Proceedings of

International Conference

on

Recent Innovations in Science & Technology
(RIST – 2021)

19th & 20th JUNE 2021

Organized by

In association with

Proceedings of

International Conference

on

Recent Innovations in Science & Technology

(RIST – 2021)

19th and 20th June, 2021

Organised by

EKC Technical Campus
Eranad Knowledge City
Cherukulam, Malappuram, Kerala,

In association with

Institute for Science, Engineering and Technology Research
and
HEXAIND Technologies & Services

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Dr. Adrian Nicolae Branga
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Message from Chairman

I am delighted in acknowledging the International Conference RIST 2021 organized by the Department of Computer Science & Engineering on "Recent innovations in Science & technology".

I appreciate the organizing committee for showing a keen interest in organizing a successful Conference and contributing new ideas and research findings. I wish them for their endeavours to spread knowledge.

With regards,

Dr. C.P.A Bava Haji
Founder and Chairman
Al-Hind Educational and
Charitable Trust,
Kerala, India

Message from Executive Director

Conferences bring together people of varied experiences and provide an opportunity to everyone to share their thoughts. Mutual participation and high quality deliberations create inspiring learning environment resulting into innovative ideas. Today's industry expects such inputs to bring home new innovations and inventions. It is quite gratifying to note that the department of Computer Science and Engineering of our college is hosting the first International Conference on Recent innovations in Science and Technology (RIST2021), on 19th and 20th June 2021.

Organizing such an event at this point of time highlights our objective ofraising an environment for the exchange of ideas headed for technological developments. I wish the conference would be able to deliberate on recentissues of national and international relevance. There have been extraordinary numbers of quality papers that are to be presented in the conference. I am sure that this occasion will deliver agregarious environment for the scholars and academicians to freely exchange the views and ideas with others. I convey my warm greetings and felicitations to the organizing committee and the participants and extend my best wishes for the success of the conference.

With Regards,

Adv. Shihab Mecheri
CEO & Executive Director
Eranad Knowledge City

Message from Executive Director

The conferences are essential to bring in values of information exchange and criticism on emerging trends in technologies. I am pleased to note that the Department of Computer Science and Engineering organizing the first International Conference entitled "Recent Innovations in Science and Technology (RIST 2021)".Undoubtedly, this type of conference not only brings all the researchers, students at one platform, but it also instils the research values among the entire community of Education in the country, thereby, contributing to the growth of nation.

I hope that this conference would positively encourage innovative ideas among the contributors paving way for new discoveries and technologies. I Congratulate, the organizing team for initiating the conduction of such a conference in our esteemed Institution.

I wish the conference a grand success.

Er. Kamarudheen K P

Executive Director

Eranad Knowledge City

Message from Executive Director

I am extremely happy to note that Department of Computer Science and Engineering, Eranad Knowledge City Technical Campus is organizing "First International Conference on Recent Innovations in Science & Technology (RIST 2021)".

I am sure that the conference of this type will inculcate the much needed research culture among the scholars and academicians and prompt collaborations among researchers to exchange the ideas of recent advances in the areas of Science and technology.

I wish the conference a grand success.

Mr. Mujeeb Kurikkal

Executive Director

Eranad Knowledge City

Message from General Manager

It is indeed a moment of immense pride for Eranad Knowledge City Technical Campus to host its first International Conference RIST 2021. I take this opportunity to thank my team here at EKCTC to realize this great moment. This conference is a wonderful opportunity to not only educate students and young researchers but deepen understanding of changing ideas and innovative methods of advancement in technology. I am convinced that for students and professionals this is an excellent event that will allow you to learn many new things as well as share your experience. Wishing a great time ahead for all the participants.

Mr. Renooj Abdul Kader

General Manager

Eranad Knowledge City

Principal's Message

It gives me an immense pride that the Department of Computer Science and Engineering of Eranad Knowledge City –Technical campus (EKC-TC) is hosting its First International Conference on Recent Innovation in Science and Technology (RIST 2021) on 19th and 20th June 2021.By organizing a conference at this juncture serves a platform for various forms of knowledge sharing in the field of Science and Technology irrespective of differences in time and geographical zones. This International conference RIST 2021 will act as an excellent colloquium of developing a platform for the exchange of ideas towards science and technology innovations for generation ahead and the next gen technological advancements. I wish the conference would be able to deliberate on current issues of national and international relevance in the fields of Science and Technology. I am pretty sure that on this occasion Academicians, Researchers and technocrats on their field of expertise can unreservedly exchange their thoughts and views with others on Innovations in the field. There have been unparalleled numbers of quality research articles are to be presented in the conference. Definitely this gathering of RIST 2021 would make a new path to innovate in Science and Technology.

I congratulate and appreciate the entire team for the efforts they have put forth to give this international conference its much needed color and vigor. I wish all great success for the successful conduct of the entire event and hope this mission will be carried out with even more dynamism in the future years.

Prof. (Dr) VINCE PAUL
Principal
Eranad Knowledge City Technical Campus

Message from Conference Coordinator

I would like to join the other members of the Conference Organizing Committee in welcoming you to the 2021 International Conference on Recent Innovations in Science and technology RIST 2021, the first international conference of Eranad Knowledge City Campus organized by department of computer science and Engineering

Education is what we imbibe-from our books, our peers, our teachers and our surroundings. As we move in the direction of our goals, we must always keep in mind that we owe more to the world than it owes us. Each of us can and must do our bit to help build a world that will cultivate our forthcoming generation. Organizing RIST 2021 is a part of our vision to incorporate relevance and symbiosis in technical education.

I hope RIST 2021 will be a plethora of activities and has become a dynamic venue where brilliant minds from all over the world converge and share their vast reserves of knowledge and skills. This conference emphasis on promoting a high level of interaction between the theoretical, experimental and applied communities, so as to achieve exchange of ideas in new emerging areas of Science, Engineering & Technology. The virtual conference will serve as a platform to cover the advanced aspects and approaches of Engineering and Basic Science in real world.I am sure everyone attending the conference will find much of value and interest.

With Regards,

Athira B Kaimal
Coordinator –RIST2021 &
Head of the Department
Computer Science & Engineering
Eranad Knowledge City Technical Campus

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UTILIZATION OF DEEP LEARNING TECHNOLOGY IN RECOGNIZING BIRD SPECIES

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Abstract:
Most of the peoples are involved in watching variety of birds to enjoy the beauty of nature and to get a relief from daily life struggles. But in some cases they may not be able to correctly identify the bird species because of the similarity or features shared among different bird species. To find a better solution for this problem, deep learning technologies can be used. This paper has been discussed to develop a deep learning platform to recognize the bird species by utilizing its captured image. Convolutional neural network is utilized for both feature extraction and classification processes. The experimental results show that this deep learning platform outperform than the other identification techniques and the recognition using images of birds is more effective than the recognition using audio signals of birds. The developed model achieved higher classification accuracy for the training image and this method helps the amateur bird watchers to identify the bird species from the captured bird image easily.

Keywords: Deep learning, Convolutional neural network, Bird species recognition.

CYBERBULLYING ON CELEBRITIES: A CASE STUDY ON ACTRESS PARVATHY

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Abstract:
Sexual harassment charges and allegations are on the rise in the film industry. Many in the industry have come forward to share the bitter experiences they went through while pursuing a luminous career. Some of them assert that there exists a "casting couch" syndrome in the industry. In addition to being physically assaulted, these gifted actresses are victims of sexual repartee. Social media has become a virtual platform for this. Award-winning South Indian actress Parvathy is one such victim as she was viciously trolled and abused on social media. Lewd and malicious comments and posts were hurled on Twitter and Facebook after she publicly criticized the misogynistic and sexist dialogues in Mammootty starrer 'Kasaba'. This paper examines the nature of cyber bullying of celebrities in the social media and the attitude of the general public towards it taking the Parvathy issue as a case study. Fifty trolls related to the issue were selected for analysis. Then the response of a sample of 500 respondents of age group 15-60

from four districts of Kerala were obtained through a structured questionnaire survey. Frequency analysis is used to present the data in the form of proportions or percentages. The study found that the cyber bullying against actress Parvathy was gendered and sexist and also it showed that females disagreed with the cyber bullying against Parvathy whereas males supported the attack.

Keywords: Trolls; cyber bullying; Facebook; Twitter; Social Media.

CONCEPTUAL COMPREHENSION ANALYSIS OF A STUDENT USING SOFT COSINE MEASURE

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Abstract:
Knowledge is the substantial wealth of a man and he possesses an innate thirst to acquire it. Knowledge embodies facts or ideas acquired through study, investigation and observation or experience. In this context, technology with its varied techniques comprising endless algorithms in natural language processing (NLP) plays an imperative role in the pursuit of knowledge. Inferences thus gathered are a clear pointer to the content teaching of students. Soft cosine measure algorithm is used in this analysis process to provide an answer regarding the grasping ability of each student with optimum learner participation and creativity. After each lecture, students have to upload their corresponding notes and this in turn would be compared with the teacher's lecture notes. The soft cosine computation gives individual results, on how much each student has comprehended a concept. This new methodology is a much awaited contribution of the educational field.

Keywords: Natural Language Processing, Soft Cosine Measure, Cosine Similarity, Comprehension, Concept.

MEDISHARE-"EMPOWERING THE FUTURE OF MEDICAL RECORDS USING BLOCKCHAIN"

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Abstract:
Medishare system has the ability to give each patient a secure and well personalized access to each of their medical data using hyper ledger block chain technology. Personal Health Records (PHRs) is considered as an important asset for every patient which is to be necessary available

for providing proper treatments. In the traditional health record management system, medical related data are separately controlled by different hospitals which resulted in providing inconvenience for proper data sharing. Moreover, there is no secured record management of a patient's PHR that reveals extremely confidential personal data. Emerging trends in the Block chain world seems to offer best solutions to majority of problems regarding data exchange, and data access. This provides a novel chance to implement a secure and reliable EHR (Electronic Health Record) knowledge management and sharing system. Even with the usage of this trending block chain hyper ledger technology, it faces a lot of challenges like the network is not always active, difficult in uploading large files etc. All these challenges are due to the limitations of hyper ledger technology, so in this proposed Medishare system, we developed an enhanced version of Hyper ledger alleviating the limitations of the standard scheme and yielding higher performance. Medi share is a decentralized medical record management system which handles the records, using permissioned block chain technology. System provides patients secure transaction history and a quick access to their own medical data leveraging unique properties of enhanced Hyper ledger. It also adds a bunch of efficient properties to the Medi share that cannot be operated using a standard version of block chain such as use of IPFS (Interplanetary File System) to handle all operations with medical data of large size, developing an admin panel by using an apt procedure to make the network active always and deploying a unique authentication for each participant. Medi share also allows patients to access their medical records in emergency situations. An emergency medical staff is always in need of valuable health information to provide proper treatment and care. Not only in the emergency but also in the shift of places we need our health records for further treatments.

Keywords: Bitcoin, Block Chain, Hyper ledger, MongoDB.

SUPERIMPOSED QR CODES

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Abstract:
A QR, short for Quick Response Codes, is a two-dimensional version of the barcode capable of conveying a wide variety of information almost instantly with the scan using smartphones. The reason why QR codes are more serviceable than a standard barcode is that the sense to store (and digitally present) much more data, including URL links, geo coordinates, and text. This paper introduces a new modification of the QR codes named the Superimposed Secret QR code. It comprises two secured QR codes in nested structure with individual messages on a single yielded square image. The two QR codes can be perceived distinctly by slightly altering the distance and angle at which images are obtained. Construction methods for generating the proposed QR code

structure with high security, decoding robustness, and pleasant visual appearance are presented. Furthermore, the experimental results verify the feasibility of the proposed method.

Keywords: Superimposed Barcode, QR code, secret QR code, Two-Layer Image, Nested

SOFTWARE RELIABILITY MODELS BASED ON MACHINE LEARNING TECHNIQUES: A REVIEW

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Abstract:
In order to create outstanding quality, reliable software, the software business has many problems. The reliability of software is important for the reliability of the system. The quality of the software is impressive. It compares with the reliability of hardware by reflecting the perfection of architecture and the reliability of hardware. This paper examines emerging literature focused on machine learning approaches of software reliability models. We can divide the reliability analysis of software into three components: modelling, measuring and improvement. Following the analysis of full applicable articles concerning defects that occur during the elimination of fault, we have proposed a method focusing on the most relevant software reliability parameters using machine learning methods.

Keywords: Reliability, Machine Learning Techniques, Modelling Techniques

MULTI OBJECT IMAGE CLASSIFICATION USING STUDENT NETWORK

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Abstract:
By using a deep convolutional neural network, i.e., heavy network architecture we can produce impressive accuracy in many applications. Taking well-trained heavy network architecture as a guiding module or teacher network, we can train a student network that is lightweight yet accurate. In this way, we can make a mobile or portable student network that is accurate as of that of a teacher module. This paper proposes a method to classify multi-object images by using a student-teacher network. This model includes a fully convolutional localization architecture to localize the regions that may contain multiple highly dependent labels. The localized regions are

further sent to the Recurrent Neural Networks (RNN) to characterize the latent semantic dependencies at the regional level. Experimental results on several benchmark datasets show that our proposed model achieves the best performance compared to the state-of-the-art models, especially for predicting small objects included in the images.

Keywords: Deep convolution Neural Network, Knowledge Distillation, Teacher-Student Learning, Recurrent Neural Network.

COVERAGE HOLE DETECTION AND COOPERATIVE DATA TRANSMISSION IN WIRELESS SENSOR NETWORK

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Abstract:
Internet of Things technology has a wide variety of applications and use of Internet of Things is growing so faster. Depending upon different application areas of Internet of Things, it works accordingly as per it has been designed/developed. But it has not a standard defined architecture of working which is strictly followed universally. The architecture of IoT depends upon its functionality and implementation in different sectors. Still, there is a basic process flow based on which IoT is built. In this paper a new strategy based for the randomly distributed nodes in an network is proposed to optimize the whole energy consumption of the network. We are also detect coverage holes in WSN by solving Delaunay triangulation process. We enhanced m QHBM-CMIMO method for wireless sensor network. Our research results demonstrate that the minimum energy consumption can be achieved by using the proposed algorithm and also achieve long lifetime and end to end delay.

Keywords: IOT, Wireless Sensor Network (WSN), CMIMO, Coverage Holes, Delaunay triangulation.

SURVEY ON HUMAN DETECTION AND COUNTING

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Abstract:
Identifying people vulnerable to COVID-19 infections is crucial in stopping the spread of the virus. The key to avoid the fast spreading of virus is to keep social distance. But it becomes difficult to keep distance in public places. Because so many people will visit frequently for full-filling their needs. Counting people and Detecting Humans are important problems in visual

surveillance. In recent years, the field has seen many advances, but the solutions have restrictions: people must be moving, the background must be simple, and the image resolution must be high. Main focus of this work is to find methods that effectively deal with the above mentioned real-time issues. Machine Learning algorithms are utilized to identify the individual persons in a video frame. The dataset is thenceforth utilized to analyse the individual persons and count of individual persons are displayed into mobile application. Developing to build an efficient system to avoid rush in institutions, organization and even public places will help people for better time management.

Keywords: Component, Formatting, Style, Styling, Insert

SELF-ADAPTIVE CHANNEL PRUNING FOR DIGITAL IMAGES

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Abstract:
Steganalysis is the art of extracting relevant information from a digital image. Basically, the forensic department mainly uses the Steganalysis method for seeking confidential legal pieces of information. To improve the performance of the deep learning structure, expanding the structure is only the main concept. That is while expanding the structure which leads to increasing the computational cost and storage overheads. This paper proposed an adaptive channel pruning method to filter the network layer to shrink the layer and reduce the computational cost. And introducing a feature matching technique to extract excessive information from a digital image. The resulting network provides a great accuracy than existing technologies. The new model which possesses even better adaptability, scalability, and transferability

Keywords: Steganalysis, Steganalyzer, Adaptive channel pruning, Feature matching, Deep learning

BLOCK CHAIN BASED FORECASTING OF FUTURE ACADEMIC RECORDS USING BAYESIAN NETWORK

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Abstract:
The combination of machine learning and block chain technology in forecasting future academic record of a student. The writer forecast the long run academic records of students during this study using past grade data. As a forecasting method, people can work with Bayesian network. The setting up of the Bayesia network in forecasting model, unnecessary variables become noise and then decrease the forecasting precision. Therefore, data procure to decrease the amount of

variables within the model to enhance forecast accuracy. As a result, the accuracy was improved. The input for this study was past grade data that were recorded by using ledgers called blocks. The Block chain was a technology in which the data are divided and converted into blocks through novel cryptography algorithms and it guarantee privacy as well as security.

Keywords: Block chain, Bayesian network, Information gain

SURVEY ON HEALTHCARE CHATBOT USING NLP AND MACHINE LEARNING

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Abstract:
As the demand in Machine Learning and Artificial Intelligence keeps growing, new technologies will keep coming in the market which will impact our daily lives and one such technology is Virtual Assistants or Chat bots. Chat bot shave evolved over years from being Menu or Button based to Keywords based and now Contextual based chat bots. The most advanced among these chat bots is contextual based because it uses Machine Learning and Artificial Intelligence techniques. ML and AI is used in these type of chat bots is to store and process the training models which will help the chat bot to give most accurate response when user asks domain specific questions to the bot. The aim is to create a healthcare chatbot using Artificial Intelligence that can diagnose the disease and provide basic details about the disease before consulting a doctor. This will help to reduce healthcare costs and improve accessibility to medical knowledge and as it is the time of pandemic it becomes very useful as the users doesn't required to go to hospitals for small issues. The chatbots are computer programs that use natural language processing to interact with users. Our project aims on providing the users immediate and most accurate disease prediction based on the symptoms that user is or are facing. The disease prediction chatbot is developed by using natural language processing concepts and machine learning algorithm. For the prediction of diseases, we have used Decision tree algorithm. Healthcare chatbots are a game changer for healthcare industry.

Keywords: Disease Prediction, Natural Language Processing, Decision Tree Algorithm, Chatbot, python

Smart Parking System with Automatic Payment

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Abstract:
Internet of Things (IoT) plays a major role in today's world by connecting day to day things to the networking system, thus providing a way for accessing electronic devices from any distant location. The growth of population and commercial development leads to a huge increase in number of vehicles. So that, spending too much time for searching a parking area/slot in the city is time consuming and also lead to substantial financial costs. Hence, in this paper we present an IoT based smart parking management system that would help the user to find a perfect parking space without wasting any time. The system consists of a smart phone application which have a mobile wallet and a user can search parking areas nearby the user's location, choose and book for a slot in a parking area from the smartphone. With the help of RFID technology and cloud Integration, the system can provide real-time detection of improper parking and automatic parking payment collection. We also implement a way to incorporate non-booked users into the system. The proposed system will surely help users to overcome the difficulty of parking and also saves much of user's time.

Keywords: Cloud computing, Internet of things (IOT), RFID technology, Smart car parking

REAL ENVIRONMENT Wpa/Wpa2 REAVER/AIRGEDDON HACK AND THE ENHANCED METHODS FOR PREVENTING AUTHENTICATION HACKING

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Abstract:
This paper covers the various methods that are available today to hack the real environment wireless networks and the ways to prevent such attacks on the wifi systems. As, wifi serves as a fundamental component of our daily day life in which various transactions occurs as a part of it. In order to prevent the loss of information and to take care of the data hacking by hacking he keys that WPA/WPA2 uses, the hackers are able to sniff the data across the wireless network. There is a very serious weakness that prevails in the current scenario that employees WPA/WPA2 encryption mechanism. A hacker who sits within the range where the user lies has a low hanging fruit to easily hack the network system. The most easily used method for the attack is Reaver attack which is an easier, step by step phenomenon to hack the wifi network.

Keywords: Reaver, nonce, rogue AP, handshake, WPA2.

EVALUATION OF DIFFERENT OPTIMIZERS IN LSTM (LONG SHORT TERM MEMORY) BASED DEEP LEARNING ALGORITHM WITH IMBALANCED DATASET

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Abstract:
With an increasing number of embedded sensor systems and data collection units set up in production plants, machines, cars, etc., there are new possibilities to store, analyse and monitor the data from such systems. These development makes it possible to detect anomalies and predict the failures that affect availability of these systems and impact maintenance plans. Typical industry scenario points towards have very less failures and data points related to same being captured in systems making it difficult to predict a rare event. This paper would be focusing towards evaluating the different optimizers and impact they have on accuracy while trying to predict a rare event target in a time series-based data. We would be evaluating different built-in optimizer classes in by tensor flow for training LSTM based neural networks.

Keywords: Failure Prediction, Neural Networks, LSTM, Component Failure.

IMPACTFUL STUDY ON THE HEART DISEASE BASED ON MACHINE LEARNING TECHNIQUES

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Abstract:
In this paper, the impactful study on the heart disease based on machine learning techniques is given in detail manner. In this whole world heart disease is one of the major problems. To overcome this many machine learning techniques are introduced. This method takes less time to know the analysis of output. Therefore, it needs accurate diagnosis at accurate time. Huge amount of data which is related to patients and diseases is given by health care industry produced. However this data is used efficiently by the researchers and practitioners. In this survey paper, many techniques were described for the heart disease.

Keywords: Heart Disease, Machine Learning, Medical Circumstances, Artificial Intelligence (AI), Labelled dataset.

DISINFECTION ROBOT

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Abstract:
People uses hospitals and facilities for recovery and rehabilitation. Keeping a perfect and safe medical care climate is the top most need, and huge advancement should be made in disinfection techniques. Current manual cleaning techniques are not adequate in battling against microorganisms. During treatment of transmissible diseases manual cleaning methods are not a good option in isolation wards and ICUs, as it can cause more danger in transmitting the disease to cleaning staffs. Infection prevention technologies, recovery and rehabilitation of transmissible disease require an up gradation which will give create changes and give birth to a new era. We can provide better care facilities by using efficient ultra violet disinfection robot. This technology has innumerable characteristics and opportunities to use in other places like offices EMS vehicles and assisted facilities. The system consists of a robot and a monitoring unit. Monitoring unit sense the room parameters like temperature, Carbon Monoxide, Poisonous Gas etc. The officials/doctors can monitor the current room parameters at IoT cloud server, without going to the room. Once the parameters are checked, we can navigate the robot using IoT based wireless communication. Robotic system receives the data from server and goes to the isolation wards/labs/ICU. Robotic navigation is controlled by joystick and the robot will carry out the disinfection process by the help of UV light attached to it.

Keywords: IoT cloud server, Robotic system, UV-disinfection, Wireless communication.

DETECTION OF COVID-19 FROM CHEST X-RAY SCANS USING MACHINE LEARNING

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Abstract:
Machine Learning (ML) can be used to track the disease and predict the growth of the epidemic. Several detection models for COVID-19 are developed. Due to the uncertainty and lack of essential data, many existing models have shown low accuracy in detection. In several technology domains, ML models have been used to define and prioritize adverse threat variables. This study proposes an improved model to analyses and detect the amount of COVID-19-affected patients. In this study, we propose a classification model that detect the infected condition through the chest X-ray images. A dataset containing chest x-ray images of normal people, people with pneumonia such as SARS and pneumococcus and other patients with COVID- 19 were collected. Histogram of oriented gradients (HOG) is used for image features

extraction. The images are then classified using Support Vector Machines (SVM), random forests and K- nearest neighbours (KNN). These results may contribute well in detecting COVID-19 disease.

Keywords: COVID-19, HOG, SVM, KNN, Classification,

DOMAIN BASED MALWARE DETECTION USING ML

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Abstract:
Digital assaults against people, organizations, and associations have expanded as of late. Digital crooks are continually searching for powerful vectors to convey malware to casualties to dispatch an assault. Assailants for the most part utilize an order and control (C2) worker to control the correspondence. To play out an assault, danger entertainers regularly utilize an area age calculation. DGA is a robotization procedure that aggressors use to make it harder for protectors to ensure against assaults. DGA permit malware to speak with C2 by producing an assortment of organization areas. Proposing an AI structure for recognizing and distinguishing DGA areas to lighten the danger. The proposed AI structure comprises of a two-level model and an expectation model. In the two-level model, we initially characterize the DGA areas separated from typical spaces and afterward utilize the grouping technique to distinguish the calculations that create those DGA areas.

Keywords: Machine Learning (ML), Domain Generation Algorithm (DGA)

TASTE DIARY – A WORLD TO FIND YOUR TASTE

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Abstract:
Most of the day, our generation are using a phone. Consequently, phones now have become an "assistant" rather than just a communication tool. With this aspect in mind, we wanted to use the phone as a personal assistant for helping users easily prepare delicious meals even if they don't know anything about cooking. Using Taste Diary, it is possible to find a recipe specific to a dish the user would like. The Internet offers us many solutions to help us plan our meals, and, right now, there are many web sites that help us organize the food we eat. Taste Diary makes it easier to find recipes easily and faster. The user can either log in as a beginner or as a professional. The

application not only allows the user to search for recipes and preparation but also allows them to check on the calories consumed by them daily. Along with this the professionals are provided with an additional feature to upload the recipe of their dish. Despite the fact that there are food search resources, none of them have recipe addition capabilities. In Taste Diary we added large-scale recipes which will be helpful for the user to find their favourite dishes. During this pandemic situation, the taste diary application helps the user to learn more about cooking and stay healthy at home.

Keywords: calories, cooking, recipes, beginner, healthy, dish.

SPINAL INJURY DETECTION WITH CROW SEARCH - DCNN METHOD

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Abstract:

Any damage to the spinal cord may fully or partially affect the sensation of a human. Damage is may be because of vertebral fractures. To identify the injuries present in the spinal cord, first we need to segment the spinal cord. In terms of image registration, the segmented spines provide important features that are helpful to the correct alignment of corresponding anatomical structures across individual subjects. Furthermore, it becomes easier to conduct disease-oriented analysis given the segmented topologies/shapes of the spines. This paper proposes a spinal cord segmentation and injury detection system based on the proposed Crow search- DCNN method that has the capability to detect the injury in the spinal cord in an effective manner.

Keywords: Optimization, Deep Convolutional Neural Network, adaptive Thrush holding,

DEEP LEARNING BASED SEVERITY GRADING FOR SKIN RELATED ISSUES

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Abstract:

Deep Learning is invading almost all sector of real world. With the rapidly growing demand and need of several industries, a Convolutional neural network (CNN) has become a major driving force in all image based applications. The advances in Computation infrastructures like cloud,

GPUs and data science, solution to almost any problem is made simple as ever before. The formidable growth of these technologies aid in the high level understanding of computers resulting in automation and digitization while meeting the extremity of real world applications. In this paper we train the CNN to identify different types of basic skin diseases, source of cause and also attempt to predict the recurrence of the disease in future. Based on the appearance, the neural network is trained to understand the different categories of diseases and analyse the reason for occurrence and also predicts the recurrence of the disease in future. According to "A new Journal of the European Academy of Dermatology and Venereology "states that skin problems are the most commonly caused human illness. But most of the people give poor importance and doesn't consult the physician. Skin problems are often considered to be least important due to various societal and personal factors. While most of the people avoid consulting a physician due to lack of awareness, reluctant and seriousness, diagnosing the problem via images may become a good fortune to many people suffering from various skin problems. Image classification and image captioning, the subfields of computer vision are used for classifying the images and labelling them according to the visual content. In addition to these, Transfer Learning an advancement in the field of Deep learning is used to identify the reason for recurrence of skin problems. Automated detection of skin problems, instance segmentation and the subsequent quantification (severity of skin problem) will be able to provide timely help to patients. Experimental results provides greater accuracy in the field of dermatology while detecting the disease, source of occurrence. Further attempts are made to predict the recurrence.

Keywords: Deep Learning, Computer Vision, Image Captioning, Convolutional Neural network (CNN), Transfer Learning, Artificial Intelligence, skin disease.

DETECTION AND CLASSIFICATION OF CITRUS PLANT DISEASES USING NEURAL NETWORKS

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Abstract:

Agricultural productivity is one on which the Indian economy largely depends. In agricultural field most of the research work is on the detection of diseases in plants since plants plays a very important role and the disease in plants is completely natural. If proper care is not taken during this space, it will have a serious impact on the plants and affect the quality, quantity or productivity of the product in turn the economy of India. The citrus plants, provides nutrients such as Vitamin C and every year 50% of citrus plants is affected due to plant diseases. This cause badly effects the production and quality of citrus plants. In this regard there is a need of an

automatic disease detection and classification system with technology which can be useful to reduce oversight work on large plants. It can also recognize disease symptoms, i.e., even after they appear on the leaves of plants at a very early stage. Neural network is used in various problems related to computer vision and image processing. They have also been widely used for detection and classification of diseases in plants. In this article, the plant disease region is segmented and extracted from the leaves of the plants using Fuzzy C Means (FCM) clustering. The wavelet transformation (single stage), whose approximation values are extracted for further processing in order to extract the texture characteristics with Gabor (Gabor can act as a characteristic extraction target and also as a filter) with Principal Component Analysis (PCA). Features such as mean value, standard deviation, and entropy of the obtained sub bands are calculated and stored in a feature vector (in the Mat file format). The extracted features are fed into the Probabilistic Neural Network (PNN) classifier to classify the disease of the affected plant or not. The proposed technique is tested on Citrus plant image dataset for detection and classification of citrus plant namely healthy, anthracnose, black spot, canker, scab and melanose. The proposed technique outperforms the existing methods and achieves 93% classification accuracy on citrus plant image dataset.

Keywords: Fuzzy C Means, Gabor, PNN, Wavelet Transformation

A COMPARATIVE STUDY OF TEXT CLASSIFICATION METHODS: TF-IDF, FASTTEXT AND BERT EMBEDDING

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Abstract:
In social media information, text classification is an important role. Deeper understanding of text in machine learning methods to be able to accurately classify texts in many applications. Documents or Articles contain many words that are irrelevant for text classification. In this paper we discuss a comparative study of different classifications methods. 1) TF-IDF: Weight words method, translate each document into vector and evaluate the number of words in the document in a corpus. 2) Fast Text Embedding: feature learning technique where each word is represented as a bag of character n-grams. 3) BERT Embedding: one of the strong context and word representation.

Keywords: NLP, word embedding, TF-IDF, pre-processing, text classification

TOUCH LESS ATM USING AUGMENTED REALITY

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Abstract:

Prevent spreading of COVID-19 is very critical to flatten the curve. Research has found that COVID-19 virus can transmit through public objects used by many people in similar fashion during the course of a day such as ATM keypad, Gas station keypad, self-checkout at grocery stores. Sanitizing keypad after every use is simply not feasible. So we need a technology which can help us operate the keypad without physically touching it. At the same time we need to consider cost of new system or enhancement. Using Augmented Reality we can impose virtual keypad on digital image at real time. There is no need for any additional hardware or camera to be installed. All we are talking about is mobile app powered by augmented reality.

Keywords: Augmented Reality (AR), Node MCU,MQTT

MEDI-CLOUD

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Abstract:

Feasibility of treating a patient when he/she is under critical emergency care is crucial for doctors. Having hardcopy of their health history or medical status is not practical and not handy in these cases and we have concluded that if all the data could be provided on a digital device with an easy to understand interface it would help the hospital staff in quickly judging the condition and deciding on the treatments to be followed. By providing a centralized cloud storage to store these data provided by the patient's before-hand we can provide access to it for the doctors. These data is secured using encryption algorithm so as not to lead to a breach in privacy. Using the unique key provided to patients, the doctors can access their health details and decide on the course of treatment accordingly to this.

Keywords: Cloud Storage, Encryption Algorithm, Unique key.

AUTOMATIC DETECTION OF DIABETIC RETINOPATHY: A SURVEY

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Abstract:
When a person's body fails to respond to insulin produced in their body, it leads to diabetes. In recent years diabetes has become more and more common disease and diabetic retinopathy has become the major reason for permanent blind- ness. Manual diagnosis is performed on retinal fundus images to find the diabetic retinopathy, but it requires experienced clinicians and by quantifying the importance of several small details which makes this an exhaustive and time-consuming task. As machine learning emerges as a powerful tool for analysing medical images it is very much beneficial to detect the diabetic retinopathy in early stages to avoid the permanent blindness. This survey provides a comprehensive study about different approaches to detect diabetic retinopathy.

Keywords: Diabetic retinopathy, deep learning

AN ADAPTIVE MODEL FOR RUNWAY DETECTION AND LOCALIZATION IN UNMANNED AERIAL VEHICLE

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.

Abstract:
Unmanned aerial vehicles is gaining more popularity in recent years due to its ability in performing dangerous task that cannot be done using manned aerial vehicles. Apart from military purpose they are also effectively used in urban planning too. Lots of data that are stored in hardware of UAV is destroyed during accidents in landing time. It's all because we don't have an efficient system for the detecting the landing sites. Here in our work we provide an excellent mechanism using CNN models to detect the runway and to provide its exact location. Apart from that we are also providing methods to detect the runway even in bad weather condition, also augmentation is done on the dataset to increase the accuracy of the model.

Keywords: Runway, augmentation, Localization, deep learning.

BLOCK - FQ: A BLOCKCHAIN BASED FOOD QUALITY ASSURANCE

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Abstract:
Food quality refers to the features and characteristics of a food product acceptable to consumers, needed for quality criteria, and is lucrative to the company. These are evaluated to try and minimize potential contamination and issues with widespread illnesses. The factors causing the contamination of the food may threaten the safe consumption of it and thereby make the foods harmful. Our aim is to bring about a systematic measure and thus ensure quality food. Currently, the food quality assurance is done manually by government authorized agencies. Instead of this organizations can digitize physical assets and create a decentralized immutable record of all transactions. By integrating IoT with Block chain, the paper discusses the properties like transparency and immutability. A supply chain mechanism is integrated into our project for quality assurance. Using IoT, mainly RFID, the food products are traced from manufacturing to the product delivery. The details of products reaching the hotel are updated into the block chain via a web interface; this interface furthermore serves as an inventory management mechanism of the hotel. Product consumption needs to be updated on a daily basis. The shelf life of food products are calculated and alarmed to officials in case of disparities via the web interface itself. The general public is provided with a mobile application which ranks the hotels in a particular locale based on the quality assurance mechanism and user reviews.

Keywords: Blockchain, Food Quality, Immutability, RFID, Transparency

COMPREHENSIVE REVIEW ON MACHINE LEARNING APPROACH FOR HEART DISEASE PREDICTION: CURRENT STATUS AND FUTURE PROSPECTS

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Abstract:
Many lives can be saved if disease can be detected at earlier stage. Heart disease diagnosis using traditional medical history is not reliable as your doctor will perform a series of tests to diagnose heart disease. Invasive methods of diagnosis are time consuming and costly. An accurate decision support system can play a key role in early-stage identification of heart disease in poor countries when heart specialist doctors are not available in semi-urban, remote and rural locations. Medical field can be significantly benefited if we provide an accurate diagnosis of

diseases using advanced Machine Learning (ML) approach. As per the new survey, from last 20 years Heart disease has remained the leading cause of mortality worldwide so in today's era, it is necessary to diagnose it quickly and accurately. The contents of paper intend to bring forth a comprehensive survey of machine learning techniques in predicting heart disease. We review representable research works that has been carried out in this field using machine learning approach for University of California, Irvin (UCI) database. Comparison is only possible if we have some common benchmark on the dataset. Therefore, we have chosen the studies that have implemented machine learning algorithms on the same dataset namely UCI database. Few unaddressed issues and challenges that comparatively received meagre attention are discussed, highlighting the future prospects for heart disease prediction and providing pointers to the future research.

Keywords: Heart disease prediction, Machine Learning, University of California

A SURVEY ON AUTHORSHIP ATTRIBUTION

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Abstract:
Over the internet huge amount of data is available in the form of blogs, emails, books, etc. The correct Identification of this data is a difficult task. Authorship Identification (AI) is the technique used to identify the actual author of an anonymous text, which has undergone a remarkable evolution in recent years. This is based on the idea that every person unconsciously follows his own writing style, which human readers can understand. This paper presents the literature review about advances in authorship identification. Also, various techniques used in AI, significant problems in this field, and our further research direction.

Keywords: Convolutional Neural Network (CNN), Knowledge Mining, Machine Learning (ML), Word2Vec.

DETECTION AND PREVENTION OF PHISHING WEBSITES USING MACHINE LEARNING APPROACH A SURVEY

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Abstract:
Phishing is a type of cyber-crime that aims to steal personals information, Data, Bank details, passwords, etc. For example, a person can lose their money or information by accessing a fake website that looks familiar to the original one. Phishing is of different types like vishing, Spear

phishing, whaling, email phishing, etc. in this the most common form of phishing through email. Many kinds of research are going on in this area to detect and prevent the types of cyber-crime still there is no complete solution for it. This paper helps to identify and classifies the various methods that can be used for phishing detection.

Keywords: Phishing websites, classification, Features, Machine Learning

COVID-19 LOCKDOWN ON THE INTERSECTION OF WORK AND LIFE OF URBAN SCHOOL TEACHERS

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Abstract
The COVID-19 pandemic is the infectious disease that causes a serious threat to the world. The aim of the study is to analyze the challenges faced by the urban school teachers during the period of COVID-19 lockdown in professional and personal life. Although schools in India are temporarily closed, most of the schools are opting for online teaching. However many urban schools do not provide online facility, due to poor infrastructure of the organization. Meanwhile it affects the teaching process and the education of students. This study highlights the challenges faced by the urban school teachers in online teaching and the effect of lockdown on the intersection of work and life of urban school teachers. The result of the study indicates a negative relationship between the COVID-19 lockdown on the intersection of work and life of urban school teachers.

Keywords: COVID-19, intersection of work and life, lockdown, urban school teachers, online Teaching.

A REVIEW OF FRUIT CLASSIFICATION TECHNIQUES

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Abstract
In today's world, where everyone is concerned about their health, the ability to recognise fruits based on their quality is quite vital. Fruits are of different types. Finding the best-quality fruits, on the other hand, is a difficult undertaking. Several fruit recognition techniques based on colour and form properties have been developed. Colour-based and shape-based analysis approaches are the most commonly utilised analysis techniques for both the recognition and classification of

fruit images. Different fruit images, on the other hand, may have similar or identical colour and shape values. This study demonstrates a variety of strategies for classifying fruits.

Keywords: Classification, Colour-based, Recognition, Shape-based

WICK: AI AND IOT BASED PORTABLE BOT FOR INTERACTIVE COMPUTATION AND ANALYSIS OF DATA

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Abstract

Chatbots are now part of cultural narrative and are even more sophisticated. It is hard to find who has not had an interaction with a chat bot or virtual assistant. This project is to extend what chat bots can offer in the new digital era. Wick is an intelligent chat bot for mobile devices with extensive functions like data analysis, visualization, prediction and training ML models. It can also communicate to IoT devices and hardware. It has a humanly interface with a user friendly interaction including speech and voice recognition capability. The application processes user queries with the help of Natural Language Processing and Networking, thus providing the user with the most relevant results including text, images, files etc. The application also has a cloud server which is in sync with the local databases of all personal devices. This project aims to build a much more enhanced chat bot that is not bounded to any servers and also provides sophisticated functionalities like training and deploying ML Models from any datasets, controlling IoT devices with interactive functions etc.

Keywords: Artificial Intelligence, Chatbot, Internet of Things, Machine Learning, Natural Language Processing, Networking, Wick

FOOD QUALITY SYSTEM

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Abstract:

Food security and cleanliness is a significant worry to forestall the food wastage. For this we need a framework to guarantee the nature of the framework. So in our undertaking with the assistance of IoT and ML , by contrasting the yields of the frameworks the nature of the merchandise are ensured .In this project, a food quality checking gadget will be planned that will keep watch of natural variables like temperature, mugginess, liquor substance and openness to

light. The gadget is based on Arduino UNO which is a well-known prototyping board. The Arduino board is interfaced width different sensors like DHT-11 to screen temperature and mugginess, MQ3 to recognize liquor substance and LDR to quantify openness to light. Fundamentally, this is an IoT gadget also, sends the deliberate sensor information to an IoT stage. Notwithstanding this we will likewise be making an AI model that will empowers us to outwardly examine vegetables and order them into predefined food quality evaluations, at that point this can save costs for the organization in numerous ways such decrease in labour cost, better and unsurprising quality control. Recipients of the task will be purchasers and different partners in Food Supply Chain (FSC). Application extent of the undertaking significantly will be two spaces. One is the assembling unit of the FSC and the other being retail locations. Cost approximated will be founded on the necessities of our IoT model which incorporates cost of Arduino, Sensors, associating wires another product that will be utilized.

Keywords: Food quality checking, Arduino UNO, DHT-11, MQ3, Food Supply Chain (FSC)

MACHINE LEARNING BASED REWARD BIN FOR EFFECTIVE WASTE SEGREGATION

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Abstract:

Waste disposal along with its management is the main concern worldwide. The waste produced day to day seems to be impossible to control, especially from small to large scale hence, it is rising constantly. The manually segregated garbage is less efficient, less feasible and is time consuming. The system introduced in this paper is based on machine learning that uses CNN algorithm to segregate the item to be disposed into the bin as plastics and non-plastics like plastic bottles, metal cans, paper cups, tetra-packets and wrappers. Further, waste is monitored using an ultrasonic sensor and after the limit is reached, the respective authorities are notified using an application. People also do not take it seriously because either they are not aware or not taking responsibility regarding waste disposal. Due to these reasons, we have implemented a conditional reward system to appreciate the user for their valuable contribution towards cleaner environment.

Keywords: Machine Learning, Monitoring, Notifying, Rewarding, Waste Segregation

AUTOMATIC ATTENDANCE SYSTEM USING FACE RECOGNITION AND RFID VERIFICATION

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Abstract:
RFID and face recognition-based attendance system is the need in today's digital world and age for universities and schools. Automatic attendance systems make the daily practice of marking attendance easy and highly efficient thus helping reduce time wasted during lectures for such administrative work. Face recognition-based attendance systems are one such biometric based attendance systems which provides more security and can evade multiple fake or proxy attendance practices easily. This paper presents a model of an automatic attendance system to alleviate the manual effort of recording data eliminating the probabilities of fraudulence. The model focuses on how face recognition incorporated with radiofrequency Identification (RFID) detect the authorized students and counts as they get in and obtain out form the category room. Smart Attendance System keeps the authentic record of each registered student and eradicates greatly the normal tedious task. Moreover, this smart system keeps the details of each student registered for a specific course within the attendance log and provides necessary information consistent with the necessity. By recognizing the face of the individual and verified by RFID simultaneously in our project, the limitations in the existing manual attendance system are eliminated

Keywords: Face recognition, Radio Frequency Identification (RFID), Real Time Clock (RTC)

REVIEW ON FACIAL EXPRESSION RECOGNITION METHODS

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Abstract:
Facial Expression Recognition is an innovation which utilizes biometric markers to recognize feelings in human faces. All the more unequivocally, this innovation is a supposition investigation device and can naturally distinguish the six fundamental or general articulations. Facial Expression is one of the significant nonverbal channels through which human feeling state is conveyed, it includes the examination and acknowledgment of facial highlights. Facial Expression Recognition is classified as social biometrics and furthermore relevant in the field of

computer vision .This paper presents an audit of exhibitions and impediment of different Facial Expression Recognition techniques and analyse the performance and limitation of each method on the basis of accuracy of detecting the emotion.

Keywords: Artificial Neural Network (ANN), Convolutional Neural Network (CNN), Facial Expression Recognition (FER), Human Machine Interaction (HMI).

CABBY-RIDE SHARING PLATFORM

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Abstract:
The ride-sharing services became highly regarded in urban transport and is one in all the 5 main shared economies. As we all know the dynamic developments among urban transport systems have created ride sharing capable enough to substitute cab services. This project creates a ride sharing platform wherever we will share our personal vehicle with the person having the same destination to hide. It helps individuals to avoid wasting time, money, fuel and helps nature in its quick recovery. Automobile Pooling may be a great way to burn up the total commodiousness of a car/bike, which might otherwise stay unused if it were simply the driving force victimising the car/bike. Our plan is basically straightforward as, if user A desires to move from a town with his/her vehicle, whereas user B ought to venture intent on a spot in between the destination of user A, user B will move towards user A lawfully through our platform. For this service, user B is charged a little fare, which in fact, is a smaller amount than the prevailing taxi charges. We tend to respect our customer's security and use measures utilizing image process techniques to avoid frauds. Through cross checking between the user's govt. approved id and live selfie, we will make sure that the registered person itself is sharing the ride. The user giving the ride will opt for the amount of seats to supply in line with the commodiousness of his car/bike. Another nice advantage is that we tend to be serving to cut back the amount of personal vehicles on road, therefore tributary to a far better system and a better tomorrow. Our project will certainly be useful for individuals with no personal vehicle. The highest technologies used are Flutter, Firebase, Image process ML and so on. Our final aim is to cut back traffic and pollution thus creating the planet better place.

Keywords: Flutter, Google Map APIML, Firebase.

IOT BASED VIRTUAL REALITY FIRE FIGHTING ROBOT

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Abstract:

The fire fighting robot principle is a real-world implementation of computational robotics that involves the development of a simulated robot to accompany fire-fighters by putting out the fire. Our paper aims to develop a virtual reality fire fighting robot that can be operated remotely using IoT technology is being planned. The desired procedure is carried out on a Raspberry Pi microcomputer, aims to provide as much extensive data about fires as possible. A fire extinguisher mounted on the robot's body, and its operation is controlled by a signal from the Node MCU output via the Blynk App. A relay module connects the fire extinguisher pump. The robot's navigation is powered by a smartphone that has the Blynk Mobile app installed. The Node MCU ways to support is linked to a motor driver IC L293D, which allows the controller to power the DC motors used in robotic navigation. Our paper is also modified by coupling it to a pi camera so that the person in charge can monitor the robot's activity from afar.

Keywords: IC L293D, IoT, pi Cam, Raspberry pi, VR headset, Wi-Fi module.

EMOTION BASED MUSIC PLAYER

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Abstract:

Emotions are an important part of every living being. The computer field combines emotions with the machine, to provide assistance and improve user experience. With emotional recognition, which reflects facial features to detect a certain emotional state, new approaches are taken as to how human communication with a computer can be done. Emotions are also played in the field of Music Information Retrieval, where music is categorized based on the emotion conveyed. In addition, with in-depth meta-data analysis, better visibility is made and more relevant recommendations are provided. The abstract provides a review on emotional awareness and classification of music, highlighting the different strategies used in these two learning areas. Everyone loves to hear music, people of all ages enjoy music every day. Recent studies confirm that humans respond to music and it plays a high impact on a person's brain activity. Music plays a very important role in extracting an individual's life as it is an important medium of entertainment for music lovers and listeners and sometimes even imports a therapeutic approach.

Keywords: Machine Learning, Tensor flow, Convolutional Neural Network, Haar Cascade, Jupyter Notebook

AN EFFECTIVE COMPARISON OF FACIAL EXPRESSION RECOGNITION METHODS BASED ON THE OCCLUDED IMAGES – A SURVEY

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Abstract:
Facial expression recognition is a technology which utilizes biometric markers to distinguish feelings in human faces. This technology is able to automatically detect the six fundamental or universal expressions like happiness, sadness, anger, surprise, fear, and disgust. The facial expression recognition plays a significant part in the human communication. Because it recognizes the emotional expressions in the humans. This overview gives a comprehensive review of performance and restriction of different facial expression recognition methods.

Keywords: Facial Expression Recognition (FER), convolutional neural networks (CNNs), Deep convolutional neural networks (DCNNs), Artificial Neural Network (ANN), k-nearest neighbours (KNN).

REVIEW ON LIGHTWEIGHT CRYPTOGRAPHIC METHODS FOR RESOURCE CONSTRAINED DEVICES

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Abstract:
Resource constrained devices that having limited processing and storage capabilities which provide maximum data output using less power consumption. It includes wireless sensor networks, wireless multimedia sensors etc., are widely used for critical applications which produce enormous amounts of data. The biggest challenging tasks for these devices are to ensuring confidentiality and integrity with high data trustworthiness. This paper presents different lightweight cryptography methods satisfies the key security properties and analyze the advantages and limitations of each method.

Keywords: Internet of Things (IoT). Lesmentha (LW), wireless multimedia sensor (WMSN), Wireless sensor networks (WSN), Rivest, Shamir, Adleman (RSA)

A CONVERSATIONAL UI INTEGRATION USING NLU FOR TELEPRESENCE ROBOTS

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Abstract:
Telepresence Video conferencing technology is usually integrated with mobile robot devices that may be guided from afar in robotic systems. These technologies, which are primarily intended to promote social contact between individuals, are gaining popularity in a variety of application areas, including health care, independent living for the elderly, and workplace contexts. The major issue here is that in telepresense robot a person should remotely access the robot and the robot is inactive if the person is not available. In this paper, we have focused to solve the problem where major conversation has been done through Natural Language Processing and we integrate the same to the telepresense robot. Our system consist of a hardware part for implementing the telepresense robot and for conversation part we used dialog flow to implement the Natural Language Processing.

Keywords: Natural Language Understanding (NLU), Telepresense Robot, NLP, Video Conferencing, Conversational User interface.

A SYSTAMATIC SURVEY ON FAKE NEWS DETECTIONMETHODS

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Abstract:
The growing reputation of social media, an increasing number of humans eat information from social media as opposed to conventional information media. However, social media has additionally been used to unfold fake information. The good sized unfold of fake news has the ability for extra ordinarily poor effects on people and society. Detection of fake information is critical in state-of-the-art society as sparkling information content material is swiftly being produced due to the abundance of to be had technology. This paper presents a review of performances and limitation of various fake news detection methods.

Keywords: Machine Learning (ML), Fake News, Fake News Detection (FND), Support Vector Machine (SVM), KNearest Neighbour (KNN).

PLATFORM TO CONNECT DAILY LABOURERS AND CUSTOMERS

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Abstract:
In this scenario where we have trouble in looking for labourers on a daily basis, an alternative method for contacting is of utmost importance. The platform helps customers book reliable services like cleaning, plumbing, painting, construction, beauty services etc. This helps to connect to the labourers within our fingertips. Professionals from your neighbourhood will be able to connect according to the need. This also helps to solve the lack of employment as thousands of people get employed. In this way, this platform helpsboth customers and labourers mutually.

Keywords: NLP, Sentimental Analysis, Customers platform, Labourers platform

AN EFFICIENT MACHINE LEARNING TECHNIQUE USED FOR PADDY DISEASE AND PEST DETECTION - A REVIEW

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Abstract:
Paddy diseases can cause sufferers of up to 30% of crops. Timely detection and proper preventative measures can help minimize the spread of these organisms. Symptoms of Paddy diseases appear in the plant leaf and stem. Early detection helps minimize the spread of these diseases and improve the quality of the crop. Paddy diseases and pests are vital aspects defining the yield and superiority of plants. Paddy diseases and pests identification can be supported out by means of digital image processing. In recent years, machine learning has made step forward in the field of digital image processing, far greater to existing methods. How to use machine learning technology to study Paddy diseases and pests identification has become a research matter of great anxiety to researchers. According to the difference of network structure, this study outlines the research on Paddy diseases and pests finding based on machine learning and the advantages and disadvantages of each methods are summarized. Collective datasets are presented, and the performances of existing studies are compared. In addition, possible solutions and research ideas are proposed for the challenges, and several suggestions are given. Finally,

this study gives the investigation and viewpoint of the future trend of Paddy diseases and pests detection based on machine learning.

Keywords: Agriculture, CNN, Deep CNN, SVM, Paddy.

A VIRTUAL NAVIGATION ANDROID APPLICATION BASED ON AUGMENTED REALITY

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Abstract:
The virtual navigation app is a location-based augmented reality navigation application for Android. It features an AR powered point-of-interest browser and real-time AR navigation apps that have long been popular with users like tourists, car drivers, businessmen during their trips way around the unfamiliar terrain and build the route to the desired point. However, recently user location systems have been improved through such sought-after technology as augmented reality. Now it's time to expand our research and provide detailed information on implementing AR solutions for geo location.

Keywords: AR, Navigation system, POI

TOURIST TRACKER GUIDE

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Abstract:
Now a day mobile is a necessary part of the people's life. There is continuously rising in a number of mobile computing application, centred on the people's life. In such application, location dependent systems have been detected as an important application. Such application which presents the architecture and implementation of such a location is commonly known as Tourist Tracker Guide. We proposed architecture of mobile tourist guide system for android mobile phones that is able to provide tourism information to the mobile users conveniently. Our system takes advantage of light-weighted mash up technology that can combine more than one data sources to create value-added services, while overcome the limitations of mobile devices.

Keywords: API, Mash up, Mobile phones

SECURE SHARING OF EHR IN CLOUD USINGMULTIAUTHORITY REVOCABLE-STORAGE ANDHIERARCHICAL ATTRIBUTE-BASED ACCESS SCHEME

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Abstract:
Personal Health Record (PHR) is a rising patient-centric model of health information exchange, which is often outsourced to be stored at a third party, such as cloud providers. However, there have been vast privacy concerns as personal health information could be exposed to those third party servers and to unauthorized parties. To guarantee the patient's manage over access to their own PHRs, it is a promising method to encrypt the PHRs before outsourcing. Yet, issues such as risks of privacy exposure, scalability in key management, flexible access and efficient user revocation, have remained the most important challenges toward achieving fine-grained, cryptographically enforced data access control. In this paper, to strengthen the system security and meet the requirement of specific applications, we add functionalities of user revocation, secret key delegation and cipher text update to the original ABE, and propose a multi authority revocable storage hierarchical attribute-based encryption (MRS-HABE) scheme, as the core building of establishing a framework for secure sharing of EHR in public cloud. The proposed MRS-HABE scheme features of forward security (a revoked user can no longer access previously encrypted data) and backward security (a revoked user also cannot access subsequently encrypted data) simultaneously, and is proved to be selectively secure under a complexity assumption in bilinear groups, without random oracles. The theoretical analysis suggests that the proposed scheme surpasses existing similar works in terms of functionality and security, at the acceptable cost of computation overhead. Moreover, we implement the proposed scheme and present experiments to demonstrate its practicability

Keywords: Personal e-health records, Attribute-based encryption, Secret Key delegation, forward and backward security

IOT ASSISTED ELECTRONIC DEVICE CONTROLLING SYSTEM

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Abstract:
The project proposes an efficient implementation of IoT (Internet of Things) for monitoring and controlling electronic appliances via a mobile application. In the existing scenario, a large amount of energy and time is consumed in powering up appliances, mainly due to the location

and confusing assembly of the switchboard. The proposed system works on IoT, where the controlling device will be a smartphone with an application to scan the device for a unique, preinstalled image on the device. In the application already added rooms are visible to the user. The user can select whichever room he needs to access. The components are added within the room. The application should identify the device and a control panel would be available to the user for further actions. The signals from the phone will be received at the IoT module attached to the switchboard which will control the powering of each device. Also, there would be a troubleshooting mechanism that is to be used in case of any malfunctioning. It would give an error message if components are not working properly. This would be a great help for the user to identify the components that are not working. Either he could fix the problem or replace the component. We can manage room according to our needs. This would be a great help for everyone, especially people who have difficulty moving around.

Keywords: Control Panel, IoT Module, Smart phone, Troubleshoot

AN IMPROVED COLLABORATIVE FILTERING ALGORITHM USING SUPPORT VALUES

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Abstract:
Internet has a large number of data which are widely diverse and huge. The Recommendation System is used to filter out these contents according to the preference of intended users. It is an information filtering system that helps in prediction or rating, based on user preference. Conventionally, collaborative filtering is the common approach to the design of recommendation system. This approach uses the similarity measures which rely on the similarities between users. The method that we use here is a combination of multiple similarity measures that are used to find similarities between users. Some of the similarity measures that we have used here are Pearson Correlation Coefficient, Mean Square Difference, Cosine Similarity, etc. Using the method of aggregation, we divide it into super similar and super dissimilar users and different similarity values are assigned to each. We use Root Mean Square Error to evaluate the predictive accuracy.

Keywords: Recommendation System, Collaborative Filtering (CF), Pearson Correlation Coefficient (PCC), Mean Square Difference, Cosine Similarity, Root Mean Square Error (RMSE)

A SYSTEMATIC SURVEY ON COMPARISON OF DIFFERENT PREDICTION METHODS AND CRIME ANALYSIS

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Abstract:

Crime analysis methods are used to analyse the crime data for finding different data trends and patterns in the crime. Crime can be predicted using different models. Crime analysis can find the trend of crime type in different locations. As the crime increases, the data to be processed also increases. The ability to predict the crimes based on the location, sample, and time can serve as a valuable source of information. To predict crime correctly with higher overall performance is a hard task due to the increasing numbers of crime. Therefore, crime prediction technique is critical to discover the future crime and thus to decrease the numbers of crime. In this survey, we are discussing about the overall performance of prediction models such as ARIMA model, Recurrent Neural Network, Long Short-term Memory which are used for crime analysis and prediction.

Keywords: ARIMA Model, Recurrent Neural Network (RNN), Long Short Term Memory (LSTM), Crime analysis, Time Series Prediction.

Intelligence Based EEG Signal Processing Techniques in Brain Computer Interface

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Abstract:

In this modern technology, Brain Computer Interface is a proficient result in the field of research in human-computer synergy, with the end goal of providing a pathway from the human brain to the external world. The main aim of BCI research is automatically translating neural commands into control signals through classifying the EEG signal patterns of different mental tasks (e.g. imagined left, right hand and foot movements). This paper mainly focused on the comparison f EEG signals classification of Brain Computer Interface. At present, it is a challenging task to extract the meaningful EEG signal patterns from a large volume of poor quality of data and simultaneously with the presence artefact noises. Finally, in our data analysis, feature extraction

and selection was performed to the classification which demonstrates that the proposed approach achieves better detection accuracy compared to traditional methods.

Keywords: Brain Computer Interface, EEG, Feature Extraction, Feature Selection, Classification

AUTOMATIC THEFT DETECTION SYSTEM AT SMART HOME USING AI

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Abstract:
These days there is a huge rise in number of burglary. Due to this security is given high preference and most of the people choose the idea of installation of CCTV. The increased use of CCTV and video surveillance indicates their success as theft deterrents. But human monitoring is very inconvenient and requires the need of work force and there is always a chance for human errors or lapses due to human fatigue, pressurizing the need of computerized monitoring with high accuracy. Therefore, in order to reduce labours and to ensure better accuracy we propose an automatic theft detection system. In this paper we propose an automatic theft detection system with smart CCTV surveillance that can detect presence of intruder in the premises. This system captures the image of any person getting into the premises and then extracts various facial parts such as their eyes, nose, and mouth. If authenticated as criminal from the database of police then an alert message is sent to the owner and the police.

Keywords: Face recognition, frames, Haar cascade, surveillance, intruder detection.

REAL-TIME SURVEILLANCE OF PEOPLE VIOLATING SOCIAL DISTANCE IN CLOSED SPACES

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Abstract:
We are now living in a world affected by the contagious disease named covid-19. The government has released many rules and regulations to prevent the outbreak of corona virus. The very important step to avoid spread of these viruses is to keep social distance ad to wear double mask. But many of the people are not following these rules and regulations. Also in many closed areas like shops, malls, banks, etc owners have made count limit to enter the shops. But many of

the people are not following the protocol. This in turn can increase the number of corona affected. So it's very important to maintain social distance. So we find a solution for this problem through our project. The implementation of our project is done with the help of camera to detect the people who enter and exit the shops. Also to check whether people are maintaining social distance. With the help of camera we will do object detection. The object detection method using in our project is open-cv with python. Using this we can check if people are violating the count limit. If they violate the court number a warning message is shown in the terminator. So that shop owner can warn them. After people detection the next step is to compute social distance between them. If any of them violate the social distance the terminator shows the message as abnormal violations or normal violations. Our project will be an asset for future as this project can used for prevention of all contagious diseases.

Keywords: Covid 19, Social Distance, Open CV, YOLO

LUNG CANCER PREDICTION FRAMEWORK WITH DEEP BELIEF NETWORK BASED ON GENE ENCODING

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Abstract:
Lung cancer, similar to other cancer types, results from genetic changes. However, it is considered as more threatening due to the spread of the smoking habit, a major risk factor of the disease. Scientists have been collecting and analysing the biological data for a long time, in attempts to find methods to predict cancer before it occurs. Analysis of these data requires the use of artificial intelligence algorithms and neural network approaches. In this paper, one of the deep neural networks was used, that is the enhancer Deep Belief Network (DBN), which is constructed from two Restricted Boltzmann Machines (RBM). The visible nodes for the first RBM are 13 nodes and 8 nodes in each hidden layer for the two RBMs. The enhancer DBN was trained by Back Propagation Neural Network (BPNN), where the data sets were divided into 6 folds, each is split into three partitions representing the training, validation, and testing. It is worthy to note that the proposed enhancer DBN predicted lung cancer in an acceptable manner, with an average F-measure value of 0.96 and an average Matthews Correlation Coefficient (MCC) value of 0. 47 for 6 folds.

Keywords: Deep Belief Network, Lung Cancer, Gene, RBM, Neural Network.

ENSEMBLE LEARNING BASED DEEP NEURAL NETWORK MODEL FOR FACE RECOGNITION

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Abstract:

Due to the low generalization ability of a single convolutional neural network, the success rate of face recognition is influenced by light, expression, posture shift, and other factors. This challenge is solved using a new face recognition method based on parallel ensemble learning of convolutional neural networks (CNN) and local binary patterns (LBP).It also aids in improving the occlusion-related low pedestrian detection rate. To begin, the LBP operator is used to extract texture features from the face. After the layer is fully linked, 10 convolutional neural networks with 5 distinct network architectures are used to extract additional features for training, enhance network parameters, and provide classification results using the Softmax function. A new form of face recognition focused on parallel ensemble learning of convolutional neural network and local binary pattern are recommended to solving the problem. Finally, utilizing majority voting, the approach of parallel ensemble learning is employed to obtain the final result of face recognition. The ORL and Yale-B face datasets identification rates climb to 100% and 97.51 percentage, respectively, using this method. The proposed approach is demonstrated in the experiments to improve not only the model's tolerance to illumination, expression, and posture, but also the accuracy of face recognition and the model's poor generalization performance, which is typically caused by the learning algorithm being trapped in a local minimum. Furthermore, the suggested method is integrated with a pedestrian detection model as a hybrid model to improve the detection rate, resulting in an 11.2% improvement in detection rate.

Keywords: Convolutional Neural Networks (CNN), Ensemble learning, Local Binary Patterns (LBP), Face recognition

DESIGN AND ANALYSIS OF FDM 3D PRINTING NOZZLE

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Abstract:

FDM process is increase day by day in industrial sector. The purpose of this project is to find different geometrical shapes of nozzle outlet which can be used to make decorative products also to find strength of the product. Fused deposition modelling (FDM) is the low cost additive manufacturing (AM) process uses poly lactic acid (PLA) materials to fabricate prototype parts from a CAD & solid works model. The melt flow through nozzle is studied in terms of the

pressure drop, nozzle outlet velocity and axial temperature is studied by varying material property and nozzle geometry.

Keywords: FDM, PLA, nozzle geometry.

FEEDBACK CONTROLLED ROBOTIC ARM FOR PRECISION APPLICATIONS

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Abstract:
The Puma Robot Arm-Gripper is an electro-mechanical hand with the added ability of 360-degree wrist rotation. The further degree of freedom of independent wrist movement makes the gripper superior to the human arm. The capability is of immense importance for delicate operations like visually assisted remote surgery, catheterization, and cannulisation operations. Many robotic grippers are slave controlled, as in steering and positioning during pick and place operations. Precise positioning is limited, however, by several inherent limitations like overshoot, machine tolerance, and over actuation. The incorporation of visual feedback may overcome such inaccuracies inherent in any electromechanical system. Built-in controls in programming and guidance control may allow for more precise applications in robot surgery, nuclear operations, and archaeology.

Keywords: Robot arm; ergonomics; RTM; PUMA; Palletisation.

OPTIMIZATION OF NUMBER OF CAPSULES ON AN ABSORBER PLATE OF A SOLAR AIR HEATER

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Abstract:
Thermal performance of Solar Air Heater (SAH) is low due to poor heat transfer coefficients of air. Heat transfer rates in SAH will improve by using fins, ribs/corrugations and encapsulated Phase Change Material (PCM) on its absorber plate. Amongst all placing encapsulated PCM proved as most effective passive technique to improve thermal performance of SAH. Optimization of number of capsules and their arrangement on absorber plate of SAH is required before conducting an experimental analysis on SAH. In this paper, optimum number of capsules

to be placed on a SAH is analytically found. Results compared in terms of external convection heat transfer coefficient, pressure drop across SAH and friction factor.

Keywords: Absorber plate, Aligned grid, Capsules, Solar air heater, staggered grid.

TWO PHASE FLOW BEHAVIOR IN HYDRAULIC STRUCTURES

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Abstract:
The Weirs are the flow control system in open channel flow pathways. Weirs are often used to change the flows of rivers in order to avoid floods, to measure, release and even to equalize cooling in nuclear reactors. In order to preserve its integrity under all operational situations, the main vessel cooling in a prototype rapid breeding reactor is performed by Spillway weir, because uniform vessel cooling causes radioactive challenges. This advantage allows for greater operational dam reservoirs and hence offers improved retention volume. It is the outcome of PKW's non-linear nature to repeated cycles of keys folding back and forth. Various geometric characteristics affect weather release, and this is described by our current work. Due to reduced entry losses of PK's weather key shape, PK weir is more powerful than rectangular labyrinth weir. PK Weir is a kind of angled labyrinth weir. This research examines the current improvements in improving the hydraulic skill of spills. Crest head reduction can increase efficiency and decrease dipping. This study reveals that the head decline in standard rectangular wear is reduced by increasing discharge, however for all the trials, a decrease of above 70%.

Keywords: Spillway, Hydraulics, Improvement, Discharge, non-linear

INFLUENCE OF DI HYDROXY FATTY ACID ON EMISSION ANALYSIS OF VCR ENGINE

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Abstract:
This research is focused on the influence of Di Hydroxy Fatty Acid fuel additive with the biodiesel from waste cooking oil. The experiments were conducted on a single cylinder variable

compression ratio diesel engine. The emission analysis of neat diesel fuel was compared with the chosen samples such as B5, B10, B10, B15, B20 and B25. It is depicted that there was 3.1% reduction in Hydro Carbon (HC), 3.7 % decrease in Carbon Monoxide (CO), 5.9 % drop in Particulate Matter (PM) and fractional increase in CO2 , NOx emissions.

Keywords: Di Hydroxy Fatty Acid, Hydro Carbon, Carbon Monoxide, Particulate Matter, CO2, NOx.

COMPUTATIONAL STUDY OF FLOW THROUGH TRUNCATED PLUG NOZZLE

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Abstract:

Conical plug nozzle and truncated conical plug nozzle are advanced rocket nozzles suitable for use as altitude compensating nozzles. In this study flow through the conical plug and truncated conical plug nozzles are numerically simulated to first validate with experimental data and then to compare with the experimental results.

THE HORIZON FOR ENHANCING THE EFFICIENCY AND REDUCING ENVIRONMENTAL IMPINGE OF IC ENGINES

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Abstract:

In the global transport sector there has been substantial development in alternatives for IC engines in terms of Battery electric vehicles (BEV) to hybrid vehicles, but still over 90% of global transportation accounts for the conventional IC engines, of which 85-90% of these are of the conventional fuel IC engines. This trend is mostly observed in medium to heavy vehicles and in heavy marine applications. It has been predicted that the conventional IC engines will co-exist with its alternatives up to 2040s but still lead the sector. So it becomes very crucial to improve the IC engines in order to reduce the environmental impact and increase the efficiency so as to make it more convenient. This paper takes into consideration all the improvements that can be done on conventional IC engines to enhance its efficiency and reduce its environmental impact.

PERFORMANCE OF MG-CARBON AND MG-PT ELECTRODES IN SEAWATER BATTERY BASED ON VOLTAGE AND CURRENT EFFECTS

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Abstract:

A stable and continuous supply of electric power is required for deployed underwater sensors for a longer period .An electrochemical method for generating electrical power from seawater continuously for more than a year and one of the main promising energy harvesting method .The research is evaluated by Magnesium /graphite and Magnesium/Platinum. Laboratory experiment was conducted with load and without load. The results showed the Magnesium/graphite produce high voltage (890mV). Distance, area, temperature and salinity affect the voltage. The decrease in distance and increase in surface area, temperature and salinity increases the voltage.

Keywords: Sea water Battery, Magnesium, Graphite, Platinum

DESIGN AND ANALYSIS OF LOCAL PASSENGER VEHICLES FRONT BUMPER BEAM FOR LOW SPEED IMPACT

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Abstract:

The bumper beam is most important part for absorbing impact during front collision of vehicles. Which protect the vehicles parts such as engine, radiator, and other important parts during impact condition. In this paper, to improve the crashworthiness of vehicles, the most important parameters such as material and shape are studied. The paper presents a dynamic analysis of passenger vehicles front bumper beam. The displacement is studied for finding the best replacement for HS steel material. The analysis is done using different materials such as H S steel, aluminium are conventional materials, GMT, LFRT AND KLFRT as composite materials and bumper beam with adding vertical stiffeners to improve its stiffness. The low-velocity simulation of bumper beam was done as per the standards of automotive stated in E.C.E. United Nations Agreement, Regulation no. 42, 1994. ARAI India accepted this regulation, so it is used for study. Frist the steel is use as the base material and other materials compared with steel. From these comparison found that GMT is the best replacement for steel. A 3D model of the bumper beam is made using Solid works modelling software. Then meshing is done in hypermesh. And analysis is done in Ls-Dyna.

DESIGN IMPROVEMENT IN HEAVY VEHICLE TRUCK CHASSIS BY ANALYSIS USING CAE TOOLS FOR ACHIEVING STRENGTH AND STABILITY

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Abstract:

Chassis signifies the different frame parts of the vehicle on the other hand it also denotes the main structure of vehicle body. The chassis frame acts as the main supporting member for different components as well as the payload of the vehicle. It should be stiff adequate to resist shock, twist and vibrations in addition with some stresses cause by sudden activities like breaking, irregular road conditions and some forces obtain by components. So, strength and stiffness are important criteria while designing chassis. After analysing different research studies, it should be found that there is the scope in modification of chassis with different factors like stress, deformation and weight by varying cross section in addition with materials. This research elaborates about structural analysis of heavy vehicle chassis under maximum load and dynamic analysis of modified chassis by calculating its natural frequencies to check failure due to resonance. For analysis purpose, dimensions of TATA 2518TC truck chassis is used by considering two main cross sections namely, "C" section with existing material that is Structural steel ST37 and "I" with AISI-4130 material. Three dimensional solid models of truck chassis was designed in Solid Works software. The meshing part has been done on Hyper Works and finally finite element analysis was done on Ansys.

Keywords: Deformation, Stiffness, Strength, Stress, Weight

CLEAN TECHNOLOGY FROM WASTE MANAGEMENT

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Abstract:

The present works highlights the effect of solid waste as an important pollutant source not only for the. soil, ground water but also for the air. Deposits in open land fill may be one option but not allowed according to European standard so in order to meet standard we should first Reduce, Reuse, and Recycle the waste products. Majority of waste products are converted to useful with the help of energy incinerators in order to recover and limits the pollutants and only the part portion of the waste which can neither be reduced reused or recycled nor incinerated should be

sent to the landfill. Secondly production of alternative fuel source from food waste through compactor which has been developed at B.I.T. Sindri campus. This waste creates problems of dumping and also air pollution in the society. It also directly affects our health and global warming. The most effective strategy for food waste management is avoidance and minimization of food waste. It can be anticipated that kitchen waste of different hostels of B.I.T. Sindri can be utilized as a potential source of BIO GAS production, fertilizers for farming at very low cost by using two stage digestion process and thus effective clean management can be achieved.

Keywords: Recycle, Reuse, and Recover, Waste management

SELECTION OF NON-CONVENTIONAL MACHINING PROCESS USING INTEGRATED AHP-TOPSIS TECHNIQUES

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Abstract:

The role of non-conventional machining processes (NCMPs) in today's manufacturing environment has been well acknowledged. For effective utilization of the capabilities and advantages of different NCMPs, selection of the most appropriate NCMP for a given machining application requires consideration of different conflicting criteria. The right choice of the NCMP is critical to the success and competitiveness of the company. As the NCMP selection problem involves consideration of different conflicting criteria, of different relative importance, the multi-criteria decision making (MCDM) methods are very useful in systematical selection of the most appropriate NCMP. This paper presents the application of a recent MCDM method, i.e., the Technique for Order Preference by Similarity to Ideal Solution (TOPSIS) method to solve NCMP selection which has been defined considering different performance criteria of four most widely used NCMPs. In order to determine the relative significance of considered quality criteria a pair-wise comparison matrix of the analytic hierarchy process (AHP) was used. The results obtained by the technique for order preference by similarity to ideal solution (TOPSIS) method which proves the applicability and potentiality of this MCDM method for solving complex NCMP selection problems. By the help of combining TOPSIS an AHP method which is based on comparison between various attributes and secondly based on fact that best alternative has least geometric distance from ideal solution and worst alternative has more geometric distance from an ideal solution. After applying combine approach among the available NCMP processes are AFM, AJM, EBM, EDM, USM and WJM.

Keywords: Analytical Hierarchy Process (AHP), Multiple criteria decision-making (MCDM), Non-Conventional Machining Processes (NCMPs), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Optimization Techniques

A REVIEW ON WEARPREDICTIONMODELS OF POLYMERS

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Abstract:

Now a day's metallic material is replaced by polymer or its composites due to high strength to weight ratio, self-lubricating, elasticity, low friction and high wear resistance. Wear behaviour for polymer composites is more complicated than metallic materials due to operating conditions and mechanical properties of polymers and fillers used. Polymers have ability to form a thin film against the metallic counterpart which changes the wear behaviour of polymers. In this paper an attempt is made to discuss the various wear models used by researchers focusing on different operating parameters like normal load, sliding velocity, time, counterpart roughness, temperature. Mathematical model or empirical equations have been developed correlating these properties to predict the wear of materials on the basis of mechanism of types of wear. Initially only operating conditions and hardness were considered and assumed that operating conditions are linear. Later on, various mathematical models were studied and it was observed that in most of the models the operating parameters are non-linear such as load, sliding speed, counter face roughness, time. The major influencing parameters for the wear behaviour of polymer composites are load, temperature, speed, elastic modulus, hardness and toughness where as it was also observed that some parameters affect the wear but are less significant.

Keywords: Abrasive Wear, Adhesive wear, Polymers, Wear, Wear Models

DEVELOPMENT OF FACILITY LAYOUT PLANNING AND DESIGN FOR THE DAIRY PROCESS WITH 3D SIMULATION

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Abstract:

The planning and design of dairy factories suffer from some problems, including pollution for non-compliance with product safety standards and risks, as well as a lack of knowledge and principles in designing and thus increasing the proportion of dust with no treatment for that and increasing the movement distance between machines as well as the vacancy of the studied plant. These problems result from poor planning and layout of the dairy and food factories; in general, This model was proposed to solve these problems. The design of the basic design approach is based on placing the high-risk main manufacturing area in the center and then secondary areas,

creating pedestrian traffic paths with the high-risk manufacturing area being separated into parts, and the percentage of the distance travelled during the operation was also reduced by implementing the proposed design, the total production time is reduced by 40%and, increasing the production efficiency by 40%.

Keywords: Layout, Productivity, Manufacture, Planning, Operation.

DESIGN OF REGENERATIVE BRAKING FOR DIFFERENT TYPES OF VEHICLES

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Abstract:
The trend showing the rise in electric vehicles is prominent and here to stay. Much more so, in the next decade electric vehicles may enter economical, mass-manufacturing market with dependable charging infrastructure in majority countries. As range being an important parameter for electric vehicles, we see many EV manufacturers incorporating a new form of braking system, called 'Regenerative Braking System' (RBS). Simply said, RBS converts kinetic energy back into electric energy, all while stopping the vehicle. This paper summarizes the different approaches taken while designing and implementing RBS based on vehicle types like Minivans, Compact vehicles, busses, heavy duty vehicles, air hybrid engines, four wheel independently actuated electric vehicles, etc.

Keywords: Regenerative Braking System (RBS), Electric Vehicles (EV).

SUPPLY CHAIN MANAGEMENT IN AUTOMOTIVE INDUSTRY - A REVIEW

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Abstract:
This article explores the main challenges which are facing the automobile manufacturers, together with the steps which can be taken to manage the automotive supply chain and to minimize its impact. Supply Chain Management (SCM) has become one of the most complex elements in the world. Globalization has become a major part in the development of SCM practice. A superior SCM practice leads to the reduction of transportation cost, better supplier-

consumer relationship and optimization of manufacturing and distribution. Many companies are continuously trying to improve their SCM practice in order to withstand their organizational competitiveness. This study discusses the various literature reviews on the complexities, implementation and functionality of SCM in the automotive industry.

Keywords: Automotive industry, Complexity, Implementation, Supply chain management.

3D PRINTING WITH ROBOTIC ARM AND ITS VARIOUS APPLICATIONS - A REVIEW

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Abstract:
For the most recent many years, additive manufacturing (AM) has become an always expanding part of the advancement of new innovation and gadgets. However, it is as yet challenging to utilize this technology on a larger scale. In this review paper, we try to explain how we can used the combination of additive manufacturing (3D printing) with AI and how robot arm equipped for creating 3D printed parts. In this we state different application of this combination and its benefits. Now days robots are used in many industries like automobile industry for manufacturing of various parts, components, accessories the healthcare industry evolves rapidly in relation to incorporating the latest innovations and technology, mining industries. Also 3D printing technology is rapidly growing in many sectors. Therefore we think if we made combination of additive manufacturing (3D printing technology) and robotics then it will beneficial for many industries for their project work. In last decade this combination is used in many industries like building and construction, mechanical sector and also many manufacturing industries which based on 3d printing.

Keywords: Additive Manufacturing, Robotics, 3D Printing and its Applications.

DESIGN AND ANALYSIS OF CONTACTLESS SUPPORT IN MULTI-CHANNEL CRYOLINE USING MAGNETIC LEVITATION

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Abstract:
Conduction and radiation are two significant sources of heat loss in vacuum jacketed cryogenic transfer lines. Radiation because of a temperature difference between a warm outer pipe and a

cold inner pipe and conduction because of the heat transfer through supports. The fixed supports are the necessary part as it provides the vacuum enclosure within the cryoline. But the sliding support, used to carry the weight of the section of pipe to prevent the bending of pipe, can be replaced with a magnetic levitation system to minimize the conduction heat loss in the cryoline. Support with a magnetic levitation system is designed here to replace conventional sliding supports. Utilization of Halbach arrays of the Nd2Fe14B (N42) and Ceramic magnets (grade 8) to perform the levitation. For the levitation of the process pipes, about 6.7×105 N/m3 force density is required. The numerical simulation is done using the Solid works EMS tool.

Keywords: Cryogenic Transfer Line, Supporting Structure, Heat loss prevention.

NUMERICAL ANALYSIS AND MESH CONVERGENCE STUDY DURING STATIC STRUCTURAL ANALYSIS OF RACK AND PINION

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Abstract:
Rack and Pinion are basically the mechanical elements used to convert circular motion into linear motion. It consists of a pinion which is basically a gear and rack which is a straight platform having the teeth on its one side. Generally material hardness for pinion is softer than rack material. In this paper, numerical analysis in mesh convergence study has been done for the assembly of rack and pinion. Fusion 360 has been used for the part of modelling and Ansys workbench has been used. Mesh convergence study have been done by comparing the results of hexahedron and tetrahedron mesh. The size of the element is approximately constant. It was observed that there is significantly difference on stress values for both mesh. However the mesh quality parameters observed to be near about same.

Keywords: Ansys, Finite Element Analysis, Meshing, Rack and pinion.

VIBRATION ANALYSIS OF HEALTHY AND FAULTY GEAR OF APARALLEL SHAFT DRIVE SYSTEM

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Abstract:
Acquiring vibration signals for any mechanical system is one of the best techniques to distinguish between the stability and instability of a system. The present work deals with the study of vibration signals of a parallel shaft spur gear system. There are two different gears of the

same specification that is taken for the analysis. One gear is considered as healthy gear or defect-free gear and another one is defective gear (single tooth broken gear). The vibration signals are collected and analysed using the FFT method. The natural frequency of healthy and one tooth broken gear is collected using the impact hammer method and a tri-axial accelerometer. The signals from the test gearbox are collected using a uniaxial accelerometer and data acquisition system. The maximum variation of vibration signals is observed for the one tooth broken gear compared to healthy gear. Four natural frequencies are obtained and tabulated from the impact test.

Keywords: FFT, Frequency and Modal Response, Gear, Impact Hammer and Vibration.

INTEGRATED TAGUCHI - FUZZY APPROACH FOR OPTIMIZE THE VIBRATION CHARACTERISTICS IN END MILLING PARAMETERS ON AL 6061-T6

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Abstract:

Vibration of cutting tool and work piece while machining of material leads to poor surface finish, low process stability and less tool life time. Therefore, it is required to optimize the cutting parameters based on vibration measurement to achieve the better surface finish and improve cutting tool life time. In present work, the cutting parameters like cutting speed, feed rate and depth of cut have been conducted on Aluminium hybrid metal matrix composite material Al 6061-T6. The experiment is designed using Taguchi L9 orthogonal array and the model development is done using Fuzzy Logic control in MATLAB software. Acceleration in Feed direction and axial direction were obtained from the Experimental vibration measurement on work piece with different level of cutting parameters. The results obtained Vibration experiment and fuzzy predicted values are visualized

Keywords: End Milling, Vibration amplitude, Taguchi method, Fuzzy Logic.

AN INVESTIGATIONAL STUDY ON ORBITAL RESONANCE IN TOI-700C AND TOI-700D EXOPLANETS

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Abstract:

The when two or more satellites, planets orbiting the same star or same primary and whose orbital mean motion is in ratio of whole numbers then we say they are in orbital resonance. So, in

this paper we studied the properties of newly discovered exo planets TOI-700d and TOI-700c by TESS satellite. We found both planets are in orbital resonance and due to this they are in tidal locking with each other. We found their orbital resonance period as 7:3 and synodic period as 27.951 days.

Keywords: Exo planets, Motion, Orbital Period, Resonance, Satellites.

MODELLING THE SOLAR ENERGY POTENTIAL IN KERALA USING ARTIFICIAL NEURAL NETWORKS

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Abstract:

In this work, an artificial neural network (ANN) based model for prediction of solar energy potential in Palakkad, a state in Kerala, was developed. Standard multi-layered, feed-forward, back-propagation neural networks with different architecture were designed using python deep learning tool 'keras'. Meteorological data of Palakkad for period of 5 years (2015 June–2021 may) from NASA Geo-satellite database were used for the training and testing the network. Meteorological data (mean temperature, wind speed, solar irradiation and relative Humidity) were used as inputs to the network, while the solar radiation intensity was used as the output of the network. The results show that the correlation coefficients between the ANN predictions and actual Mean monthly global solar radiation intensities for training and testing datasets were higher than 90%, thus suggesting a high reliability of the model for evaluation of solar radiation in Palakkad. The predicted solar radiation values from the model were given in form of daily maps. The daily mean solar radiation potential in Palakkad ranged from 7.01–5.62 to 5.43–3.54 kW h/m2 day, respectively. A tabulated daily data for future 1 year (2021 may-2022 may) were generated according with the date. The model can be used easily for estimation of solar radiation for preliminary design of solar applications in Palakkad region.

Keywords: Artificial neural network, Renewable energy, solar radiation, Modelling

PROPERTIES OF ALUMINIUM-LITHIUM ALLOYS FOR AEROSPACE APPLICATIONS- A COMPREHENSIVE REVIEW

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Abstract:
A Different combination of alloys has been experimented in the current trend, but some combinations are more significant than others, like Aluminium- Lithium alloy, which is highly known for its applications in the aviation and aerospace domain. The properties of this alloy urge for various research findings over it. This paper sums up major properties for the selection of material incorporates its tensile properties and its effects, fracture mechanism, most importantly fatigue life cycle, grain size, and its morphology, etc. The study over different grades of Al-li alloy are summarized along with its applications.

Keywords: Alloys, Aluminium, Applications, Fatigue, Tensile properties.

MODELLING AND OPTIMIZATION OF LASER DRILLING ON CFRP COMPOSITE: AN INTEGRATED APPROACH USING RSM BASED PSO

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Abstract:
Carbon fiber-reinforced plastic (CFRP) composites forms of fiber orientated reinforced polymer composites, have a lot of potential in the automotive, aerospace, and marine industries due to high strength to weight ratio. In conventional drilling many problems occur when drilled a CFRP composites such as delamination on surface, fiber cut, voids formation, fiber bending and fiber pull-out, etc. So, to minimize these defects a non-conventional thermal based Nd: YAG laser drilling process is used. By optimizing drilling parameters, a good quality holes are produced. There are several critical process parameters involved in the laser drilling process. The current experiment has five important laser drilling process parameters into an account to achieve the best responses: top hole circularity (THC), hole taper (TH). To find the best drilling parameters, an integrated optimization techniques that is particle swarm algorithm (PSO) based on the methodology of the surface response (RSM) was used. Result shows that maximization of hole circularity the optimal settings are pulse current of 250 A, Pulse width of 3 ms, gas pressure of 5 kg/sq.cm, work piece thickness of 1 mm and incident angle of 0 degree with best fitness value is 0.8411 whereas for minimization of hole taper (TH) optimum setting are pulse current of 150 A, Pulse width of 3 ms, gas pressure of 6 kg/sq.cm, work piece thickness of 3 mm and incident angle of 0 degree with best fitness value is 0.4109. By applying PSO algorithm top hole circularity (THC) increased by 7.40 % and hole taper (HT) decreased by 63 % comparatively to RSM model. So, PSO algorithm gives better result.

Keywords: ANOVA, CFRP, Nd: YAG laser, PSO, RSM

CFD ANALYSIS OF AIR FLOW OF AIR-COOLED BIKE ENGINES

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Abstract:

In this study, the heat transfer analysis of combustion engine of bike is performed with the varied fin geometries. Generally rectangular fins are used for motorbike but still this fin geometry might be modified to extend the heat transfer rate. A numerical investigation is administered for 2 geometries like circular/annular and rectangular, of finned engine cylinder using CFD and therefore the results are compared. Many experimental methods are presented in literature to ascertain the effect of wind velocity, fin geometry and therefore the ambient temperature on heat transfer rate. In this project an attempt is formed to review the effect of wind velocities and fins geometries on the heat transfer rate and simulation of the heat transfer using ICEM-CFD. The models are generated and simulated in FLUENT software. The results show that the heat transfer rate and effectiveness of the circular/annular fins is better than for the rectangular fins.

Keywords: ICEM-CFD; CFD Analysis; Ansys 19.2; Air-cooling

DESIGN AND DEVELOPMENT OF ELECTRICALLY ASSISTED CHAINLESS BICYCLE

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Abstract:

This project is an attempt to develop an Electric Chainless Bicycle which addresses the various consumer problems as well as industrial problem of complex mechanical components and solves it. This project aims to provide better output at the optimum cost and input energy i.e., the energy given by the rider. Chainless bicycle has lower friction, lesser material is used for manufacturing and has better output. Electric Cycles support the user in conserving his/her energy. We aim to create a product which has potential market scope.

Keywords: Bicycle*, Chainless*, Pedal mechanism, Mechanical

OPTIMIZATION OF FLEXURAL STRENGTH FOR CARBON BLACK FILLER BASED EPOXY COMPOSITE LAMINATES

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Abstract:

The flexural strength of carbon black-filled epoxy resin was analysed as a function of their volume content ratios. Carbon black filled epoxy specimens have enhanced flexural strength in comparisons with pure epoxy. In this paper we have made 5wt%, 10wt%, 15wt% of carbon black fillers added to the epoxy in various sizes such as 50μ, 100μ, 150μ. Flexural specimens were made as per ASTM D790 and tested in Universal Testing Machine (UTM) through three point bending test. Various results obtained were tabulated and optimized that 15wt% of 50 μ size carbon black fillers provide the best flexural strength.

Keywords – carbon back fillers, flexural strength, and three point bending strength.

NATURAL AND INDUSTRIAL ORIGIN REINFORCED LM6 ALUMINUM MATRIX COMPOSITE MATERIALS – A COMPARATIVE STUDY

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Abstract

Aluminium matrix composites (AMC) find a broad spectrum of industrial applications owing to their excellent anisotropic properties. Commonly used reinforcing materials in AMC include SiC, C and Aramid/Glass fibres. However, higher costs incurred in processing reinforcing materials lead to excessive total production costs of composites, which is a considerable impediment to industrialists and end-users. It is reported in the literature that use of industrial wastes such as slag, red clay, fly ash and arc furnace dust as reinforcement materials in AMC has drastically improved properties and reduced total cost considerably in comparison with AMC with commonly used reinforcing materials. Besides reduction in costs, this new approach solves

environmental problems posed by these waste materials otherwise. Researchers have thereby started focusing on exploring newer and cheaper waste materials suitable for reinforcement in AMC. The present study considers marble wastes (MW), a promising waste material produced from the marble cutting and finishing processes, and Graphene Oxide (GO), a single-atomic layered material produced through the oxidation of graphite, to be used as potential reinforcing materials in AMC. Composite specimens are fabricated using the pressure casting process and subject to mechanical testing methods and microstructural assessments to make a comparative study on mechanical and physical properties of LM6 AMC. Natural and industrial reinforcing materials are used in fractional volumes of 5% MW and 5% GO. The results revealed that the new AMC class has much improved mechanical and physical properties over conventional AMC. Further, GO/LM6 composites exhibited superior properties over the MW/LM6 composites, with a 45% improvement in UTS. The fracture surface characteristics and analysis were carried out using SEM, which showed that porosity spots across the structure and a potential cavity in the matrix that has led to a final fracture of AMC.

Keywords: Aluminium matrix composites, Graphene oxide, LM6, Marble wastes, Pressure casting

OPTIMIZATION AND FEA OF MOTORCYCLE FRAME USING LIGHT WEIGHT COMPOSITE MATERIAL FOR WEIGHT REDUCTION

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Abstract:
Frame of a motorcycle is the skeleton on which all the other parts of the motorcycle are mounted it is conventionally made of steel which is heavy in weight which in turn makes the motorcycle fuel-consuming. In order to make the frame light an attempt is made in this project by replacing the conventional steel with light weight Nomex Honeycomb structure as core with carbon prepreg composite as the material for the frame. In this project a 3-D model of motorcycle frame is designed using Solid Works and tested for various static loads for structural stability after using alternate material i.e. Nomex-carbon prepreg composite material. The Structural stability is analyzed using Ansys Workbench R18.1. The structure is found to be stable and weight reduction is achieved.

Keywords: Ansys, frame, Honeycomb structure, Prepreg, Solid works

INVESTIGATIONS ON THE MICROSTRUCTURE AND MICROHARDNESS OF THE FRICTION STIR PROCESSED AZ80 SURFACE COMPOSITES

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Abstract:

Magnesium alloys are preferred next to titanium alloys due to their exceptional properties. However, their applications are limited due to the inferior surface hardness and wear resistance. Through this work, the effect of friction stir process parameters on the microstructure and micro hardness of the processed zone has been analyzed. The analysis revealed the variation of hardness along, across and beneath the processed area. The micro hardness of the zones doped with multiwall carbon Nano tubes via FSP route has been analyzed in detail. Microstructural examination of the processed zones performed using optical microscopy indicates through mixing of reinforcements with the matrix. The micro hardness of the processed zone was assessed using Vickers micro hardness tester as per ASTM E384 with a diamond indenter. Microstructural characterization revealed extensive grain refinement for the sample processed at 1200 rpm tool rotation speed and 30 mm/min tool traverse speed. The results also revealed significant improvement in hardness. The trends of the micro hardness curves for the values along and across the processed seam indicated improvement up to the tool traverse speed of 30 mm/min. However, the micro hardness of the composites exhibited an increasing trend with increasing depth of the processed zone.

Keywords: Surface composites, friction stir processing, micro hardness, tool rotation speed, tool traverse speed.

STUDY OF ADVANCED RUNWAY RUBBER REMOVAL ANDHUMAN HEALTH CAUSES DUE TO TYRE WEAR

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Abstract:

The project copes with the study the effect of road surface structure, the human health issues of labourers related to aircraft tyre wear on airport runways. One of the major operations involved in the airport maintenance is to ensure the safe landing and take-off of the aircraft, which is decided by the adequate runway pavement texture. Certain parameters of runway changes in a period of time due to several factors. Hence it is very important to check the runway conditions

in a period of time. One of the major issue spotted in the runway surfaces which causes the unmanageable landing and take-off of aircraft by the presence of the rubber. When the wheels of the landing aircraft impact the runway pavement they deposit rubber on the pavement surface. The increase in the thickness of the rubber build-up is estimated to be about 0.05μm for each. The removal of the accrue rubber deposits plays a vital role in deciding the pavement skid resistance. On the chance of health challenges there have been several health conditions which are face off the labourers who work on airport runways. For over 20 years expose to ambient particulate matter has caused health effects related to cardiopulmonary outcomes, developmental reproductive and cancer outcomes. From the tyre wear caused on roads it contains polymeric rubber originating from the tyre along with embedded mineral from the pavement. These are fine particle-dispersed and which can be inhaled by humans which cause severe health issues. The focus of this risk assessment is on human inhalation exposure to road and tyre wear particles (TRWP), one of the contributors to vehicle particulate emission. Though there remains uncertainties in the risk assessment the evidence suggest that TRWP presents a low risk to human health. It is considerable importance to remove the rubber substance from the runway surface be carried out smoothly of the aircrafts operations. Removal of rubber from the runway surface includes many operations. In this paper be concerned with the design of a rubber removal system which can be effectively use for removing the rubber substrates from runways.

Keywords: Aircraft, Runway, Rubber substrates, Rubber removal system.

EVOLVING ROLE OF THE AUTONOMOUS UV ROBOT IN THE NEW NORMAL

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Abstract:
This project describes the evolving role of robotics in healthcare and other areas with specific concerns relating to the management and regulate of the spread of the novel coronavirus disease 2019 (COVID-19). The vital role of such robots is to minimize human contact and to ensure sterilization and support in hospitals and other big institutions as well as daily use. This will result in minimizing the spread of the virus, and other harmful pathogens, taking an active role in the management of the COVID-19 pandemic. The main objective of the current research is to focus on medical robotics in general and then to connect its utilization in everyday life and healthcare sectors enabling them to broaden the use of medical robots for sterilizing. The recent achievement of the Korean and Japanese health sectors in obtaining active control of the

pandemic was not possible without the use of avant-garde medical technology. This ultra-modern UV sterilizing robot operates on the latest computer software like python and its latest libraries, raspberry pi, latest silent motors and a battery back for 2 hours run time that helps the robot to move around unmanned. In the light of today's catastrophe, the sterilizing process plays a major role in public healthcare, industries, airports, railway-stations, schools, colleges. Using innovative UV-BOTS are 99% effective compared to common practice, ensures human safety.

Keywords: Coronavirus, Sterilization, Contact-less, Open CV, Raspberry pi4

AUTONOMOUS DELIVERY ROBOT CONTROLLED BY A WI-FI MICROCONTROLLER

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Abstract:
Autonomous delivery robots are making change in the transportation system of the last mile delivery Easy and less cost delivery make the peoples to attract into the field of the automation. This project is mainly into the build a autonomous robot for the last mile delivery of goods. Vehicles would need to be able to handle the extreme conditions on Indian roads such as avoiding major potholes, animals that share the roads with cars, other cars in the traffic signals, and dealing with the vast number of cars on the roads. This project is mainly aims to the implementation of the robots to the rural area. Navigation of the robot is implemented using the cameras. A Wi-Fi controlled micro controller is used. The sensor in this projects is cameras. GPS compass and ultrasonic sensors are used for the support of the navigation system. In order to reduce the damages caused by the roads, high clearance from the ground is provided.

Keywords: Autonomous robots, Wifi, Microcontroller.

FATIGUE ANALYSIS OF EXCAVATOR BUCKET

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Abstract:
An excavator is a typical heavy-duty earth-moving equipment which performs significant complex tasks. In current world scenario, advanced technologies are being developed in order to tackle the rising challenges in excavation and other critical applications. Therefore, earth-moving companies are envisaging innovative and upgraded designs of these robust machines. An excavator generally consists of a boom, arm, bucket and cabin on a rotating platform. It is subjected to certain resistive forces which depends upon different terrain condition. Being

unpredicted and dynamic in nature, these forces damage the components of excavator. As a result, it is important to determine the forces required to dig the terrain for light duty as well as heavy duty construction work. While performing excavation task, the power is transferred from boom to bucket through an arm in case of backhoe excavators. Thus, excavator bucket is the most crucial component of the whole assembly. So, it needs to be designed with maximum strength, minimum weight and cost, while maintaining critical factor of safety and reliability. It is essential to optimize the bucket to provide maximum fatigue life to perform digging operations at prescribed force conditions. Also, it is necessary that the bucket sustains sufficient load capacity for long and improved working life. This paper focuses on evaluating the forces acting on the excavator bucket and accordingly calculate bucket capacity and digging forces required to dig the terrain for light and heavy-duty applications. The main aim of the project is to enhance the life of excavator bucket by incorporating optimization of its design parameters. This paper deals with the static force and fatigue analysis of a Komatsu PC 450 heavy duty excavator bucket. Initially, all the data was collected regarding the excavator bucket. A 3D model of the bucket was designed in Solid works 2020 software. Then meshing of the bucket was done in Hyper mesh 2019 software. In order to ensure a proper mesh, 3D solid mesh was done involving Tetra elements. Further, meshed bucket was imported to Ansys Workbench 2020 R1 software for fatigue analysis with proper loading and boundary conditions. The stresses developed were utilized to determine the fatigue life of bucket with the help of Goodman's fatigue life equation.

Keywords: Backhoe excavator, bucket capacity, digging forces, fatigue life, static and fatigue analysis.

STEEL WHEEL RIM OPTIMIZATION FOR DIFFERENT VENT HOLE SHAPES FOR TUBE TYPE COMMERCIAL VEHICLE WHEEL OF 7.5 -20 PROFILE.

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Abstract:
Day by day, the competition is increasing with innovations and ideas in the automobile sectors. With these innovations, a new path is created in product development. There is enormous scope in modifying the existing materials or replacing old products with new and advanced material products in this development. Automotive industries are paying their primary interest in improving the fuel economy. Many experiments are carried out on changing wheel rim design. There has been lesser research on analyzing the effects on performance after changing vent whole shapes. This paper highlights the effect of vent hole shapes on maximum principal stress in commercial vehicle wheel.

DESIGN AND ANALYSIS OF TWO WHEELER (BIKE) CHASSIS UNDER ACCELERATION AND BRAKING CONDITION

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Abstract:
The frames serve as a framework for supporting the bike and different parts of the bike. Also, it has to withstand shock twists, vibrations, and other stress caused due to sudden braking, acceleration, and shocking road conditions. Weight reduction is now the main issue in the automobile industry. The purpose of the study is to select a suitable material as per the requirement to reduce the weight and deformation under acceleration and braking conditions of the trellis frame. Various loading conditions like acceleration and braking were carried out on the chassis and the structural stability of the chassis is analyzed by using alternate material while maintaining the strength. The materials are studied and according to the working condition, the material will be selected by comparing the maximum principal stress, deformation, and cost among all frames. The 3D model of the chassis is created using appropriate modelling software and its structural behaviour is analyzed using Ansys Workbench R21

Keywords: Weight Optimization, Braking and Accelerating Condition, Trellis Frame, FEA

STRUCTURAL ANALYSIS OF A RACK AND PINION ARRANGEMENT FOR AIRCOMPRESSION

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Abstract:
The Project aims to analyses the stress for a rack and pinion arrangement for a compression device. This device is used in automotive as a method of regeneration of power as compressed gas while breaking. The study aims to find the stress developed for loads 1000, 2000, and 3000 N.

Keywords: Ansys Workbench, CATIA V5, FEA analysis, Rack and pinion, Structural analysis

DESIGN AND DEVELOPMENT OF 3 WHEEL OMNI-DIRECTIONAL SYSTEM

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Abstract:
This paper presents the design and implementation of the three-wheel holonomic motion system of a mobile robot designed to operate in homes. The holonomic motion system is described in terms of mechanical design. The paper analyzes the kinematics of the motion system. Holonomic drive, in the realm of robotics, refers to the ability to move in all direction and rotate independently. For example, a tank, which has to rotate before it can move in a different direction, would not be holonomic. Holonomic wheels are wheels with 2 degrees of freedom. They are also known as Omni-directional drive wheels or Omni-wheels for short, sometimes written as Omni wheel. The three wheel system proposed in the paper differs from the original 4 wheel Mecanum drive used in most applications. The conventional wheels in our vehicles move in just two directions viz. forward and backward. We have to change their angles with our steering wheels to move the vehicle along another direction. This changes the orientation of the vehicle and it faces in a different direction. Some objectives of the paper are: to help the vehicle traverse in multiple directions without changing its orientation; to provide advanced mobility to the vehicle; to make driving an easier experience. The scope of the project includes: help in parking as there will no longer be a need to change the orientation of the vehicle; the system will help in changing lanes on the road and thereby reduce the chances of accidents. After solving the equation given below we can find out the velocities of the three wheels of the vehicle needed in order to obtain the desired motion. The paper also discuss the difference between four wheel drive and three wheel drive.

Keywords-Omni-directional, Holonomic, Robot, Kinematics, Design

SIMULINK MODEL FOR PLACEMENT OF THERMOELECTRIC GENERATOR ON 2 WHEELED VEHICLES BY SIMULATION AND PRACTICE TO UTILIZE RESIDUAL HEAT TO POWER DEVICES WITHIN SCOPE

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Abstract:
Automotive exhaust thermoelectric generators (AETEG) are gaining traction as a means of reducing fuel usage by directly converting waste heat from exhaust into energy. Materials research, modules, and the thermoelectric generator (TEG) system have all advanced

significantly during the last two decades. For such applications, the Seebeck effect principle can be applied. The Seebeck effect is two metals with a common contact point, where the potential is produced due to temperature differences in the other two ends of the metals as a result The Peltier module works on the same basis. This paper examines the analytical modelling for the Peltier module in terms of the main parameters needed for quick evaluation depending on the user's application, such as voltage, current, coefficient of performance and efficiency, thermal resistivity, total internal resistance, and Seebeck coefficient of the module. These parameters are usually provided by the module's manufacturer via the datasheet. To model the basis equations, MATLAB/Simulink was employed. Several commands on the Mat lab command window can be used to build a graph representation of the output. With this paper we have created a Simulink model complemented with a physical one, wherein using it we look for the Peltier module most suitable for our application and with it derive an optimum placement point for the device on a 2 wheeler vehicle by comparing our simulation and experimental readings. This assisted us in deciding on the optimum material for the Peltier module. After that, it was installed in various positions and readings were taken to determine the maximum power output.

Keywords: Seebeck, Peltier effect, Thermoelectric, analytical modelling, energy conservation

DESIGN, DEVELOPMENT, AND TESTING OF A SERVO MOUNTED OBSTACLE DETECTION SYSTEM FOR VISUALLY IMPAIRED INDIVIDUALS

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Abstract:

This paper proposes a cost-effective obstacle detection system for visually challenged individuals, which reduces the number of sensors required to cover the same area in front of the user, by rotating the sensor module. The system consists of time-of-flight sensors that can move to sweep a greater area than the stationary ones. The system transmits the signal to the user via a grid of vibration motors, informing the user of the distance, height, and how far to the side the obstacle lies. The system is tested to check whether the proposed system is viable for the intended purpose.

Keywords: 2-D Vibration Array, Collision avoidance, Obstacle-detection, Ultrasonic sensing, Vibration-feedback

DESIGN AND ANALYSIS OF A REHABILITATIVE AID FOR SPASTIC FEET

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Abstract:

Spasticity is a state in which the muscles become tense and limbs are difficult to move. The crank rocker mechanism for foot is a device which produces a therapeutic effect on the foot with spastic paralysis. This technique reduces the adhesions and contractions of soft tissue by circulating interstitial fluid with rapid dorsiflexion and plantar flexion of the ankle. This equipment assists the therapeutic aid and increases the dorsiflexion and plantar flexion movement of the feet. This work focus in the design and analysis of the crank rocker mechanism. Further, a threaded screw mechanism is provided with an auxiliary unit for controlling the angle of swing of the feet in accordance with the user requirements.

Keywords: calibration, crank-rocker mechanism, orthosis, spastic feet, threaded screw

ADDITIVE MANUFACTURING OF BIO-IMPLANTS USING FUNCTIONALLY GRADED MATERIALS

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Abstract:

Functionally graded materials (FGMs) have been an integral part of the bio-medical industry for a significant span of period. It has helped to address issues arising due to use of orthodox materials in the fabrication of implants and other surgical tools. With variations in the material concentration of a single material or combination of multiple materials affects its properties (mechanical, physical and chemical). This has been motivated by the enhancement in controlled deposition techniques and the ability to build structures with complex lattice formations. Additive Manufacturing (AM) has proven its proficiency in producing products with complex geometry and user-derived designs. FGMs and AM can be coupled together to fabricate parts with preferred set of functioning to improve bio-mechanical characteristics of implants, thus

providing thrust to the scope of research in this field. This article focuses on the state-of-the-art study of functionally graded materials, overview of the currently available manufacturing techniques and methodologies that are being used to manufacture various artificial implants namely dental, cardiovascular, knee and hip implants. Along with this it also sheds light on the challenges that are limiting the success outcomes with probable ways to overcome them.

Keywords: Additive Manufacturing, Biocompatibility, Functionally Graded Material (FGM), Implants, Porosity.

EXPERIMENTAL INVESTIGATIONS ON TRIBOLOGICAL BEHAVIOUR OF ALUMINIUM ALLOY 7075/SiC/TiO2 HYBIRD METAL MATRIX COMPOSITE THROUGH STIR CASTING

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Abstract:

Aluminium matrix composites are the new emerging materials of this generation which can be tailored and engineered to obtain specific required properties for special applications. Aluminium alloys have excellent properties like good ductility, corrosion resistance, low density and high thermal conductivity which made aluminium to be used in many engineering applications like automobile, aerospace, defence and mineral processing components. Although tribological behaviours of aluminium alloys are not good this restricts the Use of aluminium alloys in engineering application. The wear and friction properties of silicon carbide and Titanium Dioxide based aluminium metal matrix composites under dry condition at constant sliding distance (i.e., 1oo m) with loads varies between 10 N- 30 N will be studied by using pin on disc wear testing machine (Make: WINDCOM 2010, Chennai). All experiments will be performed at room temperature and results will be investigated. The study of all worn surfaces for both silicon carbide and titanium dioxide based aluminium metal matrix composites will be carried out through Trinocular Metallurgical Microscope (Image Analysis System) at magnification rate (5x, 10x, 45x and 100x).

Keywords: Stir Casting, Metal Matrix Composite MMCs, AA7075-T6, Silicon Carbide SiC, Titanium Dioxide TiO2,, Pin on disc, Trinocular Metallurgical Microscope.

ARTIFICIAL INTELLIGENCE (AI) BASED IDENTIFICATION AND ENFORCEMENT OF HELMETS FOR TWO-WHEELER RIDERS

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Abstract:
In this paper an attempt is made to reduce causality in the two wheeler accidents, which contributes more than 40% of the total number of road accidents. It is observed that awareness and execution of the traffic rules plays a vital role. Since the number of accidents is increasing every year, any attempt using the latest technological development can save hundreds of lives. Even though it is well known fact that the use of helmet can reduce the head injuries in the accidents, the negligence to use the same invites serious causalities in the two wheeler accidents. The proposed model presented in this paper use the potential of Artificial Intelligence (AI) and an effective implementation of the law to wear helmets for two wheeler passengers is ensured. Presently the law is executed with the strict actions of the traffic enforcement system comprising Police Department and Motor Vehicle Departments of the State. This physical system, address lot of limitations and two wheeler riders often violate the law in the rural roads. AI based smart system, captures sufficient number of images of the passengers wearing different helmets available in the market. These data is used to train the smart system and validated for standard conditions. The outcome of the AI is similar to the decision taken by the human brain, where neurons are acting as the nods. The built in camera placed in the front part of the vehicle capture the images in a sampling time interval of 800 ms. The images are processed to identify the status of the helmet and the response is used to control the speed of the vehicle. The absence of the helmet forces the maximum speed of the vehicle as 20km/hr so that the passenger will voluntarily use the helmet. The experiments shows 86% reliability and it is expected to be improved by the use of high resolution camera and modified algorithms used in the AI system.

Key Words*:* Artificial Intelligence, MobileNET, OpenCV, Python

RECUSE ROBOT VEHICLE FOR UNDER WATER DIVERS

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Abstract:
Recuse robots are paving new ways for effective recuse operation without the direct contact of human begins. Using of robots in dangerous situation can help to avoid the risking of human life. Recuse robot vehicle for under water divers is waterproof drones which can propel underwater to lift the victim who is in danger. The robot vehicle is attracted to the diver with the help of

locking system attracted with the diving suit. When a diver is suffering from oxygen which results in lower heartbeat the robot vehicle will senses and get into action. The robot will lift the victim to the surface of the water so that recuse can be easy, for accelerating the speed of lifting the person to the surface an airbag system is provided. The Camera attracted to the robot will provide the visuals from underwater with the help of led light the receiver on the shore will get a clear image on the display. The system consists of microcontroller heartbeat sensors, camera, and Airbag.

Keywords: Underwater Recuse robot, Recuse robot

EFFECT OF ELECTRICAL DISCHARGE MACHINING PARAMETERS ON MACHINING CHARACTERISTICS OF METAL MATRIX COMPOSITES

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Abstract:
Parametric analysis of die-sinking Electric Discharge Machining (EDM) of 10 wt.% alumina particulate reinforced Al6061 matrix composite has been performed using one-parameter at-time- approach. Individual effect of change of voltage, peak current, pulse-on-time, and duty factor on output response i.e., Material Removal Rate (MRR) and surface roughness (Ra) has been analysed with detail discussion on the physics of the EDM process. Experiments were performed by varying one input parameter while keeping other parameters at constant value during die sinking EDM of MMC using copper electrode. The analysis revealed that increase of pulse on time increases the Ra but decreases the MRR. MRR increases with the increase of duty factor, but it bears nonlinear relationship with Ra. The increase of voltage initially decreases the Ra but at higher values Ra values increases exponentially. The increase of peak current always increases the MRR and Ra.

Keywords: metal matrix composite, EDM, voltage, pulse on time, duty factor

DESIGN AND ANALYSIS OF A MINIATURE SUPERSONIC WINDTUNNEL

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Abstract:
The aim of the project is to design and analyze a miniature supersonic wind tunnel.. This supersonic wind tunnel will be an intermittent blow down type. The tunnel is operated by using the compressor and pressure vessel with a capacity of 6000 cubic liters at a maximum storage of 12 bar pressure. The tunnel is designed to have a flow of Mach 1.6, Mach 2.1 and Mach 2.6 in a 35mm x 17.5 mm test section. The nozzle was designed using the Method of Characteristics to minimize the shocks in the test section. The tunnel components, C-D nozzle, Test section and the Diffuser has been designed in CATIA. The flow passing through the wind tunnel is simulated by ANSYS (Fluent).

Keywords: C-D Nozzle, Method of Characteristics, Pressure ratio, Second throat, Shock swallowing, Mach number, Ansys- fluent

DESIGN AND STRUCTURAL ANALYSIS OF 3 COMPONENT STRAIN GAUGE BALANCE

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Abstract:
For many engineering systems the designing of components is based upon applications of theoretical model. The accuracy of the model is verified through testing. It is important to avoid deformations so that they may prevent structure from full filling the purpose. To obtain an internal strain, forces and stress to evaluate the reliability of the structure, an cost less attempt is made by simulating the balance under various conditions and forces. The way of the validating a math model is used to estimate strain gauge measurement to compute strain at the surface of the structure. An effort is made to develop a three component force-moment balance which is capable of measuring lift, drag and pitching moment of a model mounted in a wind tunnel. The forces acting on the beam causes strain on its surface which are measured by strain gauge. The strain which is yielded through axial direction is very small which is not practically possible to measure axial force using strain gauge directly. Using these three component internal strain gauge balance we can measure any aerodynamic model.

Keywords: Drag, Deformation, force-moment balance, lift, pitching moment, strain, stress, wind tunnel

STUDS AND EVALUATION OF SOLAR WATER DISTILLATION WITH PARABOLIC DISC EXPERIMENTAL SETUP BY USING HYBRID NANOPARTICLES

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Abstract:

This paper describes the productivity of pure water at different concentration ratios of hybrid Nano fluid at 500 mm of Hg pressure inside a parabolic solar collector vacuum chamber. In this newly developed setup, three different concentration ratios of Nano fluid ALO have been taken at 0.08%, 0.12% and 0.16% and the productivity from Nano fluid has been studied by fixing Tio2 at 0.2%. The temperature difference at the focal point falling from the parabolic solar collector and the temperature difference without focal point is 110°C. Where the atmospheric temperature is more than 110°C. In this experiment, increasing the concentration ratio between base fluid and Nano fluid, respectively 0.8%, 0.12% & 0.16% yielded the productivity 610 ml/h, 635 ml/h & 660 ml/h respectively

Keywords: Parabolic Solar Collector, Vacuum Chamber, Focal Point, Distilled Water, Nanoparticles

A REVIEW ON CHARACTERISTICS OF WAREHOUSE MANAGEMENT AND BASIC ANALYSIS ON WAREHOUSES OPERATING IN CHENNAI CITY

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Abstract:

Warehouse Management represents one of the key elements of logistics that stores goods between the point of manufacture or production and the spot of consumption in order to confer a never ending flow of goods. It plays a crucial part in the supply chain of an organization to stock up products effectively in Material Management practices. The potential of warehouses has received much attention, recently, and considered to be an increasing and novel approach among the best performing organizations. Warehousing operation is vital as it serves as the hub, where nodes are linked to their respective spokes. An effective strategy adopted in the warehouse enables to enhance and to satisfy the customer genuine needs as demonstrated earlier. Hence, in the present study, we investigate the level of warehousing characteristics or attributes associated

with supply chain warehouse efficacy, among the selected employees of logistic sectors and warehouse management firms, functioning in Chennai city, with a sample size of 417 respondents, using descriptive statistics. Results showed that there was a significant positive correlation was observed with moderate frequency of 35.4% followed by high frequency 30.7% respectively among examined respondents and elucidated their intention and a quest for sustained or continuous effective warehouse management measures, to improve and target the unique demands of the customers. The outcomes of the descriptive analysis showed that, obtained mean values as above 3 (3<) indexed clearly that looking for hub and spoke model strategy that ensured adoption of safety parameters with a higher standard deviation (1.169). The low standard deviation indicates the low possibility and our findings shown to be higher opportunities for integration of efficient warehouse management. Study inferred that effective and continuous warehouse management confers a promising platform for enhanced data management cost optimization, forecasting of demands, in the light of value added approaches in supply chain management of examined warehouse sectors.

Keyword: Warehouse operation, supply chain management, hub and spoke, safety parameters, logistic management.

PERFORMANCE ANALYSIS OF ADVANCE PCM WITH ACTIVATED CARBON POWDER BY THE USE OF EVACUATED TUBE SOLAR COLLECTOR

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Abstract:
This paper experimentally investigates effects of doping active carbon powder and titanium dioxide in paraffin wax. Paraffin wax (PCM) is most promising method of energy storage. The work is concern about performance enhancement methods of PCM as latent heat storage system. Performance can be improved by doping high thermal conducting material and high pores material to ensure better heat flow and availability of more surface area respectively. Thermal charging and discharging, Decrement in relative humidity of ambient air are the parameters considered for study. Three samples are prepared by mixing paraffin wax with active carbon having three different mass concentrations of 20%, 26% and 34%. Titanium Dioxide is added to every sample by a fixed mass concentration of 1%. Experimental data, presented in this paper, has helped to find conclusive results.

Keywords: Activated Carbon Powder, Evacuated Tube Solar Collector, Paraffin wax, Titanium Dioxide

STUDY OF SOLAR PHOTOVOLTAIC AND DIFFERENT TYPE OF COOLING SYSTEM USED IN PHOTOVOLTAIC SOLAR SYSTEM

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Abstract:
Cooling the working surface is a critical operational issue to consider while running solar photovoltaic systems for efficiency improvements. Proper cooling can boost electrical conversion efficiency while also slowing the rate of cell breakdown over time, extending the life of solar modules. The cooling system's excess heat energy might be employed in home, corporate, or industrial purposes. This report provided a overview of different approaches that used for minimising the adverse effects of higher temperature and trying to upgrade the power output production performance of solar photovoltaic panels running above the Standard Test Conditions' recommended temperature (STC). Enhancing the performance of photovoltaic solar panels via make use of phase-change materials; with water immersion cooling method; Solar PV panel cooled by employing Nano fluid; Hybrid solar Photovoltaic/Thermal system cooled by forced air circulation; and Solar panel with Thermoelectric cooling process are all mentioned. A number of research publications are evaluated and classified based on their emphasis, contribution, and solar panel cooling technology. The outcome results were reviewed in terms of each technology's advantages, limitations, potential applications, area and features of technology. The objective of this review is to present an overview of each of the above-mentioned technologies for lowering the PV module's surface temperature. The research will concentrate on the array of surface temperature reduction technologies bound by each cooling technology. Each cooling technology's performance will be highlighted as well. This evaluation will provide a comparison of the performance of each cooling method in addition to the study. The result of this paper is discussed in detail in the conclusion section. This study found that any suitable cooling technology for solar panels should keep the operating surface temperature low and steady, be simple and reliable, and, if possible, allow the utilisation of extracted thermal heat to improve total conversion efficiency. Engineers working on the theory, design, and/or application of photovoltaic systems can benefit from the extensive review offered here.

Keywords: Solar Energy, Photovoltaic Panel, PV Cell.

EFFECTS OF BONE POWDER ON THE MECHANICAL PROPERTIES OF ALUMINIUM COMPOSITE

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Abstract:

The newly formulated Aluminium Al6061 composite is fabricated using two different techniques such as squeeze and stir casting. Al6061 is a precipitation hardened aluminium alloy which is used as matrix material and waste material is beef bone powder which is used as reinforcement. Al6061 alloy is most commonly used in automotive, marine and aerospace applications to reduce weight, corrosion resistive and to improve the strength of the composite. From the critical literature survey, beef bone has good tensile and flexural strength and light in weight which is to improve the strength without much increase in cost. All the control process parameters involved in the machine were studied keenly and the parameters are selected by referring the earlier researchers work for different casting process involved in this work. The Aluminium composite is fabricated and obtained three samples successfully for further testing and analysis. The samples are prepared for the required dimensions as per the standard. The prepared substrates are tested for mechanical properties such as SEM, XRD, Hardness, EDX and Optical microscope.

Keywords: Aluminium composite, SEM, XRD, Hardness, EDX, Optical Microscope.

DEVELOPMENT OF A METHODOLOGY TO OPTIMIZE THE FORMULATION OF CONCRETE TO IMMEDIATE RELEASE FROM THE MOLD

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Abstract:

Methodology developed focus on the optimization of the formulation of concrete to instant release of mould. Information for the developed formulation method is obtained from the technical data sheets of the materials and by a compactness test on a press. Mould characteristics and vibration parameters are also necessary for the use of the compressible stack model. From this information and the requirements outlined in the product specification, the formulation method determines the optimal granular mix, the volume of equivalent aggregates, the volumes of cement, additives, effective water and air are calculated by solving a system of equations and tested with constituents, a mould and vibration parameters used for its development. The results obtained show the accuracy of the model.

STATISTICAL RISK MANAGEMENT IN CONSTRUCTION INDUSTRY

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Abstract:
Construction project has numerous risks that impact the entire project life cycle. Prediction of Risk Management helps to achieve the successful completion of the projects within planned cost and time. Most of the time a similar type of risk frequently occurs every project, especially typical infrastructure projects, but impact and risk probability is different. It is obvious that this risk affects the project cost and time, and the project's cost increases drastically. This study attempts to make Statistical modeling to predict the risk in India infrastructure projects. Most of the projects are affected by climate risk, design risk, resource risk (Manpower and Equipment), and typical uncertain event. The risk data is obtained from varies infra projects and analysis and interpretation with risk factors to calculate the time and cost of risk for mitigation. This study helps to identify the risk factors in zone and state-wise and makes proper risk mitigation to complete the projects in budgeted Cost and stipulated time. This paper measures and handles risks to help with upcoming construction projects.

Keywords: Climate, Construction project, Cost, Project life cycle, Risk Management, Time, Uncertain risk

INFLUENCE OF PARTIAL SUBSTITUTION OF FINE AGGREGATE BY COPPER SLAG ON DURABILITY PROPERTIES OF SELF COMPACTING CONCRETE

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Abstract:
The purpose of this research was to determine the efficiency of Self Compacting Concrete (SCC) manufactured with copper slag and to determine the influence of adding a super plasticizer on the qualities of SCC manufactured with copper slag. The M40 grade concrete was used in this

experimental investigation. By substituting fly ash for cement, 40% of the cement was eliminated. Copper slag was substituted for fine aggregate in various quantities ranging from 10% to 50% in the concrete compositions. In total, six concrete mix proportions were produced, for which the parameters like water absorption and chloride permeability were evaluated. In addition these mixes were exposed to acidic and sulphate environment in addition to marine environment to evaluate the percentage loss of weight and strength at 7, 28, 60 and 90 days.

Keywords: Acid Attack, Copper Slag, RCPT, Self-Compacting Concrete, Sulphate Attack, Marine Environment

EXPERIMENTAL INVESTIGATION ON THE USE OF OFFSHORE SAND AS A PARTIAL SUBSTITUTE FOR RIVER SAND IN CONCRETE

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Abstract:
The main aim of the study is to determine the degree to which dredged offshore sand can be used as a substitute for river sand by testing its physical, chemical, and structural characteristics. Experiments such as sieve analysis, determination of chlorides, shell content, and estimating the quantity of organic matters were carried out to study the physical and chemical properties. Various experiments such as rapid chloride penetration test (RCPT), water absorption test, and alkalinity test were performed to analyse the durability properties of concrete. The quantity of chloride, shell material, and organic content were within acceptable limits. Concrete made with dredged offshore sand with partial replacement of river sand had compressive and flexural strengths equivalent to the concrete made with river sand. The average current passing through the concrete with dredged off-shore sand was within the ASTM range for conventional concrete, according to the RCPT results. Water absorption of concrete specimens with upgraded offshore sand with river sand was higher compared to conventional concrete specimens. All concrete specimens with upgraded offshore sand showed alkalinity levels within the acceptable limits as per code. Hence an attempt was made to replace dredged offshore sand with river sand in this investigation.

Keywords: Alkalinity, Chloride content, Dredged offshore sand, Durability, Gap grading, Shell content, Water absorption.

SOLAR PHOTOCATALYTIC BIODEGRADABILITY OF SALINE WATER: OPTIMIZATION USING RSM AND ANN

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Abstract:

Natural sunlight assisted TiO_2photocatalysis was employed for the treatment of pollutants present in the seawater. A batch experimental study was carried out by varying the dosage of the photo catalyst between 1 and 4 g/L of the seawater. The performance of the photo catalytic reaction was evaluated by measuring the chemical oxygen demand (COD), biological oxygen demand (BOD) and total organic carbon (TOC) with respective to the reaction time. The biodegradability (BOD/COD) was optimized along with other parameters using Response Surface Methodology (RSM) and Artificial Neural Network-Genetic Algorithm (ANN-GA). The maximum percentage removal efficiencies of COD, BOD and TOC for experimental runs was 85.7, 31.5, and 83.2%, respectively. The maximum biodegradability (BOD/COD) for experimental runs was found to be 0.072. The optimized predicted values of the biodegradability and other parameters obtained through RSM and ANN-GA were COD = 84.6, 84.7%; BOD = 28.7, 29.2%; TOC = 83.9, 78.3%; and Biodegradability = 0.069, 0.07, respectively. The predicted values were found to be in good agreement with the experimental values.

Keywords: Biodegradability, Photo catalyst, Solar photo catalysis, Seawater, Titanium dioxide (TiO_2).

PHYTOREMEDIATION AS A NOVEL STRATEGY FOR UPTAKE OF FLUORIDE IONS FROM ENVIRONMENT

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Abstract:

The According to World Health Organization (WHO), fluoride is considered as one of the drinking water contaminants which cause large-scale health problems through drinking water exposure. The reported tolerance limit of fluoride concentration in drinking water is 1.5 mg/L.

Fluorine promotes health benefits at low concentrations, but it promotes adverse effects ranging from fluorosis to carcinogenic problems at high concentrations. Although fluorine removal from environment can occur through processes such as adsorption, reverse osmosis, and electro dialysis, the phytoremediation emerges as an accessible, effective and environmentally friendly treatment. Plant tolerance to fluoride uptake is the essential requisite for phytoremediation and most of the time; it is the invasive species that are great in phytoremediation. However, in the present research work, a detailed understanding of the plants that can perform in phytoremediation for fluoride uptake in significant amounts from the environment and yet perform at the least toxicity, safe and much cheaper, is considered as an approach for a long-term strategy.

Keywords: Contamination, Fluorine, Phytoremediation,

STUDY ON REPLACEMENT OF BITUMEN PARTIALLY WITH WASTE COOKING OIL AND ENGINE OIL IN BITUMINOUS CONCRETE

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Abstract:
Bitumen is defined as a gelatinous viscid mixture of hydrocarbons attained naturally or as a residue from petroleum refinement which is used for pavement materialisation and roofing. Bitumen is employed as a binder for flexible pavements throughout the globe. Though bitumen is non-hazardous under normal conditions but when heated it becomes toxic and has consequences of environmental degradation. Also bitumen being a product of non-renewable source of energy i.e. petroleum will led to depletion of petroleum reserves. It is a key challenge in highway industry to scale back the dependence on fossil fuels & to recycle the highway waste. The asphalt industry is undoubtedly a sector that contains a sustainable environmental impact, one amongst the main component being binder, bitumen, which is produced from petroleum. Bitumen generation results in enormous amounts of carbon dioxide emission which causes hazardous environmental impact. This research work is about the employment of waste oils as the alternative binders. The waste oils employed are waste cooking and waste engine oil. These are studied and analysed as a step towards sustainable environment. This project work will provide an alternative or modified binder as well as will serve with the better way for safe disposal of waste oils generated. Thus this project is beneficial concerning both the environmental aspects of alternative binder and safe disposal of waste oils.

Keywords: Pavements, Bitumen, Engine Oil, Cooking Oil, Addition Percentage, Highway Industry.

IDENTIFICATION OF APPROPRIATE STATISTICAL DISTRIBUTION FOR THE ASSESSMENT OF ENERGY REQUIREMENT OF EASTERN STATES OF INDIA

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Abstract:

Understanding energy needs is a critical problem for any State, especially for India, which has a diverse geographic area, population, and other factors that affect energy demand. As a result, energy demand differs from meeting the current needs. The exact-fit of the monthly average energy requirement records aimed at the five eastern States of India for the period 2008–2019 was evaluated in this study. We found four distinct distributions to match the existing data. Three analytical non - parametric goodness-of-match assessments, namely the "Kolmogorov–Smirnov(K-S), Anderson–Darling(A-D), and Chi-square assessments(C-s)", remained applied to assess the effectiveness of the matches for all of these distributions. According to these comparisons, it can be concluded that the "Burr distribution" was fitted for the data of Bihar and Odisha States, the "Generalized Extreme Value (GEV) distribution" was fitted for the data of Jharkhand, the "Frechet distribution" was matched for the records of Sikkim, and the "Generalized Gamma (GG) distribution" was fitted for West Bengal State energy requirement data. In the future, the findings of this research can be used to create more reliable models of energy planning, growth, production, and policymaking, among other things.

Keywords: Energy requirement statistics, K-S assessment, A-D assessment, Chi-square assessment, goodness-of-fit

SENSORS FOR STRUCTURAL HEALTH MONITORING: AN EXPERIMENTAL EVALUATION

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Abstract:

A Civil Engineering structure's performance is strongly influenced by its service condition, age, the type of material employed and the structure's plan. Apart from performance, every structure's

critical characteristic must be serviceability, safety, and reliability. As a result, it is critical to adopt a credible technology that is capable of conducting a thorough study and analysis of the structure. Structural Health Monitoring (SHM) is an internationally accepted technology that is used in a variety of applications. By utilising a damage detection and analysis strategy, SHM advancement aids in extending the service life of the structure. Sensors are critical to the SHM system's operation. Generally, structures fail as a result of unique geometric traits and material deterioration that impair their performance. The SHM's major goal is to alert the system during the early stages of damage start and to avoid further disaster propagation by continuous monitoring with structurally implanted sensors. The SHM continuously monitors the structure through displacement, strain estimation, impact, load, pH rate, crack appearance, vibration signatures, humidity, and crack size. The article discusses the experimental evaluation of two types of sensors, fibre optic sensors and piezoceramic sensors, which are widely employed in the majority of applications. This paper emphasises the future metrics and issues in sensor innovation and SHM technology.

Keywords: Damage Detection, Fiber Optic-Based Sensors, Piezoceramic-Based Sensors, Structural Health Monitoring, Wireless Sensor Networks.

MAPPING OF QUALITY OF DRINKING WATER IN VARIOUS VILLAGES OF DEVANAHALLITALUK USING GIS

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Abstract:

One of the important source of water is Ground water, 50% of the world's population depends on groundwater of which 43% is used for irrigation use. Hencethe quality of groundwater is important . In this project the selected area for studies is devanahali taluk which is located in Bengaluru Rural district. Due to the drastic development of Bengaluru urban city and the location of KIA (Kempegowda International Airport) we need to concentrate on this area in all the aspects for the future sustainability of Bengaluru city. There are about 212 villages and 2 towns in this taluk with a population of 2,09,622 lakh. The total area of devanahali taluk is 446sqkm. Identification of bore wells with the respective latitude and longitude and checking physical-chemical parameters of the water sample and mapping in the software the given task can be executed by integrating various shape file and validated collected bore well data using GIS.

Keywords: Bore wells, Ground water, GIS, Physical and chemical parameters, Water quality

A STUDY ON THE COMMON ANOMALIES CAUSING DISTRESS IN REINFORCED CONCRETE FLAT SLAB ROOFS

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Abstract:

In Indian context reinforced concrete (RC) flat slabs are commonly used with roof finishes viz. clay tiles, cement mortar, cool tiles, terracotta tiles etc. To improve the thermal insulation properties, weathering course systems such as brick bat coba, mud pushka, screed concrete etc. are also laid over the mother concrete slab. In recent times, the distress in RC slabs are in increasing trend which leads to spilling / delamination of concrete and causing damage to properties and human lives. This paper presents the anomalies that commonly occur in the RC flat roofs during its service life. More than 35 RC buildings, with the age group of 10 - 25 years, constructed in an academic institution near Chennai, which is 20 km from the sea coast, was studied to understand the commonly anomalies. The field inspection was carried out in a structured manner with well-defined matrices and simple tools to observe the anomalies and record the same. The past history of repair work carried out in the buildings over the period of service life was also noted by conducting interview with the Institution estate officials to understand the efficacy of repair techniques adopted. It was found that clay roof tiles topping over the brick bat coba laid over RC slab was the preferred system of roof finish. The anomalies observed were prioritized based on the recurrence, significance, age of the building, and by assigning proper weightage. The main anomalies causing distress to the RC flat slabs were identified based on ranking and recommended for rehabilitation to enhance the service life of buildings.

Keywords: Reinforced concrete flat slabs, anomalies, roof finish, weathering course.

MECHANICAL PROPERTIES OF FIBER REINFORCED CONCRETE BY USING DEMOLITION WASTE AS COARSE AND FINE AGGREGATE

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Abstract:

The cost of construction materials are increasing to a high rate for a conventional building and it is a major factor that affects the housing delivery worldwide. This has necessitated research for

alternative cost of effective materials in construction. Therefore properties of concrete with demolished concrete (D&C) waste are used as aggregate replacement of conventional aggregates and the study is done with M25 Grade Concrete. In these studies 3 different combinations of natural materials and D&C Waste content is used at the proportion of 50% Recycled Coarse Aggregate(RCA), 50% RCA&10% Recycled Fine Aggregate (RFA), 50% RCA & 20% RFA has been replaced with 1% of Steel Fibers Reinforcement . The cube, beam and cylinder are casted as samples and tested, and then the physical & mechanical properties are determined. The samples are tested for density, compressive strength, flexural strength & splitting tensile for7, 14& 28 days and then it is compared with conventional concrete

Keywords: Demolished concrete waste aggregate, Compressive strength, split tensile strength, flexural strength

A REVIEW PAPER ON PARTIAL REPLACEMENT OF FINE AGGREGATE BY DIFFERENT WASTE MATERIALS

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Abstract:

There is a scarcity of conventional construction materials such as cement, fine aggregate and coarse aggregate as a result of rapid increase in construction activities. In construction activities concrete is the main ingredient and used in tremendous quantity. It requires large quantity of sand also as a fine aggregate. Due to excavation of river sand natural resources are depleting and causing serious threat to environment. So now researchers have focused their interest to find an alternative solution to concrete and sand. On other side there is various waste and by-products from several industries are finding their way as substitutes or alternative materials to prepare concrete. This paper presents the review of some research papers which uses locally available waste replacing fine aggregate.

Keywords: concrete, sand, partial replacement, fine aggregate, construction.

COMPARATIVE STUDY ON SEISMIC BEHAVIOUR OF STEEL SHEAR WALL IN DIFFERENT LOCATIONS OF MULTISTORIED RC BUILDING

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Abstract:

As a new type of lateral resistance structure system, steel plate shear wall can bear most of the lateral loads in the structure, improve the initial lateral stiffness and horizontal bearing capacity of the structure, and act as the first line of defence before the main frame is destroyed so as to reduce the damage degree of the main frame and improve the collapse resistance of the structure. Dynamic studies were carried out on the shear strength capacity considering the effects of the relative stiffness and strength of the boundary elements on the shear capacity of the structure under seismic zone III. The multi storey RC structure was analyzed by Response spectrum method using STADD PRO V8i software. This paper presents comparison of various parameters such as storey drift, lateral displacement, base shear on seismic analysis of G+9 storey RC building stiffened with bracings and steel shear wall. The performance of the building was studied with shear walls in different locations. It was observed that structural capacity of the building was improved and also the lateral displacement and base shear were reduced with the addition of steel shear walls in a RC building.

Keywords- Multi-storeyed RC building, Steel plate shear wall, Response spectrum analysis, lateral stiffness, horizontal bearing capacity, storey drift, displacement, base shear, Staad pro v8i.

SEISMIC RESPONSE OF MULTISTOREY FLAT SLAB BUILDING WITH AND WITHOUT SHEAR WALL

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Abstract:

In present scenario the analysis of flat slab is more composite and also to study the behaviour against different forces acting on the components of a multi-storeyed building is so complex. This paper presents the dynamic analysis of the behaviour of multi-storeyed RC building (G+9 storied) having flat slab with or without shear walls. The analysis of the structure was carried out

by response spectrum method using Staadpr to study the effect/ performance of flat slab building with varying heights with and without shear wall in seismic zone IV. The dynamic performance of structure with different shear wall locations and varying thickness was studied and compared. From the dynamic analyses of the flat slab multi-storeyed building, storey drift, lateral displacement, base shear and drift reduction factor were determined and compared. On comparison, it was observed that flat slab building with shear wall gives better performance. Storey displacements obtained are complying with the IS code recommendation.

Keywords: Multi-storeyed RC building, Flat slab, Shear wall, Response Spectrum analysis, storey drift, lateral displacement, drift reduction factor, base shear.

ESTIMATION OF CLIMATE CHANGE IMPACT ON THE FLOOD OF KICKAPOO RIVER AT LA FARGE

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Abstract:

Predicting the impact of climate change in a particular river is necessary to adapt and mitigate the future floods. In this study the climate change impact on Kickapoo River is estimated using the rainfall forcing of RCP 4.5 scenario. Towards this a new methodology is framed to simulate discharge in the river using Artificial Neural Network which uses the knowledge of predictability of the time series as well. Four different bias correction methods, including an ANN based bias correction method is evaluated to reduce the biases in the rainfall forcing series obtained from Global Circulation Model and the best out of the four applied to bias correct the whole series. Simulation of discharge is done till the year 2099. It is found the Kickapoo River flow may likely go low in future due to climate change.

Keywords: Climate Change Impact, Kickapoo River, Predictability, bias correction, Hurst exponent, GCM.

EXPERIMENTAL STUDY ON SHEAR PERFORMANCE OF RUBBERIZED CONCRETE PANEL UNDER DIAGONAL TENSIONAL STRESSES

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Abstract:

The rapid industrialization and urbanization in the country leads to the lot of infrastructure development. This process leads to the several problems like shortage of construction materials, increased productivity of wastes and other products. The traditional method of disposal of waste tires have been stockpiling or illegally dumping or land filling, all of which are short-term solution. One of the possible solutions for the use scrap tire rubber is by adding into the concrete, to replace some of the natural aggregate. The aim of this project is to study on shear performance of rubberized concrete panel under diagonal tensile stresses using treated crumb rubber of M30 concrete. The treated crumb rubber will be done by using Sodium hydroxide (NaOH). The fine aggregate will be partially replaced by treated crumb rubber of 5%, 10% & 15%. Addition of fiber material such as polypropylene fiber as volume fraction of concrete is 0%, 0.25%, 0.50%& 0.75%. Different mix of rubberized concrete cube and cylinder will be cast and tested to failure under compressive and spilt tensile test. The achieved strength of correct mix combination will be taken and the panel will be casted for that mix combination. The parametric testing program included diagonal tension test of concrete panel built with shear reinforcement.

Keywords*:* Concrete panels, Reinforced Cement Concrete, Shear Strength, Diagonal Tension, Crumb Rubber, Poly propylene Fiber.

COMPARATIVE STUDIES ON THERMAL AND FIRE RESISTING BEHAVIOUR OF CONVENTIONAL AND GEOPOLYMER MORTAR

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Abstract:

Geo polymer has been known as eco-friendly which can be used as an alternative to Portland cement based concrete. Geo polymer concrete and mortar is one of the emerging techniques in the construction field. In Geo polymer concrete or mortar usually the Ordinary Portland Cement is totally replaced by the industrial waste product such as fly ash. In this research work, Class C fly ash (CFA) is used in one of the mortar mixes for the inducement of geo polymerization in Class F fly ash (FFA). The FFA: CFA ratios are 100:0 and 95:5 are used as the combined base materials for the geo polymer formation. In this paper the thermal and fire resisting behavior of

Geo polymer mortar is investigated and then compared with conventional cement mortar. The experimental result shows that the high calcium content of CFA contributes to the strengthening of the Geo polymer matrix structure. The Geo polymer mortar with FFA: CFA ratio of 95:5 possess low thermal conductivity and higher fire resistivity when compared to the Geo polymer mortar with FFA:CFA ratio of 100:0 and conventional cement mortar. Further in order to investigate the laboratory experiment with a real time structure a model is developed using Geo polymer mortar and conventional mortar. The propagation of heat from the outer wall to the inner wall of the model is investigated using Infra-red thermometer. The result shows that the model developed using Geo polymer mortar arrest the heat propagation from outer wall to the inner wall when compared to the model developed using conventional mortar.

Keywords: fly ash, geo polymerization, mortar, Infra-red thermometer, thermal conductivity, fire resistivity.

ANALYSIS ON FLEXURAL BEHAVIOUR OF HYBRID NYLON AND POLYPROPYLENE FIBRE REINFORCED CONCRETE

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Abstract:
Concrete is strong in compression and weak in tension. When the load is applied the crake generally develops with time and stresses. These cracks cause exposure steel to the environment resulting in corrosion of the steel reinforcement. To overcome this effect, discrete fibres are added to the concrete material. Nylon fibre (NF) is commercially preferable synthetic thermoplastic polymer. These fibres have excellent toughness, strength and durability. Polypropylene fibre (PF)is the fourth largest commercial fibre produced on the world market. It is cheap and also possesses good chemical resistance, increase post crack strength. These fibres are combined to produce a composite that will reflect the benefit of each of the individual fibre. This hybrid matrix provides a synergetic response to increase the properties of concrete. The flexural behavior of concrete beams strengthened using hybrid nylon fibre and polypropylene fibre. One of the beams was used as a control beam (conventional beam) while the remaining beams were strengthened before tested to failure under flexural loading. In this study the flexural properties and compressive strength property of hybrid nylon polypropylene reinforced concrete specimen has been analyzed. The hybrid nylon-polypropylene concrete specimen exhibited the highest increase in the flexural strength in comparison to conventional concrete.

Keywords - Fibre reinforced concrete, Flexural behavior, Fibre reinforced material, Hybrid concrete specimens, nylon fibre, Polypropylene fibre

EXPERIMENTAL INVESTIGATION ON THE FLEXURAL PERFORMANCE OF FUNCTIONALLY GRADED REINFORCED CONCRETE

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Abstract:

Fibre reinforcement is commonly used to provide toughness and ductility to brittle concrete. Reinforcement of concrete with a single type of fibre will improve the desired properties to a limited level. Hence two or more types of fibres are rationally combined to derive benefits from each of the individual fibres, termed as hybrid concrete. In functionally graded concrete, the material composition is varied spatially in order to meet performance demands which differ within regions of a structural element. This study aims to characterize and quantify the mechanical properties of functionally graded reinforced concrete (FGRC). For this purpose, one conventional and five fibre reinforced mixes were prepared. Two different types of fibres were used, steel fibre (SF) and polypropylene fibre (PPF). In this study, a fixed volume of SF and PPF of 1 % by volume of concrete was added to the concrete in five different mix ratios. Two mono-fibre mixes, one hybrid fibre mix and two functionally graded hybrid mixes were analyzed for the flexural properties. The results showed that the compressive and flexural parameters were pronouncedly improved in the FGRC due to the hybrid fibre addition in the areas of necessity based on stress behavior.

Keywords: Fibre reinforced concrete, Flexural behaviour, functionally graded material, Hybrid concrete, steel fibre, Polypropylene fibre.

DEVELOPMENT OF CLAY TILES WITH THE ADDITION OF INDUSTRIAL WASTE: A CASE STUDY ANALYSIS

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Abstract:

In recent years, scientific issues of environmental preservation have gained prominence, and recycling of materials abandoned by various productive sectors has emerged as a serious

challenge to be handled. Because of the environmental damage caused by industrial growth through waste disposal, this research looks into the idea of employing industrial waste as an alternative raw material in the production of ceramic tiles. The wastes were found to be viable as alternative raw materials in the production of ceramic tiles.

Keywords: ceramic tiles, environment, industry, waste, raw materials.

PREDICTING THE SEISMIC RESPONSE OF REINFORCED CONCRETE STRUCTURES USING ARTIFICIAL NEURAL NETWORKS

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Abstract:
The implementation of Artificial Neural Networks (ANNs) in the prediction of seismic behavior of Reinforced Concrete (RC) structures once revealed to seismic events is described. An ANN system is developed trained and validated leveraging the existing evaluation details obtained from the relevant documentation on the RC structural elements. Studies pertaining to measure the magnitude of vibration-induced structural damages involve using the Finite Element Method (FEM) model [1]. FEM is appropriate while evaluating a limited number of defined structural elements while is ineffective for wider assets. Influenced by these limitations, the model employed Artificial Neural Networks to introduce a specific model for estimating earthquake-induced damages. Modeling earthquakes technology is a compute complex domain whereby ANNs could be employed during stationary or adaptive loads to simulate the architectural response. Performance Based Design (PBD) is the latest concept in structured framework earthquake engineering wherein structural efficiency is evaluated for numerous risk scales, demanding considerable computational requirements. ANNs' projected structural contribution could be included in the PBD model while conducting comprehensive analyzes with a view to minimizing unnecessary computational costs [2]. The ANN's efficiency was tested utilizing multiple scenarios, and thus the ANN was determined to be equipped to predict damages effectively.

Keywords: Artificial neural network, Structural damages, Earthquakes, Finite element method, Performance based design

EXPERIMENTAL INVESTIGATION ON MORTAR SURFACE COATING USING NANO GGBS AND GRANITE WASTE POWDER FOR HYDROPHOBICITY

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Abstract:

Durability is an important factor for the quality of concrete and to last for long time without remarkable deterioration. The high cost of coating materials limits their large scale application in concrete. In this work a low cost waterborne stearic acid (calcium stearate), a by- product of steel GGBS and Granite waste powder are introduced to improve the water repellent and corrosion resistance properties. Hence, the super hydrophobic coating is prepared by sonication of the synthesized Nano GGBS and Granite waste powder into a mixture containing a hydrophobic agent. Different methods of application of coating such as drop casting and spray coating are used. This work is carried out to achieve a water contact angle > 100 which is of hydrophobic. The hydrophobic performance and durability of the coated cement mortar has been reported based on the water contact angle, sorptivity, water absorption. Ultrasonic pulse velocity test is done to study the surface porosity on the coated surface. As a result the drop cast specimen exhibited near to the super hydrophobicity with the water contact angle of 145 degree.

Keywords: Calcium stearate, GGBS, Granite waste powder, Nano GGBS, Nano Granite waste powder, Hydrophobic.

EXPERIMENTAL INVESTIGATION ON BEHAVIOR OF SELF CURING MORTAR USING NATURAL AGENTS AND PEG 400

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Abstract:

Curing is the most significant aspect of concrete strength and durability. Curing occurs as soon as the concrete is placed and finished, in order for it to achieve the appropriate strength and durability. In some instances, such as when there is lack of rainfall or bad weather, improper curing happens. As a result, self-curing process is used to solve this problem. This experiment investigated at the performance of self-curing agents in mortar cubes. Self-curing substances such as coir pith, Spinaciaoleracea, and PEG 400 were utilized as self-curing agents and

comparisons were done. First, the coir pith (1%, 2%, and 3%) was partially substituted with fine aggregate in mortar cubes, where coir pith works as self-curing agent. The water absorbed earlier by coir pith will be released during cement hydration process, reducing shrinkage and self-desiccation. The second step involves the usage of Spinaciaoleracea extract (0.6%, 0.8%, 1.0%), which was partially substituted with cement and employed as self-curing agent. Similarly, PEG 400 (1%, 1.5%, 2%) was partially replaced with cement and utilized as self-curing agent. The mechanical and durability features of mortar containing self-curing agents were investigated and compared to those of ordinary mortar. The results reveal that natural self-curing agents outperformed chemical self-curing agent.

Keywords: Coir pith, Durability, Mechanical, PEG 400, Self curing, Spinaciaoleracea.

STUDY ON FLEXURAL BEHAVIOUR OF RC BEAMS WITH HYBRID STEEL FIBRE BOTH EXPERIMENTALLY AND ANALYTICALLY

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Abstract:

Concrete is one of the most extensively utilized composite construction materials in the world. Cracks are important because they turn concrete constructions into permeable parts that are prone to corrosion. The mechanical characteristics of concrete structure would be improved by the inclusion of small closely spaced and uniformly dispersed fibers, which would also act as reinforcement. The fracture behavior of SHFRC is investigated both experimentally and analytically in this research. The percentage of fiber in the volume fraction ranges from 0 to 0.75 percent. In order to design concrete with superior crack resistant behavior, it is required to examine fracture behaviors such as types of cracks, break propagation, and crack width. Image processing may prove to be an effective tool for studying fracture propagation since it has the potential to be a simple yet accurate solution. It offers data on fracture width, beam deflection, and so on. As a result, image processing techniques will be used to investigate crack characteristics in order to improve crack management. Image processing techniques must be used to analyse the fracture behaviour of RC beams and high strength hybrid fibre reinforced beams in order to improve the fracture resistant behaviour of high strength hybrid fibre reinforced beams.

Keywords: Image Processing; Hybrid fiber reinforced concrete beam; Steel fibers.

STRUCTURAL DAMAGE DETECTION METHODS USING FINITE ELEMENT MODELLING

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Abstract:

In the past ten years, the detection of structural damage based on finite element (FE), model updates is an area of study with increased attention to the civil engineering field. Different studies have addressed direct, predictive, empirical, and algorithmic techniques for the update of FE models for the assessment of structural damages. The study examines the structural health monitoring approach using the Response surface method, Bayesian's Probabilistic Strategy (BPA), Modifying Genetic Algorithms (MGA), and Evolutionary Algorithms (Evolutionary Algorithms). Such approaches are graded according to the list of benefits available in each method. Modeling of finite elements focused upon evolutionary algorithms provides better results than other algorithms.

ENERGY AND ECONOMIC ANALYSIS OF MICROWAVE OVENS

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Abstract:

Microwave ovens are designed primarily for heating and cooking food, providing an exhaustive exposure to electromagnetic radiations in the microwave frequency range which may varies from 900– 2450 MHz within which it is commonly referred as an electric oven. Vacuum tube also called magnetron is of the three main component of a microwave oven which generates energy that heats food. The rapid heating of food in oven is possible by the power provided by the vacuum tube inside it. To do so, microwave oven emits two types of EM radiations, microwaves and low frequency radiations. Among which low frequency radiations contribute effectively to power the magnetron. This energy delivered is directed to the food with the help of a wave guide hidden in the wall. The chamber holds the food safely. Microwave oven heats food quickly and more efficiently. The energy consumption of microwave must have been so close to meet the monthly expenses of the common people that they could hardly fail to meet the utility bill. So a

new system is inscribed in this paper by evaluating the energy consumption, economic growth and carbon emission. Additionally an energy conservation measure for an oven is also analyzed.

Keywords: Electromagnetic radiation, magnetron, turnable, vacuum tube.

AUTOMATIC ACCCIDENT DETECTION AND RESCUE SYSTEM FOR MORETHAN THREE WHEELERS

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Abstract:
The street mishaps rate is developing dramatically alongside the fatalities caused because of mishaps. In any case, the essential and the fundamental driver of the expanded pace of losses is because of the deferral in crisis administrations. Numerous lives could be saved with ideal salvage administrations. In this paper, we present a basic examination of different existing techniques utilized for foreseeing, forestalling and recognizing street mishaps, including their qualities, limits, and moves that should be routed to guarantee street wellbeing and save significant living souls.

Keywords: Accident detection, Rescue, Three wheeler.

VANET BASED SECURE FILE SHARING SYSTEM
BASED ON ADVANCED ENCYPTION STANDARD

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Abstract:
In the VANET systems, the leakage of some sensitive data or communication information will cause heavy losses for all times and property. Then, a better security level is required within the VANET systems. Meanwhile, fast computation powers are needed by devices with limited computing resources. Thus, a secure and lightweight privacy preserving protocol for VANETs is urgent; we first propose an identity based signature that achieves enforceability against chosen message attack without random oracle. So as to scale back the computational cost, we design two secure and efficient outsourcing algorithms for the exponential operations, where a

homomorphism mapping supported matrices conjugate operation is employed to realize the safety of both exponent and base numbers. TA authorizes RSU to act as an agent and RSU converts OBU's signature into TA's signature, which effectively hides the important identity of auto OBU. Meanwhile, TA has access to trace the important identity of OBU using its secret key when malicious messages are found. Jamming in wireless networks is defined because the disruption of existing wireless communications by decreasing the signal-to-noise at receiver sides through the transmission of interfering wireless signals. Jamming is different from regular network interferences because it describes the deliberate use of wireless signals in an effort to disrupt communications whereas interference ask unintentional sorts of disruptions. Jamming makes use of intentional radio interferences to harm wireless communications by keeping communicating medium busy, causing a transmitter to back-off whenever it senses busy wireless medium, or corrupted signal received at receivers. Jamming mostly targets attacks at the physical layer but sometimes cross-layer attacks are possible too. During this section, we elaborate on various sorts of jammers and therefore the placement of jammers to maximize the jammed area.

Keywords: TA, RSU, OBU, VANET.

SMART CROP HARVESTING SYSTEM

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Abstract:
The proposed system is a crop harvesting system based on the Internet of Things (IoT), object recognition and automation technologies. The system helps to reduce the manual labor of the farmers by automating the identification and plucking of ripened fruit without a direct visit to the field. The system aims to reduce the tiresome tasks in the agricultural scenario. Harvesting using robotic arms reduces the amount of time spend by farmers in performing repetitive task. The proposed system includes object detection in the server side and harvesting using robotic arm in the hardware side.

Keyword: Internet of Things (IoT)

REDUCTION IN VOLTAGE DROP OF DISTRIBUTION FEEDERS USING BIFURCATION TECHNIQUE - A CASE STUDY OF 11KV FEEDER OF 220KV SUBDIVISION

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Abstract:

State Electricity Boards are main components in Distribution Sector to provide electrical energy at suitable prize and minimum voltage drop & to reduce voltage regulation at load points. It has been observed countrywide that distribution companies/feeders are running in overload conditions, because its system is extended without any proper planning. During last 30 years, energy requirement and consumer growth rates are increasing day-by-day and thus distribution utilities are under tremendous pressure. This huge increase directly affects the reliability of supply and service conditions, quality to the consumers. These conditions require proper planning of pressured networks for accommodation of future needs as well to reduce above components and the technical losses. There are many methods adopted by researchers with a focus on to improve voltage profile and made suggestions to distribution sector: Deregulation power systems, HVDS system, Distribution Generation, power loss reduction by various optimization techniques etc. In present study, we have analyzed the implementation of Bifurcation technique in feeder for solution in power sectors & by using this method, splitting up the feeder into smaller sections with an aim to minimize voltage drop, is implemented in a 11KV distribution feeder in a 220KV subdivision of Punjab State.

Keywords: Bifurcation, Distribution sectors, Distributed Generation, HVDS, and Optimization.

ROAD BLOCK DETECTION USING SUPPORT VECTOR MACHINE ALGORITHM

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Abstract:

Traffic congestion in a road comprises increased vehicular queuing, slowing of vehicle speed and the total blockage of road segments. Relevance of this system comes here as it reduces traffic

congestion through giving alert to upcoming vehicles in particular road segment .The alert can be about vehicular accident or it can be any block like fallen objects or even the heavy vehicular queuing would be informed to vehicles so that they can take alternate option of another road with less traffic intensity As this system provides sudden detection of road blocks due to an accident or other hazardous situation, it can alert the vehicles speedily than any existing system. RSU (road side unit) is the communication infrastructure between vehicle and a cloud server. Server aggregates and processes the information from vehicles and sends alerts and acknowledgements. Vehicle to vehicle communication is provided for the broadcasting of alerts and acknowledgements. Communication network would be a vehicular adhoc network. Machine learning algorithm called support vector machine has been used to process the data.

Keywords: Congestion, road side unit, vehicular adhoc network, machine learning algorithm, support vector machine.

SMART MUNICIPAL WASTE DISPOSAL FOR INDIAN CITIES

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Abstract:

The management of municipal solid waste in India is a severe problem because of both environmental and aesthetic concerns. Moreover, this is compounded by the sheer quantity of waste that is generated per day. As of 2016, India is the largest producer of municipal solid waste, based on calculations by the World Bank and we are going to hold this dubious distinction till as long as 2050.One of the main issues with the current method of waste disposal is the inability to differentiate the waste materials at the point of collection itself. Also, the system can be made far more efficient provided we can understand when we need to collect the garbage. The proposed solution addresses both the above-mentioned issues. It consists of a sensor which can segregate the recyclable materials from the non-recyclable ones, enabling the processing of the waste to be efficient and less time-consuming. It also consists of an IoT based waste tracking system using which the garbage collector will receive a message once a particular waste bin gets filled to its top.

INDUSTRY 4.0 BASED SEMI-AUTOMATIC ELECTRIC HEAVY VEHICLE USED IN INDUSTRIAL SECTORS

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Abstract:

We know that our world is developing at a rapid pace, and new technologies are getting invented every minute, especially in the industry sector. This is one product which will benefit any

technology-driven factory. To explain this project in a single line, it is "a fully automatic or a semi-automatic vehicle which can be used especially in the industrial sector". This is a four wheeler heavy vehicle which has a Robotic Arm in the front portion and the remaining portion can be used to store/keep the loads. The prototype of the product can be compared to a toy lorry (structurally), where instead of the driver's seat we'll place the robotic arm and the remaining portion is left free to load and unload goods. The next feature of this vehicle is that, this is going to run with the help of a Line Follower, so that it moves in the desired path. We also provide a sensor at the front and the back so that the vehicle stops if there is any obstacle and that could be done by adjusting the distance for sensing the obstacle. The Robotic Arm used here can be controlled manually either by a smart phone or an IR remote. The main use of this product is to transport, load and unload goods with less human effort.

Keywords: IR Remote, Industry 4.0.

ADVANCED WALKING STICK

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Abstract:
Independence is the ability to live without being controlled by any kind of actions or judgment, opinions and regulations. Visually challenged people face the real challenge of being independent. In the current world, there are millions of visually impaired or blind people who are always in need of helping hands. This paper presents the design and implementation of multi-sensors based advanced walking stick for visually impaired people. The proposed system is implemented using an Arduino Uno R3. Visually impaired can use this stick for safe navigation and thus helps them to be independent. The stick consists of three sensors: ultrasonic sensor, LDR sensor, and water sensor. The ultrasonic sensor, HCSR04 is used for obstacle detection in the moving path of a challenged person and buzzer is used to make the person alert. The water sensor is used to detect the presence any water bodies on their path. The LDR sensor is used to detect the presence of light and thus the person knows whether it's getting darker when he is outside. An RF transmitter and receiver is also used to help the user track the device when misplaced. The main aim of this paper is to impart knowledge and contribute the services to visually disabled society.

Keywords: Walking Stick, Visually Impaired, White Cane, Ultrasonic sensor.

DEEP CONVOLUTIONAL NEURAL NETWORK FOR CLASIFICATION AND SEGMENTATION OF WIRELESSS CAPSULE ENDOSCOPY IMAGES

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Abstract:
The objective of this paper is to develop convolutional neural network (CNN)-based deep learning to identify bleeding and non-bleeding CE images, where a Res-Net is used to train a CNN that carries out the identification. Moreover, bleeding zones in a bleeding image are also identified using deep learning-based semantic segmentation.

Keywords: Capsule endoscopy Convolutional neural network Deep learning classification Segmentation.

COMPARISON OF DIFFERENT CHANNEL STATE INFORMATION ESTIMATION IN NOMA-COMP SYSTEM

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Abstract:
Non-orthogonal multiple access (NOMA) is the promising technology in 5G and can utilize range proficiently. 5G devices have quicker data rate and are lower latency. We can use NOMA either as code, frequency or time. In NOMA we can serve multiple users simultaneously, hence NOMA has higher number of connectivity and improved user spectrum efficiency. There are mainly two types of NOMA plans, which are power-domain multiplexing and code-domain multiplexing. This followed power domain multiplexing by allocating different power levels to every users in according to the distance of the users. Nearest users provided with lowest power and farthest user provided with highest power. The Successive interference in NOMA is cancelled with the help of Coordinated Multipoint system (CoMP). In NOMA system, it is difficult to estimate Channel State Information (CSI). Here we introduce Least Square (LS), Minimum Mean Square Error (MMSE), Maximum Likely hood and Neural Network methods to estimate CSI and compare these methods too.

Keywords: Channel state Information, Coordinated Multipoint, Interference, Least square, Maximum Likely hood, Minimum Mean square error, Neural Network, Non-orthogonal multiple access, Power allocation.

CNN AND MLP BASED BEAM SQUINT AND CHANNEL ESTIMATION FOR MMWAVE MASSIVE MIMO-OFDM SYSTEM

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Abstract:

With the development in the wireless communication system, it shows an increase in the scale of antenna arrays used in wideband millimeter wave (mm Wave) communication system. As the number of antennas increases there occurs a propagation delay for electromagnetic waves where this physical propagation delay termed spatial wideband effect. In the above cases, for the same path, there exists a distinct angle of arrival in an orthogonal frequency division multiplexing (OFDM) system. This effect resulting from the spatial wideband effect known as beam squint, where it is always proportional to the spatial wideband effect. Here proposes a channel estimation technique in mm wave massive multiple input multiple output (MIMO) OFDM system with frequency division multiplexing. Channel parameters are extracted as frequency-sensitive and insensitive parameters by a compressive sensing-based approach. The frequency insensitive parameters angle of arrival (AoAs) and delay, and frequency sensitive parameter complex channel gain is obtained during uplink and downlink channel estimations. Here proposes channel estimation using the neural networks (NN), multilayer perceptron (MLP), and convolutional neural network (CNN) using training and testing data, together with least square (LS) and minimum mean square error (MMSE) methods. Graphical and numerical results under different parameters show the superiority of the proposed system.

Keywords: Angle of Arrival, Beam Squint, Convolutional Neural Network, Multilayer Perceptron, Spatial Wideband Effect.

ENERGY EFFICIENT LED DRIVER FOR STREET LIGHT APPLICATION

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Abstract:

LEDs are having a wide range of applications in present days. Single-switch light-emitting diodes (LEDs) drivers are for street lighting system. By integrating the single-ended primary-inductor converter (SEPIC) and Class-E resonant dc/dc converter, converter exhibits extreme simplicity and high reliability, as there is only one active power switch. With careful parameters design of a single Class-E resonant converter, the converter can achieve soft-switching

characteristics, which could significantly reduce the switching losses and greatly improve the system efficiency. Street lights are very much required in populated regions. Automatic streetlight controller using light dependent resistor, RTC, and micro controller. The control of presented LED driver system greatly applicable in street light .It is observed that streetlights are not turned OFF even when there is ample amount of light after sun rise and are turned ON even before sunset. Even in timer based street light control systems, the ON and OFF time differ noticeably according to RTC. To overcome these problems, an automatic streetlight controller is to be designed.

Keywords: Integrated sepic and class E resonant converter. Automatic street light control.

BIDIRECTIONAL POWER FLOW BETWEEN EV AND GRID CHARGE SCHEDULING, OPTIMIZATION BASED ON QUEUING MODEL

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Abstract:
Electric vehicles (EVs) diffusion is expected to increase smart grid to urge strongly with various EV charging demands. As a result, the EV charging, process at the supply station has to be managed in the way to encourage the EV satisfaction level while conserving smart grid stability. In this article, the Bidirectional power flow between EV and grid; i.e., Grid-to-Vehicle (G2V) and Vehicle-to-Grid (V2G), is oppressed. We make a profit from that an unused electric power of EVs and we present an EV load management technique based on EV charging and EV discharging harmonization. We propose a peak load management model (PLM) used to schedule EVs for charging or discharging service according to the power demand with the timing and location where each EV need to be served. Also, we propose an Electric Vehicle Supply Equipment (EVSE) selection model to guide the EVs to the supply station. We develop a mathematical conformity for handling, requests for EV charging/discharging at EVSE based on queuing theory. Those models are evaluated while considering the mobility of vehicles in an urban scenario and time-of-use-pricing (TOUP). Finally, widespread MATLAB simulations are conducted to authenticate the proposed approach and validate its effectiveness.

ACOUSTIC ENERGY TRANSFORMATION TO ELECTRICAL ENERGY BY ADOPTING PROGRESSIVE PIEZOELECTRIC TRANSDUCER

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Abstract:
This paper deals with the transformation of acoustic energy into electrical energy by using advanced piezoelectric transducer. Electricity is one of the most important blessing that science has given to mankind. It has also become a part of modern life and cannot think of a world

beyond it, also exploration for novel and inexpensive energy resources are required in. By examining for new sources of energy it been observed that there are massive amount of acoustic pollution is generated all over the world. The piezoelectric transducer can convert acoustic vibration into electrical energy. This domain of piezoelectric materials can be used to develop instrument which will absorb the acoustic waves travelling near to it and this sonic energy can be used to perform variety of functions by transforming it into conventional electrical energy .The sound level of the piezoelectric material choose for the experiment at the driving range 35100dB. Assimilating this with the surrounding environment human noise level 50-100dB, it is found that the piezoelectric materials used in this study shows better performance of output power and sound level value. The size of the piezoelectric material will affect the efficiency of the transducer to harvest energy. In this paper a new method of harnessing the piezoelectric energy has been formulated. The output of piezoelectric transducer is connected to a harnessing circuitry for accumulating superior output. The harnessing circuitry has higher efficiency than other circuitry because of no extra voltage drop in the output. The output shows that the acoustic energy is effectively harnessed and stored in the assembled module. On embodiment into a wide scale such as railway, airport etc.; conformable to circumstances to stir up a substantial amount of electric energy. Here the sound pollution is great extent and energy of sound is very high so it can produce a pleasant output.

Keyword: Piezoelectric materials, Sound wave, Electrical energy, Harvesting circuitry, Power unit.

DESIGN & DEVELOPMENT OF SMART SHOE WARDROBE

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Abstract:
The recent development of smart home technology is making people's residential life more affluent. Due to usability issues in existing shoe rack designs, many designers have looked into the development of ergonomic shoe racks. However, They appear to be a number of possible flaws that still existing these ergonomic shoe rack designs. This paper objectives to design and develop a Smart Shoe wardrobe. If an automatic system is attached to a Shoe wardrobe it will give much amenity to people, regular cleaning of shoes helps to avoid shoe stench and from various skin ailments. The Smart shoe rack is capable of doing operations such as cleaning, storing and polishing etc; to clean the shoe, place it in a cleaning section so as to removes dust, Mud from the shoe, as the above mentioned operation are executed on an automatic basis with the help of a ARM11 Processor, As this operations are executed with the help of sensors and motors. After executed operation, the shoe is ready to place it in storage section. As the storage section is capable of maintaining a good conditions as this help to increase the lifespan of shoe.

While considering the polishing section, it consist of two section simple mopping section and polisher section. The user must place shoe in mopping section then only user must move to next section in order to achieve better results. By implementing this project could able to overcome the main resources of the infections and health issues are due to the absence of cleanliness and hygiene. In the case of application, it can be used at several conditions like hospitals, industries, homes. Where ever the people use the footwear and care about their safety and health,the smart shoe cabinet can implement with highly efficient and effective methods. This product has the potential to be marketed as a self-assembled unit, with the establishment of smart shoe cabinet in the society, gives ergonomic feature into a shoe storage system it can improve overall usability, productivity and establishment of health safety in our environment.

Keywords: ARM11 Processor, Sensor (Temperature, LDR, PIR), DC Motors.

IOT BASED HEALTH MONITORING WEARABLE MASK FOR COVID PATIENT

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Abstract:
The biggest crisis facing the world today is the corona virus or covid19. It is a disease that is affecting more and more people around the world. The disease took the lives of many people and destroyed many families. Most of the people in the Indian nation are ordinary. Many tests for Covid19 are expensive and beyond the reach of the average person. This paper presents a wearable sensor network system for Internet of Things (IoT) connected safety and health applications. An IoT network system which can monitor both environmental and physiological can greatly improve the safety of humans. The purpose of this project is to help patients with Covid19 bedridden patients at a very low cost .We know that some of the symptoms of corona virus are respiratory diseases and high fever. If these symptoms can be monitored regularly, doctors can sometimes save the patient's life. To this end, this project produces a very inexpensive, very accurate and easy to handle wearable mask. This mask is equipped with various sensors to detect symptoms. In addition, the sensor values the patient's condition and allows the doctor to remote monitor the patient's sitting position .With this wearable device, the patient's breathing rate, oxygen level and temperature variations can be easily tracked. Therefore, doctors are able to take the right steps at the right time.

Keywords: IoT, Mask, Health.

COMPARATIVE ANALYSIS OF DIFFERENT NOISES AND BAYER PATTERN ON IMAGE DEMOSAICING

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Abstract:

With advancements in technology, the colour image camera sensors acquire only one R, G, B value for a particular pixel and the remaining values are calculated using the process of demos icing, which is a process of generating a full colour image from few samples. The artefacts', if present, degrade the quality of the image to a greater extent, so it becomes a mandate to remove such noises or artefacts'. Considering that most of the artefacts' resemble the Poisson or Gaussian or speckle or salt and pepper noise pattern, so using gradient corrected linear interpolated based demos icing is performed on two different Bayer patterns, to check whether some improvement in terms of signal to noise ratio and peak signal to noise ratio can be achieved or not on images from Kodak database. Experimental results obtained show the advantage of using the defined method.

Keywords: Speckle, Gaussian, Salt and Pepper, Poisson, Bayer pattern.

ARTIFICIAL INTELLIGENCE (AI) IN AGRICULTURE

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Abstract:

Agriculture place a significant mode in the economic sector. The population is increasing tremendously and with this increase the demand of food and employment is also increasing. The traditional methods which were used by the farmers, were not sufficient enough to fulfill these requirements. The agrochemical application with the conventional sprayers results in the wastage of applied chemicals, which not only increase the economic losses but also pollutes the environment. In order to overcome these drawbacks, and image processing based real-time variable rate chemical spraying system was developed for the precise application of agrochemicals in disease the paddy crop based on crop disease severity information. The developed system comprised of web cameras, laptop, microcontroller, and solenoid valve assisted spraying nozzles. The Chromatic Abbreviation (CA) a based image segmentation

method was used to dictate the deceased region of paddy plants. The system further calculated the disease severity level of paddy plants, based on which the solenoid valves remained on for a specific time duration so that the required amount of agrochemical could be sprayed on the diseased paddy plant. Field performance of developed sprayer prototype was evaluated in the variable rate application (VRA) and constant rate application (CRA)modes. The field testing results showed a minimum 33.88% reduction in applied chemical while operating in the VRA mode as compared with the CRA mode. Hence, the developed system appears promising and could be used extensively to reduce the cost of pest management as well as to control environmental pollution due to such agrochemicals.

COMPACT OCTAGONAL MICROSTRIP PATCH ANTENNA FOR MULTIBAND APPLICATIONS

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Abstract:

Compact and multiband antennas are in great demand to meet the ever expanding wireless/mobile communications requirement. A novel design for compact multiband single and dual octagonal microstrip patch antennas are proposed to operate at nine frequencies in different bands such as C, X, Ku, K, Ka and V. The Roger RT/Duroid 5880 glass microfiber reinforced PTFE composite is used for substrate material for the two antennas with dielectric constant $\varepsilon r=2.2$ and thickness of substrate h=1mm. The antenna parameters such as return loss, VSWR, gain, directivity, radiation pattern and electric field distribution are thoroughly studied for evaluating the performance. It is found that the single octagonal ring slot antenna has produced satisfactory performance at six resonant frequencies spread over five designated RF bands. The dual octagonal ring slot antenna is, in principle, an improvement made over the single octagonal ring slot antenna by the addition of an additional ring. The antenna can achieve the single octagonal ring slot reflected power of -12.2dB, -14.0dB, -17.4dB, -17.8dB, -20.5dB and - 10.9dB at 7.6 GHz, 12 GHz, 24.6 GHz, 37.7 GHz, 43.2 GHz and 48 GHz respectively and the dual octagonal ring slot reflected power of -20.9dB, -15.1dB, -22.8dB, -17.0dB, -25.4dB, -37.4dB, - 15.0dB, -16.1dB and -10.1dB at8.2 GHz, 11.4 GHz, 14.9 GHz, 21.1 GHz, 24.9 GHz, 28.9 GHz, 37.7GHz,40.9GHz and 45.8 GHz respectively. The dual octagonal ring slot antenna gave improved return loss. The simulated return losses are less than -10 dB at all the resonant frequencies. The obtained bandwidth is good and better voltage standing wave ratio VSWR<2 for both single and dual octagonal ring slot antennas. The antennas are found to be suitable for multiband wireless communication systems. The performance of proposed multiband antennas are simulated and validated by measurements.

Keywords: Octagonal, micro strip, VSWR, return loss, multiband**.**

COVID-19 FACE MASK DETECTOR

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Abstract:

Corona virus or covid-19 has set the whole world under dilemma and has made the situation even worse by its second wave. The impact of covid-19 has fallen on almost all sectors of development. The health care system is going through a crisis. Many precautionary measures have been taken to reduce the spread of this disease where wearing a mask is one of them. Though countries are trying to cope up the situation with repeated lockdowns, some people are still roaming around without face mask in public places which can cause a rapid increase in the number of corona virus cases per day. In this paper we discuss and analyse the idea of face mask detection using a face mask detector which would be very useful especially in hospitals, shopping malls, groceries and such public places. We will use the datasetto build A covid-19 facemask detector with computer vision using Python, Keras, OpenCV, Tensor Flow and Imutils

Keywords: Imutil, Keras, OpenCV, Tensor Flow, Computer Vision, Python.

HYBRID ELECTRIC VEHICLE

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Abstract:

Have you pulled your car up to the gas/petrol pump lately and been shocked by the high price of gasoline. As the pump clicked past Rs.1400 or Rs.1500, maybe you thought about trading in that SUV for something that gets better mileage. Or maybe you are worried that your car is contributing to the greenhouse effect. Or maybe you just want to have the coolest car on the block. Currently , there is a solution for all this problems, it's the hybrid electric vehicle. The Vehicle is lighter and roomier than a purely electric vehicle, because there is less need to carry as many heavy batteries . The internal combustion in hybrid electric vehicle is much smaller and lighter and more efficient than the engine in a conventional vehicle. Giant mining trucks are often diesel – electric hybrids. Submarines are also hybrid vehicles—some are nuclear – electric and some are diesel-electric. Any vehicle that combines two or more sources of power that can directly indirectly provide propulsion power is a hybrid.

Keywords: Hybrid vehicle, hybridization types , electric and fuel injection ,battery voltages , power split hybrids, petrol and diesel engine, DC power, Regenerative braking, No air pollution.

SYNTHESIS AND APPLICATION OF SILICA AND CALCIUM CARBONATE NANOPARTICLES IN THE REDUCTION OF ORGANICS FROM REFINERY EFFLUENT

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Abstract:

Nanotechnology has the potential to enhance the recovery of oil, improve the mechanism and to unlock the remaining oil resources. This research focused on the synthesis of silica and calcium carbonate nanoparticles for the removal of organics from refinery waste water. The methodology employed for the synthesis of silica nanoparticles is Stober's process and the calcium carbonate nanoparticles were prepared by precipitation and homogenization processes. The surface characterization, stability analysis, and identification of functional groups were performed using Scanning Electron Microscopy (SEM), Zeta sizer and Fourier Transform Infrared Spectroscopy (FTIR). Phase identification and grain size was performed using X-Ray Diffracto meter (XRD). The synthesized particles were found to be spherical in shape without any aggregation, which indicates the successful synthesis of nanoparticles. The synthesized nanoparticles were applied in the removal of organics from petroleum refinery effluent by performing a series of batch experimental studies with varying experimental conditions. The experimental results shows the maximum reduction in Chemical Oxygen Demand (COD) at pH 4.0, stirring speed of 125 rpm, a mixing time of 90 minutes and a dosage of 0.5 g using silica nanoparticles. The corresponding values in the case of calcium carbonate nanoparticles are pH 8.0, stirring speed of 125 rpm, a mixing time of 90 minutes and a dosage of 0.4 g. The results suggest that calcium carbonate nanoparticles were more efficient than silica nanoparticles in the removal of organics.

Keywords: Calcium Carbonate, Characterization, Nanotechnology, Oil recovery.

REMOVAL OF HEAVY METALS (CU^{+2}, ZN^{+2}) FROM SYNTHETIC WASTE WATER USING BIO SORBENT (ALGAE)

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Abstract:

Heavy metal pollution from industrial waste water is the greatest challenge faced due to its high toxicity and harmful effects to human health and environment. The conventional treatment

methods like chemical precipitation, ion exchange, natural zeolite, membrane process and ultra-filter, adsorption are not very effective in treating industrial waste water containing heavy metals. These methods are more expensive with serious sludge disposal issues and extremely high processing cost. Bio sorption is considered to be an eco-friendly and inexpensive technique for the efficient removal of heavy metals. The functional groups present in the biomaterials, make it possible for them to attach metal ions from waste waters to the surface of adsorbent. The objective of this research was the removal of (Cu^{+2} and Zn^{+2}) from synthetic wastewater using two different types of bio sorbents (algae) and hence to study the efficiency of bio sorption by varying the solution pH, biomass concentration, temperature, stirring time and initial concentration of metals ions. From the experimental results it was observed that the metal removal efficiency follows the order $Zn^{+2} > Cu^{+2}$ by using both types of bio sorbents. The results show that Zn^{+2} and Cu^{+2} have high removal efficiency of 70% and 60% respectively. The optimum processing conditions obtained for the removal of Zn^{+2} was found at pH 10.0, 45 minutes of stirring time, dosage of 0.6g and a processing temperature of 50°C by using S. platensis and pH 7.0, 90 minutes stirring time, 0.6 g of dosage and 25°C by using Sargassum ilium with initial concentration 2 ppm. The optimum condition of Cu^{+2} removal was found at pH 5.0, 120 minutes stirring time, 0.6 g of dosage by using S. platensis and Sargassum ilicifolium at different temperature 30°C and 50°C respectively at initial concentration 2 ppm. The effectiveness of heavy metal adsorption was characterized by FTIR and SEM analysis.

Keywords: Bio-sorption, Heavy Metals, Spirulina Platensis, Sargassum Ilicifolium.

A STUDY ON THE REMOVAL OF PHENOL FROM SYNTHETIC WASTE WATER USING MARINE ALGAE

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Abstract:

In this research study, the bio sorption potential of a marine algae Sargassum ilicifolium, collected from Oman sea coast, was investigated for the removal of phenol from synthetic solution. Batch adsorption studies were performed and the effects of various experimental parameters such as solution pH, contact time, initial phenol concentration, stirring speed, and temperature were evaluated. Maximum phenol removal was observed at pH 8.0. The optimum conditions for the removal efficiency were 50 mg/L of initial phenol concentration, 3.0 gm of adsorbent dosage, pH value of 8.0 and 90 min of contact time. Under these conditions the maximum removal efficiency was 92.0%. The surface morphological characteristics were

determined using Scanning Electron Microscopy (SEM) and Energy Dispersive X-ray spectroscopy (SEM-EDX). The surface functional groups and bond stretching property of the bio sorbent, Sargassum ilicifolium was characterized using Fourier Transforms Infrared Spectroscopy (FTIR). The FTIR analysis for surface function group of algal biomass revealed the existence of N-H stretch, N-H bend, Aromatic C- C stretch (in-ring) and Aromatic amines C-N stretch identified through their respective frequencies (cm^{-1}).

Keywords: Effluent, immobilization, Layer-by-Layer, Nano particles, photo degradation.

SYNTHESIS AND CHARACTERIZATION OF NANO PHOTO CATALYSTS FOR TEXTILE WASTE WATER TREATMENT APPLICATIONS

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Abstract:

Nano photo catalysts are receiving significant attention due to their extraordinary physical properties, high thermal and chemical stability, low environmental impact, strong oxidation capability, and bountiful potential applications in solar energy systems. Nano photo catalysts are an excellent support material for pollution-control applications. This research work focused on the synthesis of ZnO and TiO$_2$ Nano photo catalysts via sol-gel method. Characterization of the synthesized TiO$_2$ and ZnO Nanoparticles were carried out using Scanning Electron Microscopy (SEM),Energy Dispersive X-ray Analysis, Fourier Transform Infrared Spectroscopy (FTIR), X-ray Diffraction (XRD) and Dynamic Light Scattering (DLS). Results showed that the size of TiO$_2$ Nanoparticles are less than 10 nm and particle size of ZnO nanoparticles are less than 100 nm. These nanoparticles were successfully employed in the batch treatment of textile industry waste water at different processing conditions such as catalyst dosage, solar irradiation time and effluent solution pH. Effectiveness of the photo synthesized photo catalytic nanoparticles in the textile industry effluent was determined by measuring the Chemical Oxygen Demand (COD), Total Organic Carbon (TOC), Total Dissolved Solids (TDS) and Dissolved Oxygen (DO). The findings from the experimental study provide an excellent solution to treat textile mill effluent using environmental friendly ZnO and TiO$_2$ nano photo catalysts.

Keywords: Dynamic light scattering (DLS), Energy dispersive X-ray diffraction (EDX), Fourier transform infrared spectroscopy (FTIR), Nanoparticles, Scanning electron microscopy (SEM), Textile mill effluent.

APPLICATIONS OF SCAFFOLD FREE 3D BIOPRINTING IN CARDIOVASCULAR MEDICINE

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Abstract:

Cardiovascular diseases are one among the leading causes of death in most parts of the world which involves diseases related to heart and blood vessels. The bio fabrication of cardiac and vascular tissues by 3D bio printing aids not only the drug testing efficiency but also addresses lack of donor organs for transplantation. Advancements in the stem cell technology as well as in the bio inks which are used in bio printing have enhanced its applications in cardiovascular medicine. The 3D bio printing usually involves two approaches which are the scaffold dependent and scaffold free bio fabrication. Scaffold free bio fabrication involves the use of cells or cell aggregate without use of solid scaffolds made from polymeric and other related substances such as poly capro lactone. Tissue spheroid based organ bio printing is one among those approaches in which three dimensional organized clusters of cells are placed near each other so that the surface tension causes them to fuse into living material . Because of the higher efficiency, biocompatibility, better intercellular communication and various other reasons scaffold free bio printing is preferred over scaffold dependent bio printing. Instead of a predetermined design, the structures made with this approach have more resemblance to embryological or organoid biology.

Keywords: Cardiovascular diseases, Bio fabrication, Scaffold, 3D Bio printing, Bio ink

NANOSPONGES; A NOVEL EMERGING DRUG DELIVERY SYSTEM

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Abstract:

Targeted drug delivery system is a special form of drug delivery system where the drug is selectively targeted only to its site of action and not to the non-targeted organs, tissues or cells. The developments of new colloidal, porous, tiny mesh like carrier called Nano sponges are such type of effective drug carriers which offers controlled drug delivery at a specific site. Nano sponges are tiny sponges with a size of about a virus, which can be filled with a wide variety of drugs and are able to carry both hydrophilic and hydrophobic drugs. These tiny sponges are such type of targeted drug delivery system, which circulate around the body and get attached with the target site and begin to release the drug in a controlled and predictable manner. This targeted drug delivery prevents the degradation of drug protein, lengthen the drug release in an effective method, and release the drug to the target site. Drugs having low bioavailability are well suited

for targeted delivery system and particle size can change from smaller to bigger by varying the amount of cross linker to the polymer. Depending on the route of administration for targeted drug delivery, they can be originated as oral, topical, parenteral, and inhalational formulations. Nano sponges show a remarkable advantage in drug delivery and various applications include recovering bioavailability of active ingredient molecule, oxygen delivery system, carrier for biocatalysts in the transport and release of enzymes, proteins, vaccines, and antibodies, which make them superior for targeted delivery of drugs. Current review focuses on the characteristic features, preparation methods, evaluation, characterization, and applications of nano sponges in the field of drug delivery.

Keywords: Nano sponges, Targeted drug delivery system, Controlled drug delivery, Polymer

EXTRACTION AND CHARACTERIZATION OF CELLULOSE FROM AGRICULTURAL WASTE MATERIALS

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Abstract:

The development and production of various types of materials from bio-degradable natural resources have acquired special focus due to the increasing concerns about the environment. Agricultural and industrial wastes are produced in huge amount worldwide. In Oman and other countries, these wastes are generally not exploited to be re-used or recycled. Waste materials have become of interest due to the beneficial use of the residual biomass left behind. These wastes tend to have harmful impacts on the environment because they might contain strong fibers that decompose at slow rate under normal environmental conditions. Agricultural waste materials contain cellulose which can be extracted to be used in many important processes including the production of bio-plastic and the production of food. The project conducted to isolate and characterize cellulose from waste residuals. Cellulose has been isolated from waste residuals via alkali pretreatment using NaOH followed by bleaching process, while cellulose was produced via acid hydrolysis method using sulfuric acid. The cellulose produced was characterized with Fourier Transform Inferred Spectroscopy (FTIR) in which it is found the main dominant functional groups are O-H and C-H, Scanning Electron Microscope (SEM) which showed a smooth surface morphology which indicates the removal of wax, lignin & hemicellulose and Energy-dispersive X-ray Spectroscopy (EDX) showed that the cellulose approximately contains of 64.5 wt% of C, 30 wt% of O, 1% S and 1.7% Na. It was concluded that agricultural waste materials were a great renewable source for the production of cellulose in Oman.

Keywords: Cellulose, hydrolysis, washing, extraction, bleaching, isolation

FIXED BED STUDIES ON REMOVAL OF METHYLENE BLUE USING DATE SEEDS OF HALAWAY VARIETY

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Abstract:
The earth is on the edge of reaching its threshold in providing living beings with fresh water so it is important that we treat the waste water and rely on it for fresh water. Unfortunately we take natural resources for granted and focus more on clothing, infrastructure (other wants to be more specific) which results in pollution of water (one of which is caused by dyes) which isn't what we plan for so to make it right, we employ techniques that are profitable as well as effective which again leaves us with the choice of using natural resources, which is the basic idea behind this project were we used date seeds of Halaway variety to treat waste water. It is worth mentioning that at some point in the timeline it doesn't matter if the process is economical as we will be desperate for drinking water. The date seeds taken were characterized with Fourier Transform Inferred Spectroscopy (FTIR) in which it is found the main dominant functional groups are R-O-H and CO_2. Initially batch studies are carried out from which the optimized variables show that the color removal is 80 %.It is observed that the color removal is increasing with increase in bed depth when performed using fixed bed and the removal of dye is good with 1mm particles considering the fact that fine powder imparts color but still the removal is good.

Keywords: Fixed Bed Studies, Halaway date seeds, characterization, functional groups.

EXPERIMENTAL INVESTIGATION ON SOLAR PHOTO-FENTON AS PHOTOCATALYST TO TREAT THE SALINE WATER BY RESPONSE SURFACE METHODOLOGY

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Abstract:
The aim of this study is to investigate to treat saline water by using solar photo Fenton reagent with and without CuO to eliminate the organic pollutants by using solar energy in order to prevent the membrane fouling. However, the experiment executed according to the Two-level factorial design with Response surface methodology (RSM) to determine the TOC, TDS, Salinity and Conductivity removal efficiency under the optimum operational conditions. As the results

shown the maximum removal efficiency were TOC=64.094%, TDS=19.230%, Salinity=21.989% and Conductivity=19.267% respectively. Moreover, increasing in CuO concentration and reaction time, TOC removal increased and time of reaction increases in presence of Fe^{+2} dosage, the TOC removal will also increase. And, the TDS removal efficiency drops by increase the amount of CuO (g/L) and Fe^{+2}(g/L). Experimental results demonstrate that the photo-Fenton process is feasible for the treatment of wastewaters containing hydrocarbons, even in the presence of high concentrations of salt.

Keywords: Photo Fenton, saline water, RSM, TDS, TOC, hydrocarbons

SYNTHESIS, CHARACTERIZATION OF BIODIESEL PRODUCTION FROM RESTAURANT WASTE COOKING OIL

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Abstract:
This study provides a comprehensive overview of the pre-treatment and the usage of waste cooking oil for the production of biodiesel using several methods. The most common process in the production of biodiesel is Transesterification. In addition, this paper highlights the purification and analysis of the produced biodiesel, operating parameters that highly affect the biodiesel yield, and several studies. This experimental investigation suggests that waste cooking oil is a promising feedstock in biodiesel production. Biodiesel is a combustible fuel that is biodegradable and made from vegetable oil or animal fat. It is desirable as an alternative to petroleum fuel because it uses renewable resources that are less damaging to the environment to produce and emit less harmful greenhouse gasses when burned as fuel. Biodiesel fuel can be used in any vehicle with a compression ignition engine that can take regular diesel fuel. The condition for biodiesel synthesis was optimized in terms of reaction temperature (40 Cº), viscosity ($5mm^2$/sec), density (900 kg/m^3), Specific gravity (0.88) and flashpoint (170 Cº). Maximum triglyceride conversion of waste cooking oil was achieved at the near optimum conditions by using transesterification method. These optimum conditions were defined at reaction temperature (40 Cº), viscosity (4.95 mm^2/sec), density (897.2 kg/m^3), Specific gravity (0.86) and flashpoint (150 Cº).

Keywords: Biodiesel Production, Waste Cooking Oil, Transesterification Method, Microwave Method.

GREEN SYNTHESIS OF CARBON QUANTUM DOTS EMBEDDED ONTO TITANIUM DIOXIDE NANORODS FOR ENHANCING PHOTOCATALYTIC ACTIVITY

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Abstract:

The green synthesis of Nano rod photo catalyst composed of carbon quantum dots-titanium hybrid-semiconductors, (100-x) TiO_2+ x CQDs (here x=0, 5, 10, 15 and 20 wt%) were prepared by hydrothermal method. The structural and morphology studies carried out by X-ray powder diffraction (XRD), scanning electron microscopy (SEM) and UV-Vis absorption spectroscopy. The amount of the doping CQDs on TiO_2 photo catalytic degradation of Congo red, bromocresol green and methyl orange was successfully investigated. The results show that the photo catalytic activity of TiO_2 could be improved by the proper amount of doping CQDs. It was observed that 15wt% CQDs doped TiO_2 shows best photo catalytic activity. The effect CQDs doping on TiO_2 increases the energy band gap and the specific surface area and improves the separation of the photo-induced electron–hole pairs in TiO_2 compared to the bulk TiO_2.

Keywords: Green synthesis of carbon quantum dots, TiO_2, CQDs, Photo catalyst

SD-DIVISOR LABELING OF PATH AND CYCLE RELATED GRAPHS

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Abstract:

Let G = (V(G),E(G)) be a simple, finite and undirected graph of order n. Given a bijection f : V(G) → {1,2,...,|V(G)|}, we associate 2 integers S = f(u) + f(v) and D = | f(u) − f(v)| with every edge*uv* in E(G). The labeling f induces on edge labeling f 0 : E(G) → {0,1} such that for any edge uv in E(G), f 0 (uv) = 1 if D | S and f 0 (uv) = 0 if D - S. Let e f 0(i) be the number of edges labeled with i∈ {0,1}. We say f is an SD-divisor labeling if f 0 (uv) = 1 for all uv∈ E(G).

Moreover, G is SD-divisor if it admits an SD-divisor labeling. We say f is an SD-divisor cordial labeling if $|e\,f\,0(0) - e\,f\,0(1)| \leq 1$. Moreover, G is SD-divisor cordial if it admits an SD-divisor cordial labeling. In this paper, we are dealing SD-divisor labeling.

EFFECT OF COBALT DOPING PERCENTAGE ON STRUCTURAL AND OPTICAL PROPERTIES OF ZNO: CO FILMS SYNTHESIZED VIA SOL-GEL METHOD

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Abstract:

In this paper we report the synthesis of Co doped ZnO thin films by a low cost sol-gel dip coating method and the effect of Co dopant concentration on the structural and optical properties of the prepared films. In the structural studies, using XRD measurements, no secondary phases or impurity phases were detected suggests that dopant atoms substitutes for host atoms without altering the crystal structure. The surface morphological studies reveal that morphology of the films was greatly influenced by dopant concentration. The band gap of the films decreases with increase in dopant concentration. The red shift in band gap with increase in dopant concentration is due to the p-d exchange interaction. The PL spectrum of the films shows emission peaks in UV, violet and blue regions. The mechanism behind these PL emission peaks were also explained in detail.

Keywords: Doping, Band gap narrowing, p-d exchange interaction, Blue emission

NUTRITIONAL STATUS AND LIFESTYLE FACTORS AMONG YOUNG ADULTS ENROLLED IN AN ACADEMIC INSTITUTION, COIMBATORE.

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Abstract:

The study was aimed to compare the lifestyle factors and nutritional status among young boys and girls. The ex post facto study comprised of 59 boys and 111 girls and in total (n=170) were included for the study. The anthropometric measurements such as Body Mass Index Waist circumference, Hip circumference were measured and Waist Hip Ratio was calculated. Based on the BMI the respondents were categorized to obese (n=130) and non-obese (n=40). The respondents were 17-25 years of age .Blood pressure was taken in supine position by using

sphygmomanometer under appropriate condition. The food intake of the subjects was collected using 24 hour recall and the level of physical activity was assessed using Rapid Assessment of Physical Activity (RAPA) questionnaire. The data was analyzed using Statistical Package for Social Sciences software and the tools used were Chi-square test, two-sample t-test and binary logistic regression model. The results of the study revealed that among the respondents 25.4% boys & 23.4% girls were non obese and 74.6% boys & 76.6% girls were obese. The systemic blood pressure levels was significantly higher (p=0.000548) in boys compared with girls. The total energy intake (P=0.007) and total fat intake was significantly (P=0.005) higher in boys. The carbohydrate intake was significantly higher (P=0.003) in girls compared with boys (p = 0.772). The study concluded that the importance of physical activity and nutrition in maintaining good health need to address to younger generation by professional bodies is really needed in this hour.

Keywords: Knowledge, Overweight, Obesity, Nutrition, Stress

COMPARITIVE STUDY OF MUNCIPAL SOLID WASTE DEGRADATION USING BACTERIA AND FUNGUS

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Abstract:

Degradation of degradable municipal waste in bulk quantity is one of the main issues for municipality. This degradable waste is converted as manure by classic method such as vermicompost, organic manure consumes more time. In this research work suggests Bacteria and fungus can form a range of physical associations that depend on various modes of molecular communication for their development and functioning. We used bacterial and fungal solution for converting solid waste into manure. In our project, initially waste was collected from Srivilliputhur municipality and waste has been separated according to the particle size. This waste decomposes into manure with the help of bacteria and fungus and to establish the efficiency between them. Among old techniques like vermicomposting, this type of waste culture concentrates more on obtaining manure in short time. Initially, waste was collected and separated using sieve analysis method. The sieve size includes 45 mm, 22.4mm, 13.5 mm and 9.5 mm and 4.65 respectively. Then the wastes are separated as suspended and retained particles accordingly. By solutioning (bio-inoculum solution) the waste on daily manner, we have identified which category tray waste is converted into manure as earlier.

Keywords: Bacteria, fungi, municipal waste, sieving, bio-inoculum, degradation.

STUDY ON KNOWLEDGE AND SKILLS ABOUT NUTRITION CARE PROCESS BEFORE AND AFTER HOSPITAL INTERNSHIP AMONG DIETETIC STUDENTS

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Abstract:

The aim of the study was to compare the knowledge and skills of the dietetic students about Nutrition Care Process before and after internship. The respondents (n=107) selected were dietetic students who had undergone 6 months internship in a hospital setting. Online questionnaire (type form) was disseminated to the respondents. The data was study using the paired sample t-test. The results of the study revealed that the level of knowledge attained on Nutritional assessment after internship (p=0.005) was high, skills obtained on Nutritional diagnosis showed significant difference (p=0.004)after internship, knowledge gained on Nutritional Intervention after the internship was higher (p=0.003) and there was a noticeable variance (p=0.001) in the skills acquired on Monitoring and Evaluation before and after internship. The study concluded that clinical judgment of the respondents were higher in post internship than in pre-internship and the nutrition care planning skills acquired during internship along with clinical exposure helped the students to enhance their skills.

Keywords: Nutrition Care Process, Nutritional Assessment, Nutritional Intervention, Monitoring and   Evaluation, Skills and Knowledge.

SOLAR CELLS: A PATHWAY THROUGH SOLAR ENERGY NANOMATERIAL'S

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Abstract:

Photo voltaic devices generate electricity directly from sun light via an electronic process that occurs in semiconductor. Multiple thin film layers are contained by thin film solar cells. The thickness of thin film layers are very less. Thin film cell functioning and structure is similar to that of normal silicon wafer cells. Semiconductor is considered as the photovoltaic cell's basic component. When semiconductor is doped with phosphorus it results in generation of free electrons in large amount while doping with indium, gallium or boron results in development of vacancy which is known as hole. Photo voltaic cell is formed with the combination of p type and

n type materials. In the absence of light, only few atoms get excited and moves across the junction. Due to this, across the junction there exists a small voltage drop. Whereas in presence of light, more atom get excited and moves across junction which result in large current at the output. Furthermore, a rechargeable battery is used to store this current and depending on the needs, it can be utilized for various applications. This chapter focus on the fabrication and structure of different types of solar cell. Challenges and future scope of various solar cells are also discussed.

VAGUE STRONG IMPLICATIVE FILTERS OF LATTICE WAJSBERG ALGEBRAS

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Abstract:
In this paper, we introduce the notation of a vague strong implicative filter of lattice wajsberg algebra. Also, we investigate some of its properties with illustrations. Further, we obtain the relation between vague implicative filter and anti-vague strong implicative filter In lattice wajssberg algebra. Finally, we establish the equivalent condition of a vague strong implicative filter.

Keywords: wajsberg algebra, Lattice wajsberg algebra, Implicative filter, strong Implicative filter, vague Implicative strong filter, vague strong implicative filter, vague implicative filter, vague strong implicative filter.

CONSUMER PREFERENCE, KNOWLEDGE AND PERCEPTION TOWARDS EDIBLE OIL AMONG SOUTHERN REGIONS OF INDIA.

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Abstract:
The importance of edible oil in daily diet is well recognized as a better source of energy as compared to carbohydrates and proteins and as a result it became a part of regular food. India is one of the major producers of oilseeds in the world. The aim of the study was to ascertain the consumer's knowledge, perception and preference of edible oil. The cross sectional study was conducted among 321 subjects using convenient random sampling method across southern

region of India. Pre-tested semi structured questionnaire was administered by online survey method to assess the socio demographic profile and the consumer's knowledge, perception and preference towards edible oil. The results showed that the majority of the respondents (170) preferred sunflower oil for cooking followed by coconut oil (57), blend of oil (49) and others (45).The study concluded that majority of the consumers' preferred sunflower oil for cooking irrespective of gender. It was observed that there is a significant positive relation between knowledge and perception (r=0.01) and there is a weak positive relation between perception with preference and preference with knowledge. It was noticed that that there is a significant difference between preference and knowledge based on respondents location (p<0.05). The results indicated that there is a significant difference between in preference and knowledge based on occupation. (p<0.05).

Keywords: Consumers, Knowledge, Perception, Preference, Edible oil

HALL EFFECTS ON MHD CONVECTIVE FLOW THROUGH POROUS MEDIUM PAST AN INFINITE VERTICAL PLATE WITH SORET EFFECT AND DISSIPATION

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Abstract:

We have studied the combined effects of MHD mixed convective two dimensional flows of an incompressible and electrically conducting viscous fluid through porous medium past an infinite vertical plate taking Soret, Joules dissipations and Hall effects into account. The non-dimensional equations are then solved analytically using perturbation technique. With the help of graphs, the effects of the various non-dimensional parameters on velocity, temperature and concentration distributions within the boundary layer are examined. Also the effects of the pertinent parameters on the skin-friction coefficient and rates of heat and mass transfer in terms of the Nusselt and Sherwood numbers are computationally discussed.

Keywords : Hall effects, Heat source; Soret number; Porous medium; Joules dissipation; MHD; Chemical reaction

AN OPTIMAL ORDERING POLICY FOR DETERIORATING ITEMS WITH INITIAL INSPECTION AND HAVING RAMP TYPE DEMAND RATE UNDER PERMISSIBLE DELAY IN PAYMENTS

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Abstract:

This paper aims to formulate an optimal policy regarding replenishment of inventory models which deteriorate as ramp type demand function and an inspection is made at the time of fulfillment of inventory. Further delayed payments are allowed. The delayed payments help the stockist to make better profits by earning interest on the credit amount for the permissible delayed time. It also encourages the shopkeeper or stockist to reduce losses. These illustrations are explained with the help of numerical examples to keep large inventories. The impact of delayed payments and inspection helps the shopkeeper or stockist to minimize his losses.

Keywords: Inspection, Backlogging, Permissible delay in payments, Ramp type demand function.

INVERSE [1, 2] - DOMINATION IN GRAPHS

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Abstract:

A vertex subset S of a Graph G = {V, E} is an inverse [1, 2] - dominating set if, $1 \leq |N(v) \cap S'| \leq 2$, for every vertex $v \in V - S'$ (i. e) each vertex $v \in V - S'$ is adjacent to at least 1 or 2 vertices in S'. In other way, the distance between any two vertices in V - S' is either 1 or 2 for any vertex set in S'. The lowest cardinality of an inverse [1, 2]-dominating set of graph G is called an inverse [1, 2]-domination number of G and is denoted by $\gamma'[1, 2](G)$. In this paper, we extract the perfect values of $\gamma'[1, 2](G)$ for few standard graphs and additionally, we use the general results to illustrate the interrelation between $\gamma'[1, 2](G)$ and other criterions.

Keywords: Graph, [1, 2] – Domination number, Inverse [1, 2] – Domination number.

DOCKING ANALYSIS ON PIOGLITAZONE ANALOGUES AND THEIR BINDING AFFINITY AS ANTIDIABETICS

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Abstract:

The challenges of twenty-first century for the pharmaceutical industry are to deliver new and safe medicines within short span of time. A novel drug discovery is a complex and expensive process with decades of venture. With present technologies and inventions, the task has been swift and effective in the recent years. Computer simulations give the dynamic picture of the reactions along with the potential drug molecule. Quantitative Structure Activity Relationship (QSAR) model and docking techniques ease the identification potential drug molecules. The present work aims at molecular docking studies on derivatives of 4-[2-(5-Ethylpyridin-2-yl)ethoxy]benzaldehyde, which is one of the key intermediates to pioglitazone. All these derivatives possess various biological activities such as antibacterial, antitumor, antifungal etc., Molecular docking studies on the reported phenoxy ethyl pyridine substituents, resulted the authors to design similar novel moieties with promising biological prominence as anti-diabetics.

Keywords: Ant diabetic, Auto Dock, Computer Simulation, Drug Design, Molecular Docking.

GLOBAL ACCURATE [1, 2] – DOMINATION IN GRAPHS

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Abstract:

A [1, 2] – dominating set S of a graph G = {V, E} is an accurate [1, 2] – dominating set, if V – S has no dominating set of cardinality |S|. An accurate [1, 2] – dominating set S of graph G is a global accurate [1, 2] – dominating set, if S is also an accurate dominating set of $\bar{G}$. The minimum cardinality of a global accurate [1, 2] – dominating set is called the global accurate [1, 2] – domination number and is denoted by [1, 2] (G). In this paper, we study some bounds for [1,2](G) are obtained and exact values of $\gamma ga[1,2](G)$ for some standard graphs are found.

Keywords: graph, accurate domination number, global accurate domination number

PREPARATION OF COPPER SULPHIDE NANOPARTICLES AND ITS CHARACTERIZATION USING X-RAY DIFFRACTION (XRD) AND UV VISIBLE ABSORPTION SPECTROSCOPY

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Abstract:

Copper sulphide can be called a multifunctional material due to its unique physical and chemical properties. The main objective of this paper is the preparation of copper sulphide nanoparticles using wet chemical route method. The CuS nanoparticles are synthesized using $CuCl_2.2H_2O$ and Thiourea in presence of water solvent. We have used TEA (Tri ethylamine) as capping agent and NH_4OH to balance the ph to 10.0. The next part of this paper deals with characterization of the prepared copper sulphide using X-Ray Diffraction and UV visible absorption spectroscopy.

IMPACT OF SINGLE USE PLASTIC ON THE ENVIRONMENT DUE TO COVID-19 PANDEMIC

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Abstract:

COVID -19 pandemic is one of the worst situations started in the world since December 2019 and it starts the journey from China and still it continues the effect on the world. To face the COVID -19, most of the countries and local bodies announced various guidelines like Lockdown, Social distancing, Quarantine, wearing masks, frequent usage of hand sanitizer etc. As per the regulations of World Health Organization (WHO), countries started self-protecting materials like wearing masks, personal protection equipment (PPE) kits, gloves, face shields to frontline warriors like doctors, hospital staff, municipal and sanitization workers. In this connection, majority of the self-protecting materials are made by single use plastics with nonwoven coated. So, in this article, I am discussing how single use plastic affects the world due to COVID -19 pandemic.

Keywords: Covid-19, facemasks, polypropylene, sanitizers, single use plastics.

FUZZY DRUG ADDICTION AND ABUSE GROWTH MODEL

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Abstract:

The drug addiction and abuse is one of the biggest problem in the world. The worldwide problem of drug addiction and abuse is responsible for millions of death cases. This paper presents a drug addiction and abuse growth model where transmission and recovery rates are considered as fuzzy parameters. We parted the transmission and recovery rates into three types based on age: Children, youngsters and senior. In this paper we have used SIR mathematical model to analyse the stability of system of non-linear differential equation and concluded by obtaining the fuzzy basic reproduction number.

Keywords: Fuzzy expected value, basic reproduction number, fuzzy basic reproduction number.

PHYTOREMEDIATION POTENTIAL OF BIOADSORBENT (WATER HYACINTH) AGAINST DYE INDUSTEY EFFLUENT

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Abstract:

Water hyacinth was obtained from Tirunelveli pond and it was used to remove dye from effluent water. Water hyacinth plant remove the rhodamine dye which was present in the dye water and the quality of treated of purified water was analyzed by APHA method. The present study clearly indicates that the purified water was more suitable for culturing of both plant (pennisetum glaucum) and fish (oreochromisniloticus) by analyzing the survival and the growth rate. Water hyacinth showed better antimicrobial activity against selected pathogens such as Pseudomonas. coli, Micrococcus, Proteus vulgaris, Bacillus subtilis; Micrococcus luteus; Escherichia coli. The present study also showed that the test plant (mung bean seeds) was grown well due to the nutrients which are present in the Compost made from water hyacinth than the Control. Protein profile of plant (pennisetum glaucum) and animal (Oreochromis niloticus) grown in this study indicates that there was a similar fraction was observed in test and control. In this present study water hyacinth used as Bio adsorbent, best antimicrobial agent, and Natural manure.

Keywords: Bio adsorbent, Bacillus subtilis, Compost, Oreochromis niloticus, Water hyacinth

A NOVEL AUTHENTICATED SYMMETRIC KEY SHARING AND ENERGY EFFICIENT APPROACH FOR MANETS

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Abstract:
MANET is a temporary network without any existing infrastructure. In this paper, a novel key management scheme is presented that emphasizes the secure and efficient key updates by using a node Authenticated Symmetric Key Sharing approach. Furthermore, this scheme makes use of a combination of both symmetric and digital signature to protect other aspects of key management, such as data confidentiality, key distribution, etc. Routing is the basic challenge and as a development unobservability emerges from it. Also energy is one of the major factor driving the routing process of MANETs. In the proposed Residual energy based secured anonymous unobservable efficient routing Scheme, which increases the life of communication between the transmitter and receiver selects the nodes in a network with high battery energy and with low transmission and receiving cost such that the source and destination can interact for a long period of time. The Energy efficient scheme and the key sharing scheme starts from the Route Request Scheme itself. Here the Routing packet is assigned in such a way that communication link is established in minimum time. The experimental results show that the proposed work performs better than the existing work.

Keywords: Anonymity, Unobservability, Key sharing, Energy Efficient

SUICIDAL IDEATION (TEXT ANALYSIS OF TWITTER DATA)

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Abstract:
This paper is based on finding suicidal ideation related posts from twitter and to compare few machine learning models to analyze which would be more accurate based on the dataset. By finding negative posts doesn't necessarily mean we have found a person on the verge of depression which leads to suicidal ideation. By finding negative posts from twitter we can cut short the factors which leads other people who is in depression and relate the posts to their lives and get more depressed. This model of finding and analyzing the twitter posts can be perfected in many ways and the implementations are based on the twitter dataset that already exists. There are two implementation one generally creating a model to find negative, neutral and positive posts and the other is comparison of machine learning models and to get the accuracy from them.

Keywords: Classifiers, LSTM, Machine learning models, NLTK, Suicidal ideation.

HYBRID FOOD REVIEW SYSTEM USING SENTIMENT ANALYSIS

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Abstract:
In this paper, we are going to create a hybrid food review system using sentiment analysis. The food reviews are taken and using the sentiment analysis techniques, we will create the hybrid model of the food reviews with various inputs from the user and train the hybrid model with user's food review data. When the input is given to the model, the analysis is done with natural language processing and classification algorithms of machine learning.

Keywords: Classification Algorithms, Hybrid model, Machine Learning, Natural Language Processing (NLP), Sentiment Analysis

PERFORMANCE ANALYSIS OF LIQUID DESICCANT COOLING SYSTEM

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Abstract:
The per capita energy consumption is increasing rapidly due to increase in the living standard of human life. Approximately 47% of total energy is consumed by human in providing comfort of human. Approximately 40% to 60% of relative humidity and 23 to 33°C dry bulb temperature is considered ideal for human comfort. The vapour compression (VC) based air conditioning (AC) system consume more energy in form of latent load and sensible load. in Indian climatic condition 37 % of total load on VC AC are latent load. This load is totally reduced by using liquid desiccant material. In this experimental work, performance of hydride liquid desiccant material at different input and output variable like temperature of air, relative humidity of air and air inlet velocity etc. has been evaluated. Lager the time of contact between humid air and liquid desiccant surface will adsorb more water vapour on the surface of desiccant. It has been observed that when the velocity of air is 3.8 to 3.64, the performance of liquid desiccant is more compared to other velocity. When the regeneration temperature is 58°C the variation in relative humidity is minimum so this regeneration temperature good for liquid desiccant system.

Keywords: Liquid Desiccant, Regeneration, Relative Humidity, Cooling System

REVIEW ON DISEASE DETECTION OF PLANTS USING IMAGE PROCESSING AND MACHINE LEARNING TECHNIQUES

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Abstract:
Agriculture is essential for everyone to promote sustainable development, the farming that combines image processing, artificial intelligence, Deep learning, and Internet of Things (IOT). World population incensing every day. Due to the rising demand in the Agriculture industry, the need to collectively improve a plants and growth its field is very useful. In this paper, it is important to maintain the crop during its initial time, and also at period of harvesting. The image processing and artificial networks are used as a different techniques to maintain the detecting the diseases on the leaves and correct time to harvesting. When we take images with help of drones, the images are divided and changed to disease described three things vectors namely the first one is color, one more is texture and morphology. The vectors morphology gives 95% accuracy and its give more compare to other two vector features. This research paper proposed effective and useful algorithms for detection of disease with help implementation of Artificial Neural network algorithms using MATLAB. Detection of leaf or plant diseases with some manual techniques are requires a lot of work by maintaining a huge farm of crops, and it's very early stages it detects different types of symptoms to different diseases on plants, when the displayed on crop leaves. In this research paper survey on various disease classification techniques that can be for plant leaves diseases detection. For this purpose Artificial Intelligence, Neural network algorithms and back propagation techniques for adjustment of training data sets.

Keywords: Image Processing, Artificial Intelligence, Deep learning, Internet of Things (IOT) and Machine Learning

SURVEY ON VARIOUS LOAD BALANCING ALGORITHMS IN CLOUD COMPUTING

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Abstract:
In today's world Cloud computing is perhaps the most utilized technology. Distributed computing offers web administrations, information stockpiling and computing assets over the web effortlessly. Cloud computing permits clients to get to the IT assets anyplace and whenever on a compensation for every utilization premise. As the interest for distributed computing develops quickly, the traffic additionally increases. There are two answers for this issue, one is to upgrade a single server to a high-performance server but upgraded server may also overload soon and second is multi server (gathering of workers). Multi server arrangement is adaptable

and practical. While making a group of servers, the issue is Load adjusting. Load balancing is one of the critical issues in cloud computing. Load balancing is an interaction of parting the unique responsibility and dispersing the responsibility among every one of the hubs with the end goal that no hub in the cloud climate is overloaded/under loaded or inactive. Load balancing in Cloud computing is utilized to improve the proficiency and utilizing resources effectively. This journal paper objective is on investigation on cloud load balancing, Load balancing methods, Load balancing algorithms.

Keywords: Cloud computing, Load balancing, Load balancing algorithms.

SECURE DEEP LEARNING MODEL FOR DISEASE PREDICTION AND DIAGNOSIS SYSTEM IN CLOUD BASED IOT

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Abstract:
In the past few decades, IoT (Internet of Things) based m-healthcare applications are arising to provide real time services in the fast world. These applications save people's lives by getting regular updates about health conditions of them for their easy lifestyle. Cloud based health care framework are provide better outcomes when compared to conventional methodologies. Nowadays Incorporating IoT devices in clinical environments plays major role in handling huge volume of medical data. Researchers thus sought to automate the process of detecting and diagnosis diseases using could computing technology. Accordingly, number of explores has been proposed an infection forecast and analysis framework in cloud based IoT utilizing distinctive secure ML (Machine Learning) calculations. This paper reviews the existing heart disease classification research frameworks with its pros and cons. Here, totally twenty-five papers are analyzed. In addition, this study gives an elaborate idea about disease prediction and diagnosis system.

Keywords: Heart disease, Internet of Things (IoT), machine learning, could computing.

A REVIEW ON DETECTION OF PROSTATE CANCER USING DEEP LEARNINGTECHNIQUES

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Abstract:
These days the utilization of image processing for clinical imaging is expanding immensely and the most well-known clinical pictures, for example, Ultrasound, computerized mammography, X-beam, CT and MRI are that are kept and preserved as softcopy. Magnetic Resonance Imaging (MRI) helps in acquiring an underlying picture of interior pieces of the body and can give

diverse gray levels for various tissues and different sorts of neuropathology and its investigation includes: Data acquiring, preparing, visualization stages. Image segmentation and characterization of restorative pictures assume fundamental part in determination and examination of the anatomical design of human body. The manual segmentation goes through a great deal of energy and time to get the exact area of the tumor even by a specialist doctor. For the most part the medical images contain noise so predicting the behavior is difficult, in-homogeneities, and complex constructions.Prostate malignant growth identification is perhaps the most troublesome and significant interaction for clinical determination. The techniques targets fostering a programmed automatic supportive system for stage classification utilizing Deep Learning and to recognize prostate malignancy.In MRI imaging, the pictures might be clear yet the clinicians need to evaluate the size and area of the tumors for additional treatment arranging. Quantitative examination of numerous neurological illnesses relies upon computerized and exact segmentation and classification of features. These days, the DL based classification of images and segmentation strategies have acquired interest of exploration as a result of their self-learning capacities over tremendous measures of dataset.

Keywords: Deep Learning, Convolution Neural Networks, Prostate Cancer.

IMPLEMENTING CYBER SECURITY POLICY FOR BIG DATA SYSTEM

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Abstract:
Industries realize the benefits of Big Data as information is crucial to their normal work, but new problems exist as a result of previous techniques. These issues are associated not only to the 3Vs of Deep Learning, but to control and confidentiality, as is the case regarding Information Technology. Protection becomes essential in Massive Datasets, but alas, privacy concerns happen as Big Data is not planned without good security. Even so, leading to the varied settings that a Big Data contains, this function is hard. It's really important and provides a central database. A broad view becomes a way to fix the problem, as well as a Reference Architecture (RA) is a greater abstract of a structure which can be useful in the execution of various systems throughout this context. Numerous efforts, including those from IBM, ORACLE, NIST, and ISO, are being implemented that acquire a RA for Data Analytics, and neither of them will have a specific data security. It really is generally agreed that significant parameters to fix a problem is a smart option. accusations and make life simpler to establish safety needs RA is a good starting point while interacting with some of these kinds of attacks, but RAs could then be turned through Security Reference Architectures throughout this direction. SRAs are brief leasing contracts. A SRA with Cloud Computing is specified in the present article used Object model models also trying to make Data Analysis implementations further safe. Facilitating that analysis for cyber security in needed to shield the actual Deep Learning Information management.

Keywords: Cyber security, Deep learning.

A SURVEY ON RECOGNITION AND CLASSIFICATION OF PADDY LEAF DISEASES USING IMAGE PROCESSING AND MACHINE LEARNING TECHNIQUES

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Abstract:
From the past few years spreading of the pests and diseases in plants have been increasing significantly. Paddy plants are the most important crop used in our country for the food, so it is most necessary to detect any disease of them within a short period of time for ensuring a proper and healthy growth of paddy plants. The process of manual disease detection requires labor and a large amount of time. Then utilizing the leaf images of plants for recognizing and classifying of diseases is the more focused research topic in the agriculture field. A survey on recognition and classification of paddy leaf diseases using image processing and machine learning techniques is presented in this paper based on the disease infected leaf images of paddy plants. Firstly the concept of various plant diseases and the standard process of plant disease detection are discussed in this paper. A study and survey on the totally 5 papers of work is carried out in detail by covering a work on leaf diseases of the paddy plants based on the certain criteria. Such criteria are different preprocessing techniques, various diseases/ classes, different segmentation methods, various classifiers and accuracy of employed techniques. The experimental results of these various techniques are compared and evaluated to design a best on detecting and classifying of paddy plant leaf diseases.

Keywords: Leaf disease detection, recognition, image processing, machine learning techniques and classification.

BIG DATA ANALYSIS OF TRADITIONAL INDIAN AYURVEDA MEDICINE AND TREATMENT PROCESS

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Abstract:
Prakriti (Human Body constitution) clearly defines harmony with human nature and cause for moving out of balance and experience disease. Basically, there are 3 energies called VATT, PITT, and KAPH which decides body function on physical and emotional levels. These 3 energies known as Tridosha. Few people may predominant in one or mixture of 2 or more. For the long time, Ayurveda Dosha have been utilized. However, these diagnostic methods actually lingers behind in quantitative unawaring quality estimations. A cautious and proper examination

prompts a powerful treatment. This work review academic journal and conference papers which adopted Machine Learning (ML) techniques in Ayurveda based disease classification and diagnosis using public medical datasets published in recent years. The aftereffects of this review showed that the use of ML procedures in illness order has encountered an intense rise in recent years. The finding of this paper additionally uncovered that there was negligible spotlight on creating strategies utilizing steady form of ML procedures. We trust that this examination will give valuable data about different ML strategies, their application in illness conclusion, and especially help specialists for creating medical decision support networks with experiences into the best in class of improvement techniques.

Keywords: Ayurveda, KAPH, VATT, PITT, Machine Learning.

INTERNET SECURITY PROTOCOL FOR SECURE DATA TRANSMISSION USING OSPF AND BGP

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Abstract:
Internet Protocol Security (IPsec) is a secure network protocol suite that authenticates and encrypts data packets to offer safe encrypted communication between two computers over an IP network. It's a protocol that's utilized in virtual private networks. In this proposed work, we are providing secure path for better packet transmission between transmitter and receiver. For safe and secure data transmission, we are developing two routing algorithms namely Open Shortest Path First and Border Gateway Protocol which are designed for packaging along with switch routing. This embedded algorithm of both OSPF and BGP protocols enhances Internet Protocol security for secure data transmission in networking domain.

Keywords: Internet Protocol Security, OSPF algorithm, BGP, topology configuration, data transmission, IP address.

SMART HOME AUTOMATION USING RASPBERRY PI 4

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Abstract:
Automation has gained its significance in today's fast-paced environment. Construction automation, manufacturing automation, interiors in home automation, artificial intelligence, etc are some of the examples. Usage and monitoring of interior household appliances manually or automatically is known as home automation. Slowly but steadily the interface between machines or computers has narrowed significantly. Hand gesture-based home automation is becoming increasingly prevalent in today's world. Gesture recognition is the process of identifying individual body parts such as the hand and ears. Bulks of electronic components are

manufactured based on this gesture. The primary goal of home automation is to manage our daily interior equipment, such as lights and thermostats effectively with minimal power/energy consumption. It's not only about lights, but also about other interior equipment like DC motors, fans, and other devices. The internet of things-based home automation aims to control all of the gadgets we use in our everyday lives at home. In this, research work is carried for automation of home gadgets with a Raspberry Pi by using a smartphone app and a relay to monitor interior gadgets from afar.

Keywords*:* Smart Home, Automation, Raspberry PI, IOT, Internet of Things, Gesture recognition, MQTT protocol.

RESNET-50 BASED DEEP NEURAL NETWORK USING TRANSFER LEARNING FOR BRAIN TUMOR CLASSIFICATION

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Abstract:

Brain tumour is one of the most complicated diseases to treat in modern medicine. In the early stages of tumour development, the radiologist's primary concern is often an accurate and efficient study. Deep Learning has become a great tool for doctors and scientists to act decisively and on time with tumor patients. A training model that has accomplish considerable result in image detection and classification is the Deep Residual Network (ResNet) utilizing CNNs. The advancement of deep learning will assist radiologists in tumor diagnostics without the use of harmful procedures. With better understanding of MRI images, as well as increase in training speeds and accuracy, deep learning can open new doors for the medical research community. In this model, an accuracy of 95.3% is achieved across various classes of brain tumor datasets. We study the outcomes of multi class classification of brain tumour using Transfer Learning utilising pre-trained ResNet50 model using CNN architecture in this paper.

PIPELINE RECOGNITION IN SIDE SCAN SONAR IMAGE USING ADAPTIVE NETWORK BASED FUZZY INFERENCE SYSTEM (ANFIS) CLASSIFIER

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Abstraet:

In applications of Autonomous Underwater Vehicle Navigation the automatic detection of underwater objects in sonar images is the most important part. A process of analyzing multi-beam sonar images for localization and underwater object detection is a new framework presented in this research. The main idea of the project is based on Pipeline Detection.

Morphological filtration method is used for the more efficient form of Denoising and segmentation of the image. Image quality assessment features and image quality enhancement features such as GMSD, PSNR, SSIM, MSE, along with Bicubic interpolation and super resolution is also implemented for better image classification. The image is been pre-processed with filtration technique but also with image segmentation process such as Fuzzy-C means segmentation and further been sent to Adaptive Neuro Fuzzy Interference System (ANFIS) classification which has good generalisation ability to accurately spot pipeline. The proposed framework which can figure out the position accurately and detect objects is been experimented by exploiting the image processing technique.

Keywords: Side Scan SONAR, Image classification, ANFIS, Fuzzy C-Means, Pipeline detection, Morphological filtration, Super Resolution, Bicubic Interpolation**.**

SMURF ATTACK USING HYBRID MACHINE LEARNING TECHNIQUE

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Abstract:
Several techniques have been constructed to make the network environment and also better communication very safe and secure in cyber security domain. Intrusion detection system tool plays very important role in finding malevolent aligned with cyber security systems. Also, finding one of the kinds of Denial of Service attack which is Smurf attack is a major protection challenges facing in network equipment. Smurf attack is a kind of Denial of Service attack or malicious which should be find out for keeping the information (data) very safe and secure in Cyber security. So, in this paper we introduced machine learning hybrid algorithm in which Nearest Centroid Algorithm attains least prediction time as 0.01% and accuracy measure as 99.6% in detection of the network attacks mainly detecting Smurf attack for preventing the information very secure.

Keywords: Intrusion Detection System (IDS), Smurf attack, Denial of Service (DoS) attack and hybrid algorithm.

STUDY OF CLOUD SENSOR NETWORK WITH RELIABLE INFRASTRUCTURE AND ARCHITECTURE

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Abstract:
Numerous associations wanted to work their organizations, works and administrations in an extremely portable (for example with perfect timing and anyplace), dynamic, and information situated style. Exercises like e-learning, natural learning, distant assessment, medical services, home security and wellbeing components and so on needs an uncommon foundation which may offer persistent, got, solid and versatile information with right data/information the board

situation in setting to their restricted climate and its clients. An uncertain assortment of finder networks for different medical services applications has been planned and implemented anyway every one of them lacking extensibility, adaptation to non-critical failure, portability, steadfastness and transparency. Consequently, in this paper an open, adaptable and re-arrange able foundation is anticipated medical services recognition applications, here the sensors utilized as virtual sensors on distributed computing organization. In this paper we will in general audit a few ways to deal with rush the assistance manifestations in field of medical services and various applications with Cloud-Sensor plan. This plan offers types of assistance to complete clients while not stressing in regards to its execution subtleties. The plan allows the help requesters to utilize the virtual sensors without anyone else or they will create diverse new administrations by expanding virtual sensors.

Keywords: Information Technology Resources, Wireless Networks, Sensor Networks, Cloud Computing, Parser and Virtualization.

ANALYSIS AND DESIGN OF G+20 RESIDENTIAL BUILDING USING ETABS

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Abstract:
Structural analysis is the branch which deals with the various components of the structure (beam, column etc.) and its corresponding responses. Various combinations defined and its correspondence story response plot has been generated for the analysis. Etabs (Extended Three-Dimensional Analysis of Building System) is software which suited perfectly for this purpose as it incorporates designing method (LSM) as per standard codes of different country. Also various analysis for seismic load such as linear static analysis, Response spectrum analysis etc. can be performed very easily and conveniently as compared to other software especially for RCC building. In this project we have made an attempt to design and analyze G+20 residential building. AutoCAD has been used for drawing architectural plan and column layout plan. Etabs has been used for the designing and analysis purpose. Location of our structure (Zone IV), defining various structural components (size of beam, column, shear wall etc.), load assignment (dead, live etc.) and corresponding load combination has been determined. Further wind analysis has been done as per IS code and later on Seismic analysis has also been performed as per IS codes. Linear static and Linear dynamic analysis has been used as per IS 1893 2002. Final load combination generated and using this final analysis has been made such Bending moment, shear force, axial force graphs obtained for various load combination and most critical one identified finally. After this various story response plot generated from the Etabs such as response plot of displacement, drift, shear further analysis has been made to identify the maximum one. Once analysis has been over then final design has been made using the Etabs.

Keywords: Structural analysis, Etabs.

3D MODELLING AND VISUALIZATION OF BUILDINGS USING PHOTOGRAMMETRY

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Abstract:

Buildings consume a large amount of energy and environmental resources. At the same time, current particles for whole building energy stimulation are costly and require skilled labor. Photogrammetry comprises techniques concerned with making measurements of real-world objects and terrain features from images. The application includes the measuring of coordinates, quantification of distances, heights, areas, and volumes, 3D topographic mapping, the extraction of 3D point clouds for surface reconstructions, and the generation of digital elevation models and ortho photographs. Photogrammetry continues to play an ever-increasing role in the world of mapping sciences. Its present needs and future trends are analyzed. Various conceptual models are discussed. The associated areas of sciences and technology and their roles in the wide academic structure are indicated. A pattern of courses and their arrangement is suggested because of the current need in the world and of the changing technological developments.

Keywords: 3D Photogrammetry, Building, Digital Elevation Models.

WASTE AMOUNT SURVEY AND PHYSICO-CHEMICAL ANALYSIS OF MUNICIPAL SOLID WASTE GENERATED IN VARANASI CITY, INDIA

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Abstract:
Modernization and progress have had its share of disadvantages and one of the main aspects of concern is the pollution it is causing to the earth. With increase in the global population and the rising demand for food and other essentials, there has been a rise in the amount of waste being generated daily by each household. Management of these huge quantities of municipal solid waste has become a serious concern for government departments, environmental protection agencies etc. In this study we attempt to document the waste generation rates, composition and physio-chemical characteristics of the municipal solid waste produced in the Varanasi City. We carried out waste amount and characterization survey (WACS) to obtain data of waste amount and composition of municipal solid waste generated in the city of Varanasi. Study was broadly focused into commercial and domestic source of waste generation. Our study went for 10 days and we collected various waste samples of different days. Further various physical and chemical analysis were carried out to determine C:N ratio, Moisture content, Ash and combustible components, etc. Average waste generated is highest from higher income household i.e, 0.55kg/cap/day followed by lower income 0.45kg/cap/day and then middle-income household

0.39kg/c/d. We found that most of organic or wet waste are generated from middle- and low-income households. Recyclable products found to be (12% - 15%) of total waste generated.

Keywords: MSW, Waste Survey, Physicochemical Analysis.

OPTICAL CHARACTER RECOGNITION USING LOCALIZATION TECHNIQUES

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Abstract:
Automatic optical character recognition (ALPR) is an analytical methodology to extract vehicle optical character information from an image. Identification and recognition of images are carried out with the help of recorded images. First the acknowledgment framework begins with character recognizable proof dependent on number plate extraction, Splitting characters and layout coordinating. As far as number plate division and character acknowledgment, the proposed model has low intricacy and is less tedious. This improves the framework execution and makes the framework more effective by taking important examples. Simultaneously their benefits and burdens were analyzed, which give the premise to optical character acknowledgment. Essentially, for the distinguishing proof of the optical character, character redesign and before that confining the space of the optical character is thought of. By using this process the number plate of the vehicle can be identified. These are used for the identification of the vehicle when the vehicle was theft or missed in an unexpected scenario.

Keywords: Character recognition, Region of interest (ROI), Morphological filters

TEXT CLASSIFICATION USING NLP BASED MACHINE LEARNING APPROACH

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Abstract:

"Online learning is not the next big thing; it is the new big thing." "eLearning is changing. And we will see new models, new technologies, and designs emerge. So, let us drop the "e" – or at least give it a new and wider definition." These quotes influenced us to build this paper. During this unprecedented time, we all are using online resources. Our paper will enhance the teaching experience of the students. Especially school-going kids, it is the duty of teacher, influencer, and faculty to enhance the teaching experience so that, one can learn at their ease without any hustle. Our paper aims at building a website and android application (in the coming days) which will

identify the individual words of any sentences entered. It will parse the string entered, remove the unwanted characters, and pass the remaining string to our AI model. As a result, the AI model will return the parts of speech the individual word belongs to. We have always seen students struggling to find that a given word is either a noun, or an adverb, or a preposition, and so on. We have searched the web but could not find any relevant websites doing the same task. There is a gigantic search engine on which we can search individual words but again, for sentences, people struggle. This may sound very simple for AI/ML enthusiasts but building a model and deploying that on a website and android application is not a cup of tea. Tech giants like Google, Facebook, and Microsoft are building different AI models and deploying them successfully on various platforms like Website, Android Application, iOS. However, we have done it successfully.

Keywords: Text Classification, NLP, Machine Learning, Chunking, POS

CLUSTER BASED DRONE CONTROL SYSTEM

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 Abstract:
Internet of Drones (IoD) networks utilize haze hubs to give registering assets to the postponement delicate undertakings offloaded from drones. In IoD organizations, drones are dispatched to finish an excursion where a few areas of interest are visited. At every area, a robot gathers the ground data, produces figuring undertakings and offloads them to the mist hubs for preparing. In our work, we think about both the errand portion (which appropriates undertakings to various mist hubs) and the flying control (which changes the robot's flying pace) to limit the robot's excursion finish time compelled by the robot's battery limit and assignment fulfillment cutoff times. We detail this joint advancement issue as a blended whole number non-direct programming (MINLP) issue. Regarding the viable situation that the future assignment data is hard to acquire, we plan an online calculation to give techniques to task designation and flying control when the robot visits every area without knowing what's to come. To improve the energy utilization the both haze hubs and robot we further propose a helpful hub based correspondence. Rather than visiting every one of the hubs the robot can speak with a pioneer hub around there. The pioneer hub is chosen utilizing boundaries like energy of the hubs, distance with the robot and so forth Every one of the hubs in a space can dump their information to ramble through the pioneer hub. The Leader hub is likewise powerfully fluctuated as the energy of the pioneer is drained quicker than different hubs. The exhibitions of our proposed online calculation are shown through broad reenactments.

Keywords: Internet of Things (IoT), internet of drones (IoD), unmanned aerial vehicles (UAV), fog computing, task allocation, flying control, energy consumption, quality of service (QoS).

DETECTION AND SENSING OF COGNITIVE RADIO SPECTRUM USING MINIMUM EIGEN VALUE AND TW DISTRIBUTION METHOD

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Abstract:

Cognitive radio technology are highly shows the non-reliance property to signal to noise ratio due its covariance nature of spectrum sensing. But using T-W distribution with minimum eigen value and does not depend on noise power. In this paper we propose an algorithm that does not depend on noise power meanwhile depends on the eigne value. Minimum eigen value causes the detection much easier and thereby performance improvement much better in lower area of signal to noise ratio. While adapting this technique the achievement of low smoothening effect in lower SNR Ranges. So better performance is achieved in concentrating only low signal to noise ratio region and also compared with the other well-known algorithm and here it is shown analytically better performance than minimum to maximum eigen value methods in literature. Comparison is made in wide SNR range to shows the advantage of our approach and also we proved our algorithm gives better performance comparing to other eigen value methods.

Keywords: Eigen Value Method, Spectrum sensing, Energy Detection, Signal to Noise Ratio, Cognitive Radio Technology, Wi-Fi.

DESIGN AND IMPLEMENTATION OF BIO SIGNAL PLATFORM USING INTERNET OF THINGS

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Abstract:

The IoT technology advancement and wearable devices, the healthcare industry is shifting ahead to a brighter future. In this paper, we present a Wi-Fi and battery powered wearable IoT system to monitor patient's Bio signal from anywhere at any time through an IP based network. The system is unique as it is composed of a 2 or/and 8 channel electrodes to measure ECG and EMG signals with a sampling frequency fixed at 1 KHz, an analog front-end (AFE) compliant with the IEEE 802.11 standard, a microcontroller for data processing and transmission, and a power management unit. The prototype operates at 2.4 GHz, 3.3v. The transceiver consumes very low power in arrange of 9mW, has a communication range between 20m and 100m, a data-rate of 128 kB/s, a latency of 1.2ms, equipped with Advanced Encryption Standard (AES) for real-time

data encryption and has a high common-mode rejection ratio (CMRR). Experimental test result demonstrates that our developed prototype has a better performance than state of the art systems.

Keywords: Advanced Encryption Standard (AES), Bio signal, Wireless sensor networks, IoT, User Datagram Protocol, (UDP)

AUTOMOBILE EXHAUST WATER ENTRY PREVENTION SYSTEM

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Abstract:
For the past few years, due to the recurring floods during the monsoon season, it has been observed that numerous accidents have been befalling due to the entry of water into the automobile exhausts. When the vehicle is running through a waterlogged region, without question the water gets sucked into the engine as a result of the backpressure created by a phenomenon called hydraulic lock in the exhaust pipe due to the sudden immersion in water. While driving through a waterlogged region, the sudden shutdown of the vehicle is due to the entry of water into the engine cylinder due to the hydraulic lock. This restricts the compression of the air-fuel mixture, resulting in a stoppage of the engine. Restarting the engine is also impossible in such a condition. This can cause disturbances in traffic, accidents, vehicle damage and even possible casualties. During a time of crisis like a flood, this can prevent the transportation of medical personnel, food, water and other such resources, crucial during such a calamity. We have comprehensively studied these cases and have come up with a remedy for this situation. We hope the added modifications to the existing conventional exhaust system can put an end to all these hazards.

Keywords: Water-Logged, Flood, Automobiles, Hydraulic Lock.

IMPLEMENTATION OF E BLOOD BANK SYSTEM USING CLOUD COMPUTING AND AES ALGORITHM

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Abstract:
Everyone is aware that the traditional blood bank management system includes paperwork. It's way of working is not efficient enough at the time of emergency situations. The main aim of creating cloud-based blood bank system is to make the blood available on time to the people, even in emergency situations. The software system is an online blood bank management system that helps in managing various blood bank operations effectively. The Algorithm proposed in this project is Advanced Encryption Standard (AES) algorithm. The project is done in python flask and html. The database used is sqlite3. The project consists of a central repository containing various blood deposits available along with associated details. The project is an online

system that allows to check whether required blood deposits of a particular group are available in the blood bank. Moreover, the system also has added features such as donors can send notifications if the particular blood group is not available. The donors can register to the site if they are willing to donate. As the person did not need to go out far, for the search of the blood, this software helps to save the time to a great extent.

Keywords: AES Algorithm, Blood Bank System, Cloud database, Flask.

WASTE COLLECTING BOAT

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Abstract:
This present study focused on the cleaning of floated garbage from the water resources like river, pond, ocean, etc. In India, water pollution is increasing day by day, so this is becoming a serious problem for water resources. This mainly consists of impurities such as waste, water debris, plastics, garbage on floating water surface. These impurities are mainly affecting the life of aquatic animals. Renewable energy like solar energy is used for the working of this device. So the use of non-renewable energy like electricity, oil, etc., are reduced. By this, non -renewable energy sources are saved and this device helps to reduce the water pollution on floating bodies. A garbage collecting robot was developed for improving working efficiency and reducing human resources consumption of surface garbage cleaning. Garbage can be completely retained in the collection network when the manipulator is closed and the efficiency of the garbage collection box is higher than that of an ordinary surface garbage cleaning boat.

Keywords: Trash collector, Water pollution, Waste management.