constrained to their residences during the coronavirus epidemic 2019 will reveal negative consequences in health behaviours. To meet the objective, the concept of Plithogenic Single valued fuzzy sets (PSFS) and its aggregation operators were introduced. Based on the proposed theory, an analysis is presented with the case study to highlight its practicality and preciseness.

Keywords: *Fuzzy set, Plithogenic Set, Plithogenic Single valued fuzzy set (PSFS), PSFS Operators.*

Tutoring Grammar in Professional Institutions

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Abstract

The aim of grammar instruction is to enable students to enhance their communication purposes. This goal has three implications: Students need clear instruction that connects grammar points with larger communication contexts. Students do not need to master every aspect of each grammar point, only those that are relevant to the day-to-day communication task. Error correction is not always the instructor's first responsibility.

Keywords: English grammar, communication, Games, etc...

Generalisation of Statistical Convergence in Cone Metric Space

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Abstract

Cone metric spaces are one of many generalizations of metric spaces. Every Metric Space is Cone Metric Space and Topological Metric Space. In this Paper, we introduce and discuss about the Statistical Convergence and its main Generalisation which are I-Convergence and I*-Convergence. The concept of I-Convergence is very important generalisation of Statistical Convergence. We introduce the idea of I-Cauchy and I*-Cauchy Sequence in cone Metric Spaces and study their properties

Keywords: Cone Metric Space, Statistical Convergence, I-Convergence, I*-Convergence, ICauchy and I*-Cauchy Condition, Condition (AP).

Adsorption and Filtration Techniques on the Pollutants from Different Waste Water

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Abstract

The problem of water pollution is of a great concern. Adsorption is one of the most efficient techniques for removing noxious heavy metal from the solvent phase. Present study focuses on the detailed information and review on the purification of heavy metal ion, dye from the factories and pharmaceutical waste from the water by nano membrane technology and various adsorbents i.e., conventional (activated carbon, clays, biosorbent). The purification of waste water using nano membranes are mainly depends upon the pressure, temperature, permeate flow, pH, TDS, salt concentration of water. In this review, the technical feasibility of various low-cost adsorbents for removal of heavy metals (like pb, Ar, Hg, Cr, etc...) from the waste waters has been discussed. The adsorptive properties of this material are a result of its high specific surface area and some of the functional groups acquired during the chemical activation. These activated carbons have proven highly effective in the removal of textile dyes in aqueous solutions and waste water. They can also be prepared from low-cost easily attainable raw-materials in INDIA. The properties of activated carbon such as its large specific surface area and its chemical stability make this material an interesting substrate for the preparation of different composite materials. As a result of extensive review, we found, the flux rate of water through the membrane unit and pore size of adsorbent is trivial to optimize in water treatment plants. So we carried out our research on design of column up flow reactor with optimized operational parameters for waste water treatment.

Keywords: Economic dispatch, power systems, photo voltaic, PSO

Customer Service Automation among Small and Medium Enterprises: An Empirical Examination

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Abstract

‘Customer Service Automation’ is emerging as the needful transformation in the present juncture for all the entrepreneurs in all the sectors. Comparatively large conglomerates are equipped enough for the implementation of customer service automation, but the small and medium enterprises (SMEs) have their unique constraints and bottlenecks in the implementation of customer service automation. In-spite of all the constraints, SMEs aim to implement emerging customer service automation through self-service technologies and analytic capabilities to attain the desirable outcomes such as integrated application of Customer data, increase the effectiveness of the sales training, enhancing trust through transparency, profitable customer retention, fulfilling On-demand services, empower service and support activities and finally, WEB based Customer interaction management. Hence, the researcher has taken an attempt to analyze the gaps prevailing in the implementation of customer service automation among the SMEs in Tamandu State by investigating the respondents' demographic and organizational variables. The research findings depict about the perception of SMEs towards customer service automation, readiness towards customer service automation and the expected benefits. This research would present the prevailing scenario of customer service automation and also facilitate for better customer service automation among the target group.

Keywords: *Customer Service Automation, Self Service Technologies, SMEs, WEB based Customer Interaction Management*

Regular and Totally Regular Fuzzy Graphs

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Abstract

In this paper, we introduce the concepts of regular fuzzy graph, total degree fuzzy graph and totally regular fuzzy graph. We investigate the relationship between regular fuzzy graph and totally regular fuzzy graphs. Also, we discuss the characterization of regular fuzzy graphs on a cycle. Moreover, we study some thermos of regular fuzzy graphs and totally regular fuzzy graphs.

Keywords: *fuzzy graphs, regular fuzzy graph, totally regular fuzzy graph.*



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