THIRD INTERNATIONAL CONFERENCE ON

EMERGING TRENDS IN ENGINEERING AND TECHNOLOGY

(ICETET - 2020)

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CONFERENCE PROCEDDINGS

ORGANISED BY

Department of CIVIL,CSE, ECE, EEE,MECH & IT

ST. JOSEPH

COLLEGE OF ENGINEERING

Near Toll Plaza, Sriperumbudur

Chennai-602 117

PRINCIPAL MESSAGE

It gives me immense pleasure to welcome all the students, Staff and Reasearch Scholars from various colleges to our Second International Conference on Emerging Trends in Engineering and Technology, ICETET 2020 to our St. Joseph College of Engineering. This fest aim is to develop knowledge, awareness of social implications of their respective disciplines, communications and Researchskills.

I hope that this International Conference would be much informative and fruitful to all participants, since which give opportunities for students, Staff and Reasearch Scholars to develop their level of confidence to work in any kind of environment. This Conference will definitely enhance basic fundamentals of subject and latest developments in the technology of their subjects. I am also particularly happy to observe that organizers have taken care to invite judges for different section of broad theme of Conference. Undoubted, it will be a great benefit to the participants and will enhance and strengthen their skills. It needs to be ICETET 2020 said that will add feathers to the cap of our Institution.

I wish all grand success for ICETET 2020.

ADMINISTRATOR MESSAGE

In this competitive world it has become the utmost necessity for students to get acquainted with the recent innovations and acquire an extremely good skill set in addition to their academic excellence. ICETET 2020 is the perfect platform for the students, staff and Research scholars to prove their agility and bag their rewards. The main objective of this International Conference is to kindle the talents of the Engineering students, Research Scholars, Staff and to provide opportunities for them to know the technological developments in their field of specialization and share it with others.

Also, by organizing such Conference, students and scholars realize the worth of teamwork, which not only gives them a memorable experience but also will help them once they enter the corporate world. Hats off to the staff members and students, whose precious efforts have made ICETET 2020 a success story. ICETET 2020 will surely reveal new openings.

I wish all grand success for ICETET 2020

CONVENOR MESSAGE

I welcome the participants of ICETET 2020. The main goal of organizing this Conference is to share and enhance the knowledge of each and every participants. We have given a good opportunity for those who have a thirst in knowing the present technological developments and also share their ideas. Furthermore, this conference will also facilitate the participants to expose and share various novel ideas.

The International Conference aims to bridge the students and staff working in academia and other professionals through presentations in current technological trends. You will get opportunities to widen your knowledge and network.

I thank the conference committee for extending their valuable time in organizing the program and all the authors, reviewers, and other contributors for their sparkling efforts and their belief in the excellence of ICETET 2020

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DEPARTMENT OF IT

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G Indra, A S Poornima, Assistant Professor, R. M. K. College Of Engineering & Technology

P Sravanthi ,R Priyanka, UG Students, R. M. K. College Of Engineering And Technology

ABSTRACT

Enormous information and distributed computing are quickening the limit development of datacenters everywhere throughout the world. The vitality expenses and condition issues have pushed datacenter administrators to investigate and coordinate elective power hotspots for datacenters, for example, different sustainable power source supplies, vitality stockpiling devices etc. Designing datacenter with the heterogeneous power that consolidates a few distinctive power sources is turning into a promising pattern. Different green power sources not just add to decrease control related expenses and carbon impression, yet additionally enable IT enterprises to give clean administrations to clients and increase great corporate notoriety. But the existing databases can't handle the huge among large number of consumers. Hence, the analysis of datasets can be used by Big Data technology to capture several datasets and also undergoing a future proposal of dealing with real-time datasets using Spark technology. Additionally, to compare and discuss the performance of comparative study with finding the best accuracy apply in various supervised machine learning technique from the given dataset with GUI based application by given dataset attributes.

Keywords: datacenter, information computing, datasets, Data technology

ANALYSIS OF CRITICAL FACTORS IN MANUFACTURING BY ADOPTING A CLOUD COMPUTING SERVICE

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ABSTRACT

The advantages of a cloud computing service are cost advantages, availability, scalability, flexibility, reduced time to market, and dynamic access to computing resources. Enterprises can improve the successful adoption rate of cloud computing services if they understand the critical factors. To find critical factors, this study first reviewed the literature and established a three-layer hierarchical factor table for adopting a cloud computing service based on the Technology-Organization-Environment framework. Then, a hybrid method that combines two multi-criteria decision-making tools-called the Fuzzy Analytic Network Process method and the concept of VlseKriterijumska Optimizacija I Kompromisno Resenje acceptable advantage-was used to objectively identify critical factors for the adoption of a cloud computing service, replacing the subjective decision of the authors. The results of this study determined five critical factors, namely data access security, information transmission security, senior management support, fallback cloud management, and employee acceptance. Finally, the paper presents the findings and implications of the study. © This work is licensed under a Creative Commons Attribution 4.0 International License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Keywords: cloud computing, layer hierarchical factor, critical factors, data access

RESEARCH PAPER ON CYBER SECURITY

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ABSTRACT

In the current world that is run by technology and network connections, it is crucial to know what cyber security is and to be able to use it effectively. Systems, important files, data, and other important virtual things are at risk if there is no security to protect it. Whether it is an IT firm not, every company has to be protected equally. With the development of the fresh technology in cyber security, the attackers similarly do not collapse behind. They are consuming better and enhanced hacking techniques and aim the weak points of many businesses out there. Cyber security is essential because military, government, financial, medical and corporate organizations accumulate, practise, and stock unprecedented quantities of data on PCs and other devices. An important quota of that data can be sensitive information, whether that be financial data, intellectual property, personal information, or other various kinds of data for which illegal access or acquaintance could ensure negative concerns.

Keywords: Cyber security, attackers, network connections, corporate organizations

CYBER SECURITY

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ABSTRACT

Vertical Federated Learning (VFL) has many applications in the field of smart healthcare with excellent performance. However, current VFL systems usually primarily focus on the privacy protection during model training, while the preparation of training data receives little attention. In real-world applications, like smart healthcare, the process of the training data preparation may involve some participant's intention which could be privacy information for this participant. To protect the privacy of the model training intention, we describe the idea of Intention-Hiding Vertical Federated Learning (IHVFL) and illustrate a framework to achieve this privacy-preserving goal. First, we construct two secure screening protocols to enhance the privacy protection in feature engineering. Second, we implement the work of sample alignment bases on a novel private set intersection protocol. Finally, we use the logistic regression algorithm to demonstrate the process of IHVFL. Experiments show that our model can perform better efficiency (less than 5min) and accuracy (97%) on Breast Cancer medical dataset while maintaining the intention-hiding goal.

Keywords: Cyber security**,** smart healthcare, secure screening protocols, privacy protection

AN EFFICIENT PERMUTATION APPROACH FOR SBPN-BASED SYMMETRIC BLOCK CIPHERS

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ABSTRACT

It is challenging to devise lightweight cryptographic primitives efficient in both hardware and software that can provide an optimum level of security to diverse Internet of Things applications running on low-end constrained devices. Therefore, an efficient hardware design approach that requires some specific hardware resource may not be efficient if implemented in software. Substitution bit Permutation Network based ciphers such as PRESENT and GIFT are efficient, lightweight cryptographic hardware design approaches. These ciphers introduce confusion and diffusion by employing a 4×4 static substitution box and bit permutations. The bit-wise permutation is realised by simple rerouting, which is most cost-effective to implement in hardware, resulting in negligible power consumption. This paper proposes a novel software-based design approach for permutation operation in Substitution bit Permutation Network based ciphers using a bit-banding feature. The real-time performance comparison between conventional and the proposed approaches in terms of memory (RAM/ROM) footprint, power, energy and execution time has been carried out using ULINKpro and ULINKplus debug adapters for various code and speed optimisation scenarios. The proposed approach substantially reduces execution time, energy and power consumption for both PRESENT and GIFT ciphers, thus demonstrating the efficiency of the proposed method for Substitution bit Permutation Network based symmetric block ciphers.

Keywords: Permutation Network, optimisation, hardware design, bit-wise permutation

Generic attacks on small-state stream cipher constructions in the multi-user setting

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ABSTRACT

Small-state stream ciphers (SSCs), which violate the principle that the state size should exceed the key size by a factor of two, still demonstrate robust security properties while maintaining a lightweight design. These ciphers can be classified into several constructions and their basic security requirement is to resist generic attacks, i.e., the time–memory–data tradeoff (TMDTO) attack. In this paper, we investigate the security of small-state constructions in the multi-user setting. Based on it, the TMDTO distinguishing attack and the TMDTO key recovery attack are developed for such a setting. It is shown that SSCs which continuously use the key cannot resist the TMDTO distinguishing attack. Moreover, SSCs based on the continuous-IV-key-use construction cannot withstand the TMDTO key recovery attack when the key length is shorter than the IV length, no matter whether the keystream length is limited or not. Finally, we apply these two generic attacks to TinyJAMBU and DRACO in the multi-user setting. The TMDTO distinguishing attack on TinyJAMBU with a 128-bit key can be mounted with time, memory, and data complexities of 264264, 248248, and 232232, respectively. This attack is comparable with a recent work on ToSC 2022, where partial key bits of TinyJAMBU are recovered with more than 250250 users (or keys). As DRACO's IV length is smaller than its key length, it is vulnerable to the TMDTO key recovery attack.

Keywords: lightweight design, TinyJAMBU, memory, multi-user setting

EVICTING AND FILLING ATTACK FOR LINKING MULTIPLE NETWORK ADDRESSES OF BITCOIN NODES

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Abstract

Bitcoin is a decentralized P2P cryptocurrency. It supports users to use pseudonyms instead of network addresses to send and receive transactions at the data layer, hiding users' real network identities. Traditional transaction tracing attack cuts through the network layer to directly associate each transaction with the network address that issued it, thus revealing the sender's network identity. But this attack can be mitigated by Bitcoin's network layer privacy protections. Since Bitcoin protects the unlinkability of Bitcoin addresses and there may be a many-to-one relationship between addresses and nodes, transactions sent from the same node via different addresses are seen as coming from different nodes because attackers can only use addresses as node identifiers. In this paper, we proposed the *evicting and filling attack* to expose the correlations between addresses and cluster transactions sent from different addresses of the same node. The attack exploited the unisolation of Bitcoin's incoming connection processing mechanism. In particular, an attacker can utilize the shared connection pool and deterministic connection eviction strategy to infer the correlation between incoming and evicting connections, as well as the correlation between releasing and filling connections. We mounted this attack on both our self-run nodes and multi-address nodes in real Bitcoin network, achieving an average accuracy of 96.9% and 82%, respectively.

Keywords: Processing mechanism, real network, reasonable attack, Bitcoin addresses

DETECTING COMPROMISED EMAIL ACCOUNTS VIA LOGIN BEHAVIOR CHARACTERIZATION

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ABSTRACT

The illegal use of compromised email accounts by adversaries can have severe consequences for enterprises and society. Detecting compromised email accounts is more challenging than in the social network field, where email accounts have only a few interaction events (sending and receiving). To address the issue of insufficient features, we propose a novel approach to detecting compromised accounts by combining time zone differences and alternate logins to identify abnormal behaviour. Based on this approach, we propose a compromised email account detection framework that relies on widely available and less sensitive login logs and does not require labels. Our framework characterizes login behaviours to identify logins that do not belong to the account owner and outputs a list of account-subnet pairs ranked by their likelihood of having abnormal login relationships. This approach reduces the number of account-subnet pairs that need to be investigated and provides a reference for investigation priority. Our evaluation demonstrates that our method can detect most email accounts that have been accessed by disclosed malicious IP addresses and outperforms similar research. Additionally, our framework has the capability to uncover undisclosed malicious IP addresses.

Keywords: Compromised accounts, malicious IP addresses, abnormal behaviour, investigation priority

SECURITY ESTIMATION OF LWE VIA BKW ALGORITHMS

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ABSTRACT

The Learning With Errors (LWE) problem is widely used in lattice-based cryptography, which is the most promising post-quantum cryptography direction. There are a variety of LWE-solving methods, which can be classified into four groups: lattice methods, algebraic methods, combinatorial methods, and exhaustive searching. The Blum–Kalai–Wasserman (BKW) algorithm is an important variety of combinatorial algorithms, which was first presented for solving the Learning Parity With Noise (LPN) problem and then extended to solve LWE. In this paper, we give an overview of BKW algorithms for solving LWE. We introduce the framework and key techniques of BKW algorithms and make comparisons between different BKW algorithms and also with lattice methods by estimating concrete security of specific LWE instances. We also briefly discuss the current problems and potential future directions of BKW algorithms.

Keywords: Compromised accounts, malicious IP addresses, abnormal behaviour, investigation priority

DYNAMIC STUDENT BEHAVIOR ANALYSIS USING WEB-BASED LEARNING PORTFOLIOS FOR E-LEARNING SYSTEMS

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Abstract

Adaptive learning is an educational method that utilizes computers as an interactive system. In existing most educational agents do not monitor engagement of students, but rather assume engagement and adapt their interactions through based questionnaires. Thus, dynamic student behavior analysis is a first step to an automated teacher feedback tool for analyzing student engagement. In this, we propose a hybrid architecture system based on student's facialze monitoring identification for predicting their engagement/behavior in classrooms and at e-learning platforms. This architecture uses feature extraction algorithms like Principal Component Analysis (PCA) for facial emotion recognition, Haar Cascade for pupil detection and Local Binary Patterns for recognizing head movements. Machine learning helps us to analyze of large quantities of data. While it generally delivers faster, more accurate results should be obtained. Hence, we use OpenCV (Computer Vision) in this learning approach.

Keywords: Principal Component Analysis (PCA,), Haar Cascade Local Binary Patterns, Open CV (Computer Vision) in this learning approach.

SOCIAL MEDIA DATA ANALYSIS USING HADOOP

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ABSTRACT

Analysis of structured data has seen tremendous success in the past. However, analysis of large-scale unstructured data in the form of video format remains a challenging area. YouTube, a Google company, has over a billion users and generates billions of views. Since YouTube data is getting created in a very huge amount and with an equally great speed, there is a huge demand to store, process and carefully study this large amount of data to make it usable. The main objective of this project is to demonstrate by using Hadoop concepts, how data generated from YouTube can be mined and utilized to make targeted, real time and informed decisions. The analysis task can be done using HDFS for storing the massive video data using HIVE the user can retrieve the data.

Keywords: Hadoop, HDFS, Hive, RDBMS, Unstructured, Structured

EDGE DETECTION DONE BY DIFFERENT OPERTORS FOR SKIN

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ABSTRACT

Skin disease is mostly found in animals, humans and plants and it is a particular kind of illness caused by bacteria or an infection. The diseases include ringworm, yeast infection, brown sport, allergies, etc. The Skin disease images using system has many techniques like preprocessing and edge detection, etc. Preprocessing is the main stage of discovery to improve the quality of images, removing the irrelevant noises and unwanted parts in the background of the skin images. Edge detection is the technique for finding the boundaries of objects within images. This paper presents a preprocessing technique such as morphological operations. The edge detection techniques such as canny and Sobel filter are to detect affected area. This proposed work and results in better PSNR and MSE values and detected the edges in the affected area.

Keywords: Skin Images; Preprocessing; Morphological operation; Edge detection using different operator

A REVIEW PAPER ON HIDING TEXT IN VIDEO

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ABSTRACT

"One single vulnerability is all an attacker network need" sai world communication is very important. So, it create security problem. Information is passed in the form of analog or digital. In digital our information is simply in binary format. We have used many techniques to maintain secret data communication. Some of the way used such as encryption, cryptography. As per the scientific reason, need carrier to carry the message .In real life air is act as medium to pass our message to another people. At this there is a situation to data lost or data is stolen by someone. So it's stolen. So we can use steganography technique to secret communication. Here many things act as carrier medium to carry our message this steganography technique applies to audio , video ,text, image and using this the message will be hidden in any one the carrier medium and there are many techniques available for secret data hiding. Discrete cosine transforms, Discrete wavelet transform and Least significant bit .The LSB technique is easy implement the concept and this technique is widely used in many areas. So, In this article explained about the important text will be hidden in image and the stego image will be hidden in video.

Keywords: Steganography, LSB, Pixels, Frames, Stego video.

RF CONTROLLED SOLAR PANEL BASED ROBOTIC VEHICLE

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ABSTRACT

Solar panel-based Radio Frequency managed Robotic system, is applicable in the various surveillance fields. In this project, the vehicle is unified to the multifunction camera, which could detect multiple angles. Users can view multiple angles via an Internet browser. The solar panel provided with a self-rechargeable battery will charge the 360-degree camera, which would display live streaming either in mobile applications or on computers. The transmitting end has a remote having buttons that will control the receiving end vehicle. The microcontroller ATMEGA338P programmed in such a way that it could control the vehicle movement.

Keywords: Radio Frequency, surveillance

SAR ANALYSIS OF HEXAGONAL MICROSTRIP PATCH ANTENNA FOR 5G SYSTEM USING ANSYS

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ABSTRACT

In recent days, vast research has been going on in 5G communications and 5G on health. This project proposes the implementation of Hexagonal patch antenna proposed for 5G cellular communication. In this paper designing of a hexagonal microstrip patch antenna elements has been proposed for mobile wireless network systems. The hexagonal patches were designed considering them as equivalent to the corresponding circulator resonators. The various parameters such as return losses, gain and impedance bandwidth are analyzed for this proposed antenna which is operated between 10.176GHz to 28.39GHz for mobile communication system. Here the impedance bandwidth is achieved at centre frequency 15GHz.

Keywords: Impedance bandwidth, 5G communications, cellular communication, wireless network

ULTRASONIC ASSISTIVE GLASS FOR BLIND PEOPLE

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ABSTRACT

Blind mobility is the major challenges encountered by visually impaired persons in their lives. Their day to day activities are greatly restricted by loss of eyesight. Blind people normally travel using blind navigation system or by using long term memory. The proposed method of the present work is to develop a low cost, reliable, portable, user friendly, low power and robust solution for smooth navigation. In this method (smart glasses for blind people), as meant are the glasses are for visually impaired people. It has an in-built sensor, such as ultrasonic sensor, PIR sensor, IR sensor. The ultrasonic waves propagates in the direction of the person and detects the dynamic obstacles for 3-5 meters. IR sensor also scans all area in there range of 4-5 meters. PIR sensor will detect any motion obstacles in the range of 4-5 meters. Any obstacle lies in the scanning range of the sensor will be reflected and picked back by the receiver unit in the sensor module. The distance and angle detection depend on the body that cause beam reflection. These glass are designed for blind people. As soon as the obstacle is detected by the sensor, its distance will be sent to the PIC mic can be tracked using GPS and GSM module. In case of any emergency a switch connected to Arduino UNO sends the location to registered mobile number using GSM and GPS module.

Keywords: IR sensor, ultrasonic waves, GSM module, smart glasses

INTEGRATED HAIRPIN-LINE BANDPASS FILTER FOR UWB /WLANNARROWBAND STATE

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ABSTRACT

In this project, the bandpass filter is designed using hairpin structure. A compact microstrip Hairpin line bandpass filter design is presented in this paper for a centre frequency of 2.4 GHz. The hairpin structure makes the filter structure more compact in size. Finally, the simulation is done using the CST software and simulated on FR4 substrate as the dielectric material with the thickness of 1.27mm . Those filters have wide application in modern wireless communication system. The (2.4-5.8GHz) band is used by various radar, surface radar, and some communications satellites

Keywords: Bandpass Hairpin filter, filter S band, UWB antenna,

INTERNET CONNECTED PATIENT HEALTH CARE MONITORING USING SMART PHONE

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ABSTRACT

In our advanced technology IOT makes all the impossible things to possible manner, It makes all the needs easier and nearer to us. It interlinks the needs of our daily life and also took us to the next revolution. Our responsible is to monitor the patient health status using IOT, The connected sensor collect the data from patient and send the data to doctor through IOT technology, In case of emergency the alert system will give alert sound to the caretaker and doctor. The data will support the doctor to take right decision and to prescribe medicine. The collected data from the sensor were transferred to caretaker they can monitor in smart phone. This proposed idea will help doctors to monitor the patient anywhere in the world and to know about the state of patient health. In this proposed idea the sensors gather the medical information of the patient that includes patient to lively monitor patient. After analyzing the data doctor can prescribe the medication based on the results. This prototype will minimize the burden on patients to visit the doctors every time for health check-up.

Keywords: Healthcare monitoring**,** sensor, medication, smart phone

DESIGN AND IMPLEMENTATION OF LOW POWER QCA BASED CSLA ADDER

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ABSTRACT

The decimal arithmetic has received wide attention in response to the increasing demand for precision in financial and commercial based applications. Several digital processors and computers were designed including decimal arithmetic hardware units. Basically, an adder performs addition of numbers and it is a digital circuit. These adders are used in processors which mainly involves calculation, increment or decrement operations. Low power has become the key feature for any device in electronics. The basic need for low power is that, it carved a way for power dissipation in which performance and area are the two important factors. CSLA adders are widely preferred digital processors and in paper implements a technique named QCA in CSLA adder in order to obtain low power and delay.

Keywords: QCA, low-power, delay, digital processors

IDENTIFICATION OF TUMOR IN HUMAN BRAIN

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ABSTRACT

Tumor is a mass of tissue that is formed by accumulation of abnormal cells. Tumor cells grow even though body does not need them and unlike normal cells they do not die. Brain tumor can be cancerous or non-cancerous. They can cause the pressure inside the skull to increase. This can cause brain damage and it can be life-threatening. Diagnosis of brain tumor is done by neurological exam, computer tomography scan, magnetic resonance imaging and other tests like angiogram, spinal tap and biopsy. There are many detecting methods but they have different result in each image. In this paper we proposed a set of image segmentation algorithms with inclusion of multiple parameters which gives the best result.

Keywords: MRI image, KSVM, Artificial Neural Networks.

COHERENT 4 QAMMIMOFSO

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ABSTRACT

FSO is the Free Space Optical communication technique in which the optical signals are transmitted through free space. Here the use of Optical Fibre Cable (OFC) is replaced by the free space which is comparatively effective. In order to increase the transmission speed and transmission data rate we use Multiple Inputs Multiple Outputs (MIMO) technique. To have a more improved performance of the system the design has been analyzed using a COHERENT 4 QAM modulation technique. The simulations are done using a commercial optical simulator named OptiSystem by Optiwave.

Keywords: Optical communication, date transmission, Optical Fibre Cable, improved performance

SMART CARD BASED BUS TICKETING SYSTEM

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ABSTRACT

Public transport is the service shared by the passengers who are the general public for transportation. Unlike transportation modes like cars, rickshaws and taxis here strangers share the system. Reasons for why the people go after public transportation are its role on cost, environment and accessibility. BUSES are the most widely used public transportation in many cities today. Passengers face a major problem due to the lack of proper bus management by the authorities. They still depend on the method of manual ticket generation and management. Due to rising population in our country, the manual method of ticket generation has become a complicated process as they lack the awareness in solutions available with the latest technology. Passengers as well as conductor faces a tough time during the peak hours where ticket acquisition becomes the major issue. In this growing world we have to stand in the queue for purchasing tickets. The technology is growing quickly, therefore this should be modified. Smart Bus Ticketing Destination Announcement System Using RFID is mainly use to buy bus tickets which is most challenging when compared to book the long journey tickets with the existing system.

Keywords: Ticketing Destination, ticket management, Passengers, transportation

CASHLESS AUTOMATIC RATION DISTRIBUTION SYSTEM USING GSMAND RFID TECHNOLOGY

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ABSTRACT

An RFID based cashless automatic ration shop is novel approach in public distribution system (PDS) useful for more efficient, accurate, and automated technique of ration distribution. Public distribution system also called rationing distribution system is one of the widely controversial issues that involve malpractices. The present ration distribution system has drawbacks like inaccurate quantity of goods, low processing speed, large waiting time, material theft in rationshop. The proposed system replaces the manual work in rationshop. The main objective of the designed system is the automation of ration shop to provide transparency. The proposed cashless automatic ration shop for public distribution system is based on Radio Frequency Identification (RFID) technology that replaces conventional ration cards. The RFID tags are provided instead of conventional rationcards. Cu which is provided by Government Authority. Customer needs to scan tag to RFID reader, and then microcontroller checks customer's details After successful verification, customer needs to enter type of material as well as quantity of material using keypad. After delivering proper material to consumer, the microcontroller sends the information to customer as well as PDS authorities using Global System for Mobile (GSM)technology.

Keywords: Atmega 16 Microcontroller,16X2 LCD Display, RFID Reader, 1x4 Keypad, Motor, Pump, GSM.

IMAGE ENCRYPTION USING CHAOTIC MAPS AND DNA ENCODING

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ABSTRACT

Image encryption helps to safeguard our information against unapproved users which has numerous applications such as corporate world, health care and military communications. Guaranteeing the security and hardiness of the image has become a key element. This paper proposes a new multiple-image encryption frame format by utilizing secure force algorithm, DNA sequence encoding, Arnold Cat map ,RSA algorithm and chaotic permutation techniques. The encryption standard of this proposed algorithm is enhanced by operating four different techniques to encrypt each segmented part of an image. Several metrics have been used to evaluate and analyze the security of the projected framework against statistical and differential analysis. An experimental result confirms that this combination of algorithms can survive the statistical and differential attacks.

Keywords- image encryption; segmented multiple encryption; chaotic; secure force algorithm; DNA sequence encoding; Arnold Cat map; RSA algorithm;

AUGMENTED REALITY GLASS FOR HEARING IMPAIRED PEOPLE

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ABSTRACT

The point of this examination was to make enlarged reality which will show content developments on a media card and actualized on the microcontroller and expanded showcase. Demonstrating was started with doing perception, during which the thing of the perception was individuals that have a lack of hearing and talking or regularly called hard of hearing. The system made aimed toward helping normal people in studying the letter cues when trying to speak with the deaf. The results obtained are an application created with augmented reality and may be employed by anyone having an augmented reality display that desires to acknowledge the letter cues by using a letter card because of the card marker. When the controller is directed to the cardboard compiled into one word, the letter marker on the cardboard is going to be detected by the display and can appear text movement of every letter scanned by the display in real-time. This is regularly the point of the expanded reality on this letter acknowledgment application, in particular giving ascent liveliness progressively which will draw in somebody to survey the letter signs.

Keywords: Augmented reality, Arduino, Speech to text conversion, ZigBee

DESIGN AND DEVELOPMENT OF IMPROVED MONOPOLE ANTENNA FOR UWB APPLICATIONS

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ABSTRACT

This paper presents a lotus-shaped planar monopole antenna for ultra-wideband (UWB) applications. To increase the impedance bandwidth of the antenna and achieve UWB coverage, we use a lotus-shaped radiating patch fed by a microstrip line and an elliptical curved ground plane. In lower frequency, the antenna cover about 300 MHz from 2.3 to 2.6 GHz (Bluetooth), while in upper frequency, bandwidth is about 7.7 GHz from 3.3 to 12 GHz which covers UWB band. Commercial software CST is used to analyze and design this antenna. The simulated and measured result of impedance, radiation pattern, gain, and efficiency are fair enough. This antenna shows an omnidirectional radiation pattern across the integrated Bluetooth and UWB bands both theoretically and experimentally. With an excellent impulse response, high fidelity, and quality factor, the proposed antenna is suitable for using dual band frequency of both Bluetooth and UWB without interference between each other.

Keywords: Monopole antenna, impedance bandwidth, Bluetooth, efficiency

IOT BASED HIGH EFFICIENT ADAPTIVE CURRENT CHARGING OF LITHIUM ION BATTERY FOR ELECTRIC VEHICLE

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ABSTRACT

The proposed project is to make another attempt in battery charging strategy by using optimized photovoltaic (PV) sourced charge to achieve optimal charging time in a lithium -ion battery for electric vehicles (EV). As the existing charging methods do not consider the variation of battery internal resistance, we aim to use an adaptive current charging profile based on this variation, which changes according to the state of charge (SOC). The battery pack is coupled to a PV module that also aids in charging the battery additionally and acts as a Battery Energy Storage (BES). We intend to use modified incremental conductance method to achieve Maximum Power Point Tracking (MPPT). MPPT algorithm's major p power from PV module by making them operate at the most efficient voltage. The charge controller tracks power by measuring the voltage and current value and hence the maximum power is determined by using MPPT algorithm. When the (V/I) ratio i.e., the value of impedance (Z) of the battery that is being charged is equal power can be obtained at this point. The simulation result shows us the values of voltage and current at different levels of charging.

Keywords: PV sourced charge, Maximum Power Point Tracking, State of Charge.

INTERNET CONNECTED PATIENT HEALTHCARE MONITORING IN SMARTPHONES USING RASPBERRY PI

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ABSTRACT

With the advancement in technology today IOT makes all objects interconnected and it has been recognized as the next technical revolution. Health monitoring system using IOT describes the collection and interoperation of patient data collected from the sensors from the hospitals through IOT Technology. The collected sensor data will support the doctor in the emergency situation for the betterment and improvement of patient health. The hardware platform to implement the project consists of bio sensors and Raspberry Pi 3 Model-B equipped in a way to communicate with a doctor through the internet and smart phone. This proposed idea will help doctors to monitor the patient anywhere in the world and to know about the state of patient health. In this proposed idea the sensors gather the medical information of the patient that includes patient's body temperature and Afterheart ra analyzing the data doctor can prescribe the medication based on the results. This prototype will minimize the burden on patients to visit the doctors every time for health check-up.

Keywords: Internet Of Things(IOT);Raspberry Pi 3 model-B; Body temperature; Heart rate

SMART SOUND SYSTEM

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ABSTRACT

The sound energy associated with the vibration of matter an abundant source of noise pollution, wherein the least of all types of pollution which most people ignore to recycle and turn into electricity sources. The purpose of this project is to design and develop a device that can make useful energy from noise. The efficiency of the device in terms of charging the power bank utilizing noise can be more effective especially in loud/ noisy places that make the power bank charge the battery continuously. Comparing to commercial power banks, noise pollution based power bank is an effective way of renewable energy generation. With the future modification of thenoise pollution based power bank, it is possible to make this device a basis of imminent technologies that will make a way of recycling noise pollution to be a secondary source of establishing a wide scale electricity source.

Keywords: Noise, transducers, piezoelectric crystal, pollution, renewable energy, green energy, piezoelectric effect

SMART LOAD BALANCER FOR DOMESTIC POWER DISTRIBUTION SYSTEM

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ABSTRACT

Unbalanced loads create de-rating of connected apparatus and connecting cables, hence significant energy and economic losses are produced. Power balance in the power system can be achieved by splitting single phase loads equally among all the three phases of the power system either manually or automatically. Automatic load splitting or scheduling can be made possible by monitoring the individual voltage and current values at all the phases of the transformer and at each load simultaneously, and for remote access to the data we can upload the values instantaneously to the cloud. An algorithm running in a processing device receives this data and decides which load must be shifted to which phase depending upon the received current values so that the system will attain a near balanced state. The loads can be shifted from present to any other phase using TRIAC Switches. This project helps in reducing the time, energy and capital losses while increasing the stability and efficiency of the system.

Keywords: unbalance, derating, shifting, algorithm

15-LEVEL, 1-PHASE MULTI-LEVEL INVERTER WITH LOW SWITCH COUNT

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ABSTRACT

The proposed H15LI topology uses a simple phase disposition pulse width modulation (PDPWM)strategy to generate 15-voltage levels in the output, to regulate the voltage across auxiliary capacitor, two innovative control techniques are proposed which are integrated with the inverter modulation technique itself. Hence, it doesn't re extra voltage balancing circuits to maintain the voltage across the auxiliary capacitor and input dc capacitors. Another significant advantage of h15li is that loss distribution among all the power switches is more uniform compared to existing 9-level inverter.

Keywords: auxiliary capacitor, H15LI topology, inverter modulation, disposition pulse

AN EXTENDABLE QUADRATIC BIDIRECTIONAL DC-DC CONVERTER FOR V2G AND G2V *APPLICATIONS*

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ABSTRACT

DC-DC converter that has an improved voltage transfer ratio (VTR) with capability of redundancy and modularity for electric vehicle applications. As n modules are embedded, its VTR becomes n times higher for both directions of currents. Furthermore, the common electrical ground between input and output is preserved. This is a simple structure with the lowest rating of semiconductors in the family of quadratic bidirectional converters leading to ease of control ability. The proposed converter performance is evaluated in both power flow direction using the dead-beat controller which is smooth, accurate and fast response. Finally, the process of charging/discharging of a lithium-ion battery is controlled through the proposed converter. A 500 W experimental results are provided in both power flow directions in closed-loop system in the presence of the proposed controller. The obtained results verify the applicability of this structure.

Keywords: Bidirectional dc-dc converter, high voltage gain, battery charge/discharge, non-isolated, semiconductors rating.

ELECTRIC VEHICLES ENERGY MANAGEMENT WITH V2G/G2V MULTIFACTOR OPTIMIZATION OF SMART GRIDS

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ABSTRACT

Energy Storage Systems (ESS) and Distributed Generation (DG) are topics in a large number of recent research works. Moreover, given the increasing adoption of EVs, high capacity EV batteries can be used as ESS, as most vehicles remain idle for long periods during work or home parking. However, the high EV penetration introduces some issues related to the charging power requirements, thereby increasing the peak demand for microgrids where EV chargers are installed. In addition, photovoltaic distributed generation is becoming another issue to deal with in EV charging microgrids. Therefore, this new scenario requires an Energy Management System (EMS) able to deal with charging demand, as well as with generation intermittency. This paper presents an EMS strategy for Microgrids that contain an EV parking lot (EVM), Photovoltaic (PV) arrays, and dynamic loads connected to the grid considering a Point of Common Coupling (PCC). The EVM-EMS utilizes the projections of future PV generation and future demand to accomplish a dynamic programming technique that optimizes the EVs' charging (G2V) or discharging to user preferences while reducing the demand grid dependences and improves the microgrid efficiency.

Keywords: smart grid; optimization; energy management; electric vehicles; distributed generation

HUMAN BEHAVIOR COGNITION USING SMARTPHONE SENSORS

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ABSTRACT

This research focuses on sensing context, modelling human behaviour and developing a new architecture for a cognitive phone platform. We combine the latest positioning technologies and phone sensors to capture human movements in natural environments and use the movements to study human behavior. Contexts in this research are abstracted as a Context Pyramid which includes six levels: Raw Sensor Data, Physical Parameter, Features/Patterns, Simple Contextual Descriptors, Activity-Level Descript ors, and Rich Context. To achieve implementation of the Context Pyramid on a cognitive phone, three key technologies are utilized: ubiquitous positioning, motion recognition, and human behavior modeling. Preliminary tests indicate that we have successfully achieved the Activity-Level Descriptors level with our LoMoCo (Location-Motion-Context) model. Location accuracy of the proposed solution is up to 1.9 meters in corridor environments and 3.5 meters in open spaces. Test results also indicate that the motion states are recognized with an accuracy rate up to 92.9% using a Least Square-Support Vector Machine (LS-SVM) classifier.

Keywords: sensing; location; motion recognition; LS-SVM; cognitive phone; human Behavior modeling

A COMPREHENSIVE APPROACH TO POWER MANAGEMENT IN EMBEDDED SYSTEMS

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Abstract

Power management is addressed in the context of embedded systems from energy-aware design to energy-efficient implementation. A set of mechanisms specifically conceived for this scenario is proposed, including a power management API defined at the level of user-visible system components, the infrastructure necessary to implement that API (namely, battery monitoring, accounting, auto suspend, and autoresume), an energy-event propagation mechanism based on Petri nets and implemented with aspect-oriented programming techniques, and an autonomous power manager build upon the proposed API and infrastructure. These mechanisms are illustrated and evaluated using realistic wireless sensor network cases that sustain comparisons with other proposals at each of the considered levels. As a result, this paper has its main contribution on the introduction of a comprehensive and systematic way to deal with power management issues in resource-constrained, battery-operated systems.

Keywords: Aspect oriented Programming, API, Petri nets

A NOVEL METHODOLOGY OF POWER SYNCHRONIZATION IN AC MICRO GRID

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Abstract

In this paper, a new operating scheme and control for the AC Micro Grid is proposed, of which structure is derived from the conventional Micro Grid technology and hybrid transformerless inverters, in this inverter the lower number of switching devices is required, thus the cost is introduced and the renewable energies are integrated using the MPPT technology and the load is shared with higher efficiency Improved variable step size P&O with Inc MPPT algorithm for renewable energy systems. In addition, the synchronizing process is developed for the bus is developed. Simulation and experiment have verified for the validity of the proposed technology.

Keywords: Micro Grid, inverter, MPPT technology, synchronizing process

THE SYNTHESIS OF FATTY ACIDS USING NANO SILICA FOR IMPROVED ENERGY EFFICIENCY IN BUILDINGS

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Abstract

Thermal storage material has a latent heat storage which gives phase change material (PCM) which has the capability to store and release vast amount of heat energy during phase transition period. Here fatty acids are used for a thermal storage material. The main weakness of this method is having low thermal conductivity and sub-cooling features. To develop the thermal conductivity, nano silica is added to give efficient result. The resulting material is known as nano enhanced PCM (NEPCM). This paper intends to discuss an addition of nano silica to fatty acids such as Lauric acid and Palmatic acid with different proportion ratios. And also confers about the characterization test such as SEM analysis, FT-IR test and AFM analysis are conducted for checking a properties of nano silica. The synthesis procedure is discussed and also tested the sample with different proportion ratios to enhance powder form for characterization. The characterization test results for prepared NEPCM is also discussed.

Keywords: Thermal storage, PCM, Latent Heat, Nano Silica

TOPOLOGY OPTIMIZATION OF TRANSMISSION LINE TOWER TRUSS

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Abstract

This paper generally deals with the topology optimization of the transmission line tower truss. Different bracing condition is done for the optimization of the truss. Transmission tower is being designed and then it is being optimized with MATLAB software by using ground structure method. This process is done by the help Artificial Neural Network(ANN). The optimization techniques is done for bracing condition and the optimum one is also finally mentioned.

Keywords: Artificial Neural Network, transmission, MATLAB software, optimization

IOT BASED HOME AUTOMATION USING ARDUINO

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ABSTRACT

While the cost of living is going up, there is a growing focus to involve technology to lower those prices. With this in mind the Smart Home project allows the user to build and maintain a house that is smart enough to keep energy levels down while providing more automated applications. A smart home will take advantage of its environment and allow seamless control whether the user is present or away. With a home that has this advantage, you can know that your home is performing at its best in energy performance. By implementing this system, it is possible to explore a variety of different engineering challenges, including software programming, PCB design, Wi-Fi, TCP/IP protocols, Web Server logic design, and other aspects. This automation system provides great insights to the challenges of software and hardware design

GREENHOUSEMONITORING AND CONTROL SYSTEM USING ARDUINO PROJECT

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ABSTRACT

Greenhouse monitoring is a needed one for variable climate changes. GSM technologies have been rapidly developing wireless technology during few years. Starting from industrial controls and telecommunication, it is now being applied in environmental monitoring and agriculture. The existing system has the ability to yet lack the ability to control indoor humidity and other parameter. This paper propose modern greenhouse measurement system, the GSM-SMS and sensors are used to sense necessary green house parameters and transmit data useing wireless communication. This project is used to measure the various parameters like Temperature, Humidity, light and Soil moisture. Values of these sensors are displayed on a LCD. These parameters are sensed by sensors and sensor output is amplified and given to ADC. Microcontroller controls these parameters and keeps them at some predefined values using relay interface. These relays can be connected to Fan, sprinkle, rooftop etc.

IOT BBASED BATTERY MONITORING SYSTEM

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ABSTRACT

This paper describes the application of Internet-of-things (IoT) in monitoring the performance of electric vehicle battery. It is clear that an electric vehicle totally depends on the source of energy from a battery. However, the amount of energy supplied to the vehicle is decreasing gradually that leads to the performance degradation. This is a major concern for battery manufacture. In this work, the idea of monitoring the performance of the vehicle using JoT techniques is proposed, so that the monitoring can be done directly. The proposed IoT- based battery monitoring system is consists of two major parts i) monitoring device and ii) user interface. Based on experimental results, the system is capable to detect degraded battery performance and sends notification messages to the user for further action. Electric vehicles (EVs) have received significant attention over the past few years as a sustainable and efficient green transportation altomative. However, severe challenges, such as range anxiety, battery cost, and safety, hinder EV market expansion. A practical means to reduce these barriers is to improve the design of the battery management system (BMS) to accurately estimate the battery state of charge (SOC) and state of health (SOH) in addition to communicating with other powertrain components. Along with a robust estimation strategy, a critical requirement in developing an efficient BMS is a high-fidelity battery model to predict the battery voltage, SOC, and heat generation profile at various temperature and power demands.

ARDUINO BASED VEHICLE ACCIDENT DETECTION SYSTEM

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ABSTRACT

Vehicle accidents are one of the most leading causes of death. Road accident is the most unwanted thing to happen to a road user, though they happen quite often. The most unfortunate thing is that we don't learn from our mistakes on the road. Most of the road users are quite well aware of the general rules and safety measures while using the roads, but it is only the laxity on the part of road users, which causes accidents and crashes. The main cause of accidents and crashes are due to human errors. We are elaborating some of the common behaviors of humans, which results in accidents due to over Speeding, drunken driving, distractions to Driver, red light Jumping, avoiding safety gears like seat belts and helmets, Non-adherence to lane driving and overtaking in a wrong manner. To save people life's from a road accident, we are going to build an Arduino based vehicle accident alert system using GPS, GSM, and accelerometer. The accelerometer detects the sudden change in the axes of the vehicle and the GSM module sends the alert message on your Mobile Phone with the location of the accident. The location of the accident is sent in the form of the Google Map link, derived from the latitude and longitude from the GPS module. The Message also contains the speed of a vehicle in knots. Keywords: Vehicle accident, Accelerometer, Arduino, GSM, GPS

LITHIUM ION BATTERY CHARGING AND DISCHARGING MONITORING AT VARIOUS TEMPERATURES

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ABSTRACT

The concept of performing battery (Lithium ion) based on temperature and by analysing voltage and current at various temperature. Nowadays lithium ion battery are used in several techniques such as mobile phones, laptop, digital camera, camcodes, handled game consells, torches, etc...Lithium ion battery used in running the e-vehicle. Lithium ion batteries, with high energy density and power density, exhibit high capacity and great working performance. Accurate measurement of voltage and current at constant, Apparatus of this process contains voltmeter (Digital) in DC current, Lithium ion battery and temperature sensor. Each element are connected in parallel and kept in the chamber and an ice cube is provided to determine the charging and discharging at cooling temperature band analysing. Lithium ion (Li-ion) batteries have been gaining recognition as the primary technology for energy storage in motive applications due to their improved specific energy densities, charge retention capabilities and long cycling life. However, during utilization, Li- ion cells tend to self-heat due to the effects of internal resistance. In larger battery packs, where cells are typically stacked together and compressed for mechanical stability, a significant amount of heat could be generated. This could lead to an excessive rise in the temperature of the cells, potentially resulting in accelerated degradation.

DTMF BASED HOME AUTOMATION

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ABSTRACT

The aim of this project is to develop a home automation system that can be controlled remotely using mobile phone. The home automation is one of the most emerging trends in modernization of home appliance control. Presently, conventional wall switches are located in different parts of the house and one has to physically go near them and press them to turn the loads on/off. It becomes very difficult for the elderly or physically handicapped people to do so. The another advantage of this project is that, some time we forget to switch off the home appliances and by this DTMF based home automation system we can switch on or off from any part of the world. This system is designed to provide control of home appliances through mobile phone by dialing the designated number. Dialing can be done from the home phone or a call made to the number from outside. This system is designed by ARDUINO UNO but is based on digital logic using DTMF technology (Dual Tone multiple frequency) which receives the command from the phone to develop digital output. This digital signal is further processed to actuate switching mechanism through relay driver to turn on/off the loads/appliances. It can be used to switch appliances from anywhere, overcoming the limited range of other infrared and radio frequency type controls. This proposed system gives a new direction to the development of home automation.

PORTABLE AIR CONDITIONER

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ABSTRACT

In case you live in a house that does not have an option for central or window AC, then getting a portable air conditioner is your answer. These units can easily be moved to different rooms and do not require any extra fittings. Listed here are some of the best options that you can consider. Semiconductor coolers are a form of solid state cooling that incorporates both semiconductor technologies and electronic assembly techniques. One such example is the Thermoelectric Peltier Refrigeration Cooling System DIY Kit. The DIY kit is a semiconductor cooling kit which uses a TEC1-12706 Thermoelectric Cooler 6A Peltier Module. The kit has 2 heat sinks: the bigger one is for the hotter side and the smaller one is for the cooler side. The bigger the heat sink, the greater dissipation of the heat. The fan, also included in this kit acts as a radiator. This is attached to the bigger heat sink. The TEC1-12706 thermoelectric Peltier module is sandwiched between the two heat sinks. The module will reduce the temperature. The kit when assembled takes up less space and is ideal for Pet Space air conditioning (dogs house, Kitchen, etc), small refrigerator.

SMART DOOR UNLOCK SYSTEM USING FINGERPRINT USING ARDUINO

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ABSTRACT

Human detection and recognisation field is very significant and has undergone rapid changes with time. An important and very reliable human identification method is fingerprint identification. Fingerprint of every person is unique. So this helps in identifying a person or in improving security of a system. Finger print of a person is read by a special type of sensor. Finger print sensor can be interfaced with a microcontroller. Through keypad we can add new user and delete the existing user, also identify the user by selecting corresponding option through keypad. In this project we use a fingerprint sensor to read ones identity to automatically operate the door of the car. For this, we use a microcontroller to enable the door opening or closing if the matching between scanned data and the already existing data is correct. Comparison is done inside the fingerprint module itself and its output is given to microcontroller. Result is displayed in a LCD display whether the user is authorized or not. LCD also helps to make troubleshooting easier. Alarming option is provided to warn about an unauthorized usage. Microcontroller used is PIC16F877.

PROVIDING SECURE CLOUD COMPUTING USING ADAPTIVE FRAMEWORK

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ABSTRACT

Cloud computing is an information technology (IT) paradigm that enables ubiquitous access to shared pools of configurable system resources and higher-level services that can be rapidly provisioned with minimal management effort, often over the Internet. In our project we majorly offering real-time data security in cloud computing. Providing security to petabytes of data is very important. A recent survey on cloud security states that the security of user's data has the highest priority as well as concern. Therefore, to provide secure cloud framework we have proposed a system named secure cloud computing Adaptive framework (SCCAF). SCCAF multi-layered security can protect data in real-time and it has four layers of security, they are Identity management, Intrusion detection and Prevention encryption and Cloud. To enhance security, we proposed to add automatic intrusion detection and prevention technique for Brute force and SQL injection attacks. Finally, the data owner files are encrypted using RC5 encryption algorithm and stored in public cloud storage named cloud Me. A solution, which looks likes the combination of UML and work flow has been proposed.

FACE DETECTION BASED ATM SAFETY SYSTEM IN IOT USING SECURE TRANSACTION

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ABSTRACT

The automated teller machine, or ATM, is such a complicated piece of technology that it does not have a single inventor. Traditionally we use ATM Cards with pin to enable any transaction of money from one account to another. In this proposed paper we implement a new generation ATM machine which can be operated without the ATM card. In this system we have some more webpages for the identification of the user and 3 rd. user. In first website we have two buttons one for user and another one for third user, if I am user means I want to click user button or otherwise click third user button. Maybe I am third user first I want to enter the authorized user name and password then camera take image mail to authorized person at the same time send alert SMS via IOT. And finally another new webpage is there, if the user should want to go there and should give okay then only third user moves to amount withdraw other its hold.

SPECTRAL ANALYSIS OF FOREST FIRE NOISE FOR EARLY DETECTION USING WIRELESS SENSOR NETWORK

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ABSTRACT

Forest is considered as one of the most important resources. As a human being its our duty to protect the animals, trees in the forest from any natural calamities. The main natural calamities or the one caused by human being was the forest fire. This LORA project overcomes or proposes the new method of detecting forest fire using some sensors and it intended to send messages to nearby areas. In this project, Fire and Smoke detection system is developed. It can sense smoke and the rise in temperature and alert user by activating buzzer also send commands on virtual terminal of android phone through wifi module. Fire hazards are not uncommon. All the information sending through LORA and monitored in pc or mobile. Forest fires are one of the main environmental problems in the entire Mediterranean basin. In a context where low power and long-range networks (LPWAN) are increasingly common to the rise of Internet of Things (IoT) architecture, the interest in providing solutions to monitor scenarios and fire prevention based on these technologies is huge. This paper presents a low cost Long Range (LoRa) based network able to evaluate level of fire risk and the presence of a forest fire.

A SECURE CLOUDS O FCLOUD SYSTEM FOR STORING AND SHARING BIG DATA

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ABSTRACT

In Provable Multi files Dynamic data Possession in cloud computing deals with stored data in Dynamic way to cloud server. Multi files Means, data to be copied in multiple server. In the project owner to upload the data in cloud server with automatically data to take multiple files then that files are stored in multiple server. If upload the data in multi-server to avoid the data loss from Hacking and server crash. In this project we introduced new technique that is Fully Homomorphic Encryption (FHE) for take Multi files of data, File security, Data Corrupted. In this Project we have to FHE algorithm for protect the data. That are keygen, copygen and taggen. Above the process done in Existing system using Single file of Dynamic Data.

DEEP POCKETS BARTER MARGIN A PROJECT REPORT

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ABSTRACT

In the fast forward world of technology, everyone is running behind the mobile application and they need all the information on the mobile phone itself. Nowadays the Mobile application users have increased and it equals the population. In this real-world humans are buying all the things in mobile itself. So they can able to buy and sell the product from country to country and state to state. They have bid the product for the market price and then it will happen some wrong while fixing for biding money. In such a way some sellers will give a high rate of product but the product will be less quality. The buyer only the looser to get the product. So lately for biding they fix one broker for buying and selling products. Nowadays in the real world for land buying and selling coming trends with the help of brokers. The seller fixes an amount to the broker and the broker also fixes an amount to the buyer. So the broker can know the land value after that only fixing the original amount from the broker. But nowadays for user confidence, all the lands, cars, etc have come into one bidding application. It will reduce timing and cost-efficient so all the mobile users had started through the mobile application. They can know the complete product details with image, location, prize with categories wise. In this paper, we have introduced the broker to fix the original amount for the posted product and reduce time efficiency for the buyers. They can easily import and export the product. The product and user details can't be easily hacked by hackers because of its highly secured use for the buyers. In this paper, we have implemented a blockchain for getting the products and user details. Another Machine learning concept also implemented for getting confirmation and finalize the amount from the broker.

LORA BASED OCEAN WEATHER MONITORING TOWER

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ABSTRACT

The concept of weather plays important part in our daily life, hence designing of wireless system to monitor weather and ocean environmental conditions which in turn it can be used as useful tool to impact the human life daily. In this system we design a wireless system to monitor the ocean environmental conditions such as humidity, noise, rainfall levels. The values read from the sensors are processed by the controller and the results are displayed on the monitor. And comparing it data with past data to compare it is easily predict future weather condition. All the information passing through LORA module and monitoring in pc.

EXPERIMENTAL STUDY ON RC EXTERNAL BEAM-COLUMN JOINT WITH CRUMB RUBBER

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Abstract

The introduction of polymers in ordinary cement concrete is gaining more attraction in the field of civil engineering. However, in order to promote the use of Polymer Modified Concrete (PMC) in real works, in addition to the mechanical characterization of the material, the study of its structural behaviour is necessary. This investigation aims to study the structural performance of beam-column joints under reverse cyclic loading. The fine aggregate will be partially replaced by crumb rubber of 5%. Mix design is arrived for conventional and rubberised concrete (M40 grade). The structural performance of the tested beam-column joints was evaluated based on load carrying capacity, load deflection response, initial stiffness, rate of stiffness degradation, failure mode, cracking behaviour, displacement ductility, and energy dissipation. The results showed using crumb rubber as a partial replacement of fine aggregate helped to enhance the load carrying capacity, ductility, and energy dissipation of the tested joint.

Keywords: Beam-column joint; energy dissipation; ductility

NON-LINEAR FINITE ELEMENT ANALYSIS OF NOVEL PRECAST CONCRETE BEAM-TO-COLUMN CONNECTION

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Abstract

This paper studies the seismic performance of robust precast concrete exterior beam-column joint. The study aims at designing a novel precast beam-column connection for high seismic regions. In this study, the test results of four precast concrete beam-column connections and a monolithic RC beam-column connection will be presented. The precast beam-column joint specimens are tested under reverse cyclic loading applied at the beam end. The connections are modeled and analyzed using Ansys software. The above mentioned specimens were analysed under reverse cyclic loading until failure. The performance of the each connection will be compared based on ductility, energy dissipation capacity, joint strength and drift capacity. The precast connection that matches the performance of RC monolithic connection will indicate its suitability for seismic regions.

Keywords: Precast Structures, Beam-Column Joints, Seismic Performance, Non-linear Analysis, Ansys

PERFORMANCE OF SELF CURED GEOPOLYMER TILES

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ABSTRACT

Portland cement is a common construction material that is used in the present market for the production of concrete. There is a significant danger to the environment by the use of cement. Greenhouse gas is released into the atmosphere during cement production which causes severe environmental pollution. On the other hand, fly ash is considered as a waste material that is obtained after coal burning which has a major disposal challenge. A new way of using fly ash in concrete was found through the geopolymer concrete production process. Geopolymer concrete is a new concrete that does not require cement and is produced when mixing alkaline solution with flyash. Geopolymer concrete is the principle of environmentally friendly building material that aims to reduce greenhouse gas emissions, but due to its steam curing process it cannot be applied directly on the field. Various researchers have found a way to overcome this drawback by adding extra calcium content rich material into the geopolymer concrete to the self-curing process. Here calcium content rich Ground Granulated Blast Furnace Slag and Ordinary Portland Cement is added as additives in the range of 5-10% at the interval of 1 %. From the result the tile containing GGBS of 10% as additives show good result by 37.5% higher than the oven cured geopolymer tile.

Keywords: Geopolymer, fly ash, alkaline solution, GGBS, Ordinary Portland Cement, flexural strength.

AN EXPERIMENTAL STUDY OF E-WASTE CONCRETE

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ABSTRACT

In this paper ,fine aggregate is partially replaced by E-waste (printed circuit board) with the mix proportion of M25 grade of replacement of 5% &25% the concrete block is made up of fine aggregate ,coarse aggregate ,cement, water & PCB .the aim is to use the PCB waste material effectively.to develop the low cost concrete blocks and minimize. the burden of the E-waste in the environment and dumping issues the conduct test show the compression strength and split tensile strength is nearly equal to the conventional concrete by replacement of 5% of PCB ,but it's achieved desired strength while replacing 25%both the compression and split tensile strength are not equal to the conventional concrete but it still achieved the it's desired strength. it also reduce the weight of the concrete up to 22%.finally, the E- waste can be used in concrete blocks to reduce the land pollution and cost of fine aggregate.

Keywords: Waste, concrete, Compressive Strength, Split Tensile Strength, grinding E-Waste.

APPRAISAL OF DISTORTION CONTINUAL FOR FLUTED RIB GIRDER UNDER CONSISTENT BENDING

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Abstract

This paper presents the results of the theoretical analysis of the lateral buckling and lateral torsion buckling analysis of I-girders with fluted web under uniform bending. Even though lateral buckling and lateral torsion buckling could control the modulus of rupture strength of I-girders composed of narrow-walled members, the amount of resistance a cross section of the I-girder with fluted web is not yet sufficiently do not approach, for example, this method is to assess the warping constant. In this paper, previous studies on the deformation about one axis and amount of resistance of the I-girder with fluted web are first discussed. Then, approximated methods for locating its Torsion due to Load being applied at a distance eccentric and calculating the distortion continual are proposed. Using the suggest methods, the lateral–torsion buckling strength of I-girder with fluted web under consistent bending can be calculated comfortably. Based on the comparisons of AISIS100-07 and AS/NZS 4600-2018 are adopted in the proposed methods are successfully verified. Finally, the effects of the fluted web profiles of the web on the lateral–torsion buckling strength of the I-girder are further discussed.

Keywords: Appraisal, distortion, fluted web, AISIS100-07 and AS/NZS 4600-2018

SELF SENSING GEOPOLYMER COMPOSITE

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ABSTRACT

Smart material technology represents an emerging research field that is finding many applications in civil infrastructures. These applications include Structural Health monitoring, damage assessment, structural control, structural repair and maintenance. It enhanced structural performance, durability and improves safety against natural hazards. Smart geopolymer concrete represents the development of concrete from ecofriendly high strength and high performance at ambient curing to multifuctionality and intelligence. Selfsensing is a kind smart concrete that has attracted wide attention from academic and industry. Nano materials having sensing properties. (Nano Graphene, Nano Fe_2O_3). In this study while adding Nano particles to the geopolymer composite sensing property. Nano particles are added with the varied percentage to the mix proportion. The materials are checked for their ascertaining of the properties. Specific gravity, Fineness modulus, Water absorption are determined. FTIR, SEM analysis, Particle size distribution are evaluated. Based on the material properties suitable the mix proportion has been formulated. Alkaline solution with 8MNaOH is adopted for this Nano based Geopolymer composite. Compression test, Electrical resistivity test, Durability test will be conducted in the varies structural elements.

Keywords: Sustainable construction material , Nano particles, sensing ability

A REVIEW PAPER ON COMPOSITION & CHARACTERISTIC OF COPPER WITH GRAPHENE COMPOSITE

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ABSTRACT

The Derivatives of Graphene can boost the various versatile properties of composites despite the low addition to their combined excellent performance. Graphene aligns with copper can achieve with stronger improvement in physical and chemical properties compared to composites randomly distributed. Further work processed by the Chemical Vapor Deposition Method (CVD).In this process thermally induced chemical reactions at the copper surface of a heated graphene substrate with the reagents supplied in the form of gaseous. CVD has characterized the material changes from the condensed phase to the vapor phase and then to the thin film condensed phase.

Keywords: Graphene oxide, Copper composition, Chemical Vapor Deposition, Chemical properties ,physical properties ,substrates.

PERFORMANCE STUDIES ON PROTON EXCHANGE MEMBRANE FUEL CELL WITH SLIGHTLY TAPERED SINGLE FLOW CHANNEL FOR DISSIMILAR CELL POTENTIALS

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ABSTRACT

The performance of a Proton Exchange Membrane Fuel Cell (PEMFC) is greatly affected by the geometrical and operating parameters. The flow channels are used for uniform reactant distribution throughout the active area of fuel cell. This paper numerically investigates the effects of slight taper in single flow channel of PEMFC for different cell voltages (0.2V to 0.9V). The numerical model of straight flow channel and three different slightly tapered (0.25mm, 0.5 mm and 0.75mm) single flow channel PEM fuel cell was developed by using a commercial modeling package and analyzed by using COMSOL Multiphysics software package. Different taper values and cell potentials were taken to optimize the performance of the PEMFC. The numerical results revealed that the PEMFC with taper flow channel at an operating voltage of 0.35V show evidence of the better performance compared with straight flow channel. Performance and polarization curves were drawn from the numerical results. The current densities, power densities, anode Hydrogen concentration, cathode Oxygen concentration, anode water concentration, cathode water concentration of straight and three different slightly tapered flow channels of PEMFC with fifteen different cell potentials were compared with each other.

Keywords: Performance studies, PEMFC, tapered single flow channel, dissimilar cell potentials, COMSOL.

AN EFFCET OF INJECTION TIMING OF BIODIESEL ON SINGLE CYLINDER DIESEL ENGINE PERFORMANCE,COMBUSTION AND EMISSION

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Abstract

The petroleum based fuel demand steep increases day by day due to increases motorization and industrialization. Many of automobile vehicle and industry are generate the harmful emission to the environment, that emissions are affect the human, animal and plants. The several researcher study about the alternative fuels and to reduces pollution in the environment. In this study macro algae can be chosen for production biodiesel. It is consumes more amount CO_2 for their growth, so reduces CO_2 from the environment. The macro algae was collected, dried in shadow, and powdered in pulvariser. The powdered sample are filled with soxhlet chemical apparatus by using solvent such as ISO propanal and N-hexane circulated through a sample at a temperature of solvent is 650 about 70 to 75hrs for the 94% of lipid was extracted from sample. Further investigation to be carried out in the diesel engine such varying the injection timing to improve the performance and to reduces the emission. The retarded injection timing such as crank angle(CA) CA220 ,CA210 and to compare CA230(std).The CA220 B20gives higher break thermal efficiency due to reduces injection delay. The emission of smoke density and hydro carbon were reduced due to complete combustion in reduces injection delay and the NOx in CA220 B20shows lower, The combustion wise CA 220 gives lower heat release rate.

Keywords: Crank angle, Macro algae, NOx, Heat release rate.

RECENTLY USED NEWER REINFORCEMENTS IN METAL MATRIX COMPOSITE –A REVIEW

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Abstract

Aluminium and Magnesium are some of the widely used light weight metals in vehicles and aerospace industries, but these materials are having low strength to weight ratio when compared to steel. In order to enhance the strength to weight ratio of these metals, some ceramic materials like carbides and oxides of metals or some natural residues are added as reinforcements and proved to have better augmentations in the physical properties. In the present work the applications of these materials in industries and the effects of some recently used newer reinforcements with these materials as matrix phase are reviewed. The changes in mechanical behaviours like Hardness, Tensile strength and Wear behaviour are also reviewed.

Keywords: Metal Matrix Composites, reinforcements, ceramics, hardness, tensile strength, review.

EFFECT OF POURING TEMPERATURE ON MECHANICAL BEHAVIOUR OF Al-SiC METAL MATRIX COMPOSITE

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Abstract

In this work, a modest attempt has been made to find out the pouring temperature at which best mechanical properties of Al6061, 2%Cu and reinforced 12% SiCp and 4%Mg MMC can be obtained. Addition of 2% Cu in Al6061 is more or less comparable to the composition of duralumin, which is widely used in aerospace applications. SiCp is hard and having linear thermal expansion at high temperature. With reinforcement of SiCp in Al-Cu alloy, it can be postulated that hardness of MMC retains at high temperature applications. The composite material is prepared by stir casting process and tested for hardness, tensile strength, wear test and micro structural analysis also done. The composite prepared with 670°C as pouring temperature has shown better dispersion of additives and superior properties than other composites.

Keywords: Metal Matrix Composites, MMC, Cu, Silicon Carbide (SiC), Aluminium, Stir casting, Wear Test, Tensile Test, Hardness

MECHANICAL PROPERTY TESTING OF FRICTION STIR WELDED ALUMINIUM 6063 PLATE

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ABSTRACT

Friction stir welding (FSW) is a new welding technology, in order to improve the strength of welded joints. FSW technique may be employed to eliminate porosity, micro-fissuring, hot cracking etc. It has been applied widely in aerospace, marine, industries etc, because of its unique mechanical properties and metallurgic structure. It is important to find strength degradation and microstructure in FSW welded aluminium 6063, because of its applications ranging from rail road to aerospace vehicles. For this purpose an experimental investigation has been carried out on strength degradation using tensile, hardness and microstructural testing of FSW butt welded joints of 6063 aluminum alloy. Scanning Electron Microstructure (SEM) technique is used to find out the microstructure at different points. In FSW joint, lower temperatures are involved in the process due to severe plastic deformation induced by the tool motion resulting in lower decay of mechanical properties. In the nugget zone there is a recrystallization of very fine grain structure. Hence from industrial perspectives, FSW process is very competitive as it saves energy, has higher tensile strength and prevents the joints from fusion related defects.

Keywords: Friction Stir weld, Al6063, Mechanical Properties, SEM

EFFECT OF TEMPERATURE ON MECHANICAL BEHAVIOUR OF Al-SiC METAL

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ABSTRACT

In this project work Al, Sic composite materials with Mg and copper has been fabricated by stir casting process at various stirring temperature and the tests like Tensile, Wear, Micro hardness, and Micro structure to analyze. The high cost of fabrication hindered the actual application of metal matrix composite (MMC). Despite of their high stiffness, strength, corrosion resistance, wear resistance, non- reactivity with chemicals and so many other tailored quality which are never obtained in alloy of metals. In this study, a modest attempt has been made to find out the process parameters at which best mechanical properties of Al6061, 5%Cu and reinforced 12% SiCp and 6%Mg MMC can be obtained. Addition of 5% Cu in Al6061 is more or less comparable to the composition of duralumin, which is widely used in aerospace applications. SiCp is hard and having linear thermal expansion at high temperature. With reinforcement of SiCp in Al-Cu alloy, it can be postulated that hardness of MMC retains at high temperature applications.

Keywords: Stir Casting, Process Parameter, Al 6061, Mechanical Properties, SEM

ANALYSIS OF EFFICIENCY LOSSES IN ANGLES OF MECHANICAL LINKAGES

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ABSTRACT

A mechanical linkage is an assembly of bodies connected to manage forces and movement. A linkage modeled as a network of rigid links and ideal joints is called a kinematic chain. Our aim is to design and analyze about the mechanical linkages. Mechanical linkage are used in the heavy machinery since its reliability is more but the losses when compared to the other system like cable operated linkages. The objective of this project is to improve the brake linkage efficiency of the Vehicles by optimizing the joint angles of the linkages.

Keywords: Mechanical Linkage, Vehicle, Brake

EFFECT OF STIRRING TIME ON STIR CASTING OF SIC REINFORCED AL COMPOSITE MATERIAL

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ABSTRACT

In this project work Al, Sic composite materials with Mg and copper has been fabricated by stir casting process at various stirring time and the tests like Tensile, Wear, Micro hardness, and Micro structure to analyze. The present study aims to evaluate mechanical properties and microstructure behavior of aluminum metal matrix composite fabricated using Al 6061 alloy with 12% silicon carbide, 4% magnesium and 2% copper content. The tensile strength and hardness test of the fabricated components are investigated as a function of different stirring time while stir casting. Microstructure analysis were analysed in cast components using optical microscope. The distribution of reinforcing particles and alloying elements were observed including dendrites, effectively dependent on stirring time while casting. The results revealed that change in stirring time while addition of magnesium and copper alloying element with aluminium SiC composite has significant effect in strength and hardness. The SiC particles dissipate more efficiently at 10min stirring time homogeneously with Al Mg Cu matrix. The SiC reinforcement distribution is enhanced by addition of magnesium which increases the wettability.

Keywords: Stir Casting, Stirring time, SiC, Microstructure, SEM

THERMAL ANALYSIS OF CERAMIC COATING ON ALUMINIUM PISTON BY PLASMA SPRAY TECHNIQUE

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ABSTRACT

In this Project, the surface of a piston in an engine is coated with layer coating powder by the plasma spray technique, and its surface behavior is subsequently analyzed. The purpose of this study is to analyze with mechanical and thermal effects of surface coating for a piston in frictional mechanism. In this related, with and without coated specimens were prepared, then the microstructure, hardness, corrosion test were carried out. From the obtained test and Ansys engine performance. The results show less deformation and fewer scratches due to wear on results , it is found that the coated specimen having improved properties in towards the diesel the multi-layer coated piston as compared to uncoated one.

Keywords: Piston, Thermal analysis, Ansys, Ceramic Coating

DESIGN AND ANALYSIS OF COMPOSITE LEAVE

SPRING FOR LIGHT VEHICLES

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ABSTRACT

Reducing weight while increasing or maintaining strength of products is getting to be highly important research issue in this modern world. Composite materials are one of the material families which are attracting researchers and being solutions of such issue. In this paper we describe design and analysis of composite leave spring. The objective is to compare the stresses and weight saving of composite leave spring with that of steel leave spring. The design constraint is stiffness. The Automobile Industry has great interest for replacement of steel leave spring with that of composite leave spring, since the composite materials has high strength to weight ratio, good corrosion resistance. The material selected was glass fiber reinforced polymer E-glass epoxy, carbon epoxy and graphite epoxy is used against conventional steel. The design parameters were selected and analyzed with the objective of minimizing weight of the composite leave spring as compared to the steel leave spring. The leave spring was modeled in CATIA V5 and the analysis was done using ANSYS 12.0 software for better understanding. Then the model is analyzed for the deflection, max stress induced and strain for all above materials under same load.

Keywords: Spring, Class fibre, Epoxy, Catia, Analys.

EXPERIMENTAL INVESTIGATION ON MECHANICAL AND CORROSION BEHAVIOUR OF GROUNDNUT SHELL ASH REINFORCED MAGNESIUM COMPOSITE MATERIAL BY POWDER METALLURGICAL PROCESS

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ABSTRACT

Due to their excellent properties such as high specific stiffness, strength/weight ratio, and wear resistance, metal matrix composites (MMCs) with particulate reinforcement and related manufacturing methods have become important research topics in recent years. Magnesium MMCs are materials that are commonly used for fabrication of light-weight functional components. Magnesium MMCs that are reinforced with various fractions of GSAp (1, 2, and 3 wt.%) were fabricated by powder metallurgy (PM) technique using a sintering cycle in a vacuum furnace at 590C for 2 hrs. The sintered density of the MMCs decreased with an increase in the amount of GSAp addition. The hardness of the MMCs was found to be higher than that of unreinforced Mg. The compressive test results also showed a significant effect of 3 wt.% GSAp content on the compressive strength of magnesium MMCs manufactured by the PM technique. Microstructural Analysis and corrosion behaviour in NaCl solution was also examined. The dispersion of GSAp in the Magnesium matrix was analysed. Corrosion behaviour with the increase of GSAp also studied. The mechanical behaviours like Micro Hardness, wear, Compressive strength were also examined and analysed in comparison with pure Magnesium.

Keywords: MMC, Power Metallurgy, Groundnut Shell, Mechanical Properties, Microstructure

DESIGN AND ANALYSIS OF VEHICLE WEIGHT BALANCING SYSTEM BY USING DOUBLE ACTING CYLINDER

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ABSTRACT

Normally in all the vehicle body being disturbed, while travelling over a rough road. By Using double acting cylinder the vehicle is undisturbed while travelling. When to turn the vehicle, the vehicle weight acting at left or right side. so the weight is distributed or equalize by using hydraulic double acting cylinder. The hydraulic double acting cylinder piston to compress the fluid and to flow or pass to the opposite cylinder, so the weight is equalized. In this system what we need is a system that will absorb the energy of the vertically accelerated wheel, allowing the frame and body to ride undisturbed motion using double acting cylinder. When the vehicle is moving on the roads, there are some types of force acting on the vehicle such as yawing, rolling, pitching forces. In this system used to reduce rolling force in a vehicle.

Keywords: Weight Balance, Double Acting Cylinder, Automobile

MACHINING OF STAINLESS STEEL USING ABRASIVE WATER JET AND OPTIMIZING PROCESS PARATER

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ABSTRACT

The usage of Stainless Steels in the Engineering world is a known fact considering the various fields in which it is used and also its properties. Especially Stainless Steel 316 grade is amongst the most commonly used types of steels in the world. Abrasive Water Jet Machining (AWJM) technology has demonstrated to be an interesting manufacturing process for various engineering sectors like automotives, boats, chemical environments, etc. due to its specific advantages when machining Stainless Steels. Normal Conventional Machining Processes have lots of disadvantages when it comes to machining stainless steels, as they tend to produce heat, excessive chip formation, etc. In order to overcome these drawbacks, AWJM is used. The machining is much more suitable and doesn't cause any alter effects. After the machining, Design of Experiments method is used to optimize the process parameters so as to obtain better surface finishing & minimize the Kerf Width and thus help in finding out the optimum process parameters. Response Surface Methodology helps to establish the relationship between one or more response variable (Surface Roughness & Kerf Width) and the essential controllable input variables (Abrasive Mass Flow Rate, Traverse Speed & Stand-Off Distance).

Keywords: Stainless Steel 316 grade, Abrasive Water Jet Machining (AWJM), Design of Experiments, Response Surface Methodology

EFFECT OF MULTIWALLED CARBON NANO TUBES BLENDS WITH BIODIESEL IN A DIESEL ENGINE WITH VARIOUS INJECTION PRESSURE

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ABSTRACT

In this Project, the effects of adding Multi-Walled Carbon nanotubes (MWCNTs) to jatropha biodiesel-diesel blended fuel (B20D) on performance combustion and emissions characteristics of a compression-ignition engine were experimentally investigated. The B20D with 25ppm of MWCNTs were examined at different engine loads and injection pressure. Compared to pure diesel, the use of B20D without MWCNTs caused a slight increase in the engine performance and decrease in the engine emissions at most examined conditions. The MWCNTs B20D blended fuel attained a maximum increase of 16.37% in the brake thermal efficiency and a decrease of 16.30% in the brake specific fuel consumption at the dose level of 25ppm of MWCNTs compared to B20D. The MWCNTs B20D blended fuel also brought about an enhancement in combustion characteristics where the peak cylinder pressure, the maximum rate of injection pressure rise to the peak rate of 200bar, 220bar and 240bar respectively, at the same dose level. According to the measured emissions, a significant reduction of engine emissions was achieved at the dose level of 25ppm, where NOx, CO, and UHC were reduced respectively. According to the obtained results, the recommended concentration of MWCNTs in B20D was concluded to be 25ppm, which could give significant improvements in overall the engine performance and emissions with a good balance between them.

Keywords: Nano tubes, Biodiesel, IC engine, Emission, PPM.

CHARACTICS STUDYOF ALUMINIUM ALLOY 8000 SERIES IN TIG WELDING

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ABSTRACT

The present work aims to evaluate the effect of Gas Tungsten Arc Welding process parameters on the depth of penetration of the given specimen. In this study, TIG welding parameters influence on weld ability 8011 aluminum alloy specimens investigated. The welding parameters such as arc voltage, welding current, welding speed, gas flow rate and heat input are taken into account which influence the depth of penetration measured after welding. Effect of welding speed and welding current on the tensile strength of the weld joint has been investigated for both type of weld joint. Optical microscopic analysis has been done on the weld zone to evaluate the effect of welding parameters on welding quality. Micro-structure value of the welded zone has been measured at the cross section to understand the change in mechanical property of the welded zone.

Keywords: Al 8011, TIG, Parameters, Microstructure

DESIGN AND ANALYSIS OF REAR SPOILERS AND INVESTIGATING THE AIR FLOW OF THE SPOILER USING FLUENT

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ABSTRACT

This project describes a study of drag reduction spoilers for car with a body-on-frame structure using Computational Fluid Dynamics (CFD) simulations. The demand of a high speed car is increasing in which vehicle stability is of major concern. Forces like drag force, lift force, weight, side forces and thrust acts on a vehicle when moving on road which significantly affect the fuel consumption The drag force is produced by relative motion between air and vehicle and about 60% of total drag is produced at the rear end. Reduction of drag force at the rear end improves the fuel utilization, stability and increase in speed. This work aims to reduce the drag force which improves fuel utilization and protects environment as well. In the stage of work different types of spoilers are used to reduce the aerodynamic drag force and compared. The design of spoilers has been done on PTC Creo and the same is used for analysis in ANSYS-(fluent). The analysis is done for finding out drag and lift forces at different velocities and pressure. This study proposes an effective numerical model based on the computational fluid dynamics (CFD) approach to obtain the flow structure around a passenger car with a rear spoiler.

Keywords: CFD, Spoilers, Creo, Fluent

EXPERIMENTAL INVESTIGATION PARAMETER OF MILLING ON ALUMINUM

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ABSTRACT

Optimization is the expression, under the given circumstance, of obtaining the best mix of outcomes. No specific methods are available to deal with all numerical and mathematical issues. So different types of techniques for dealing with different kinds of issues have been introduced. The optimization technique is most widely used in Electro Discharge Machining (EDM) to find the best combination of input parameters (such as current, voltage, pulse on time, pulse off time, etc.) for the desired output parameters (such as material removal rate, surface roughness, tool wear rate, etc.). This method usually only applies to conductive materials. Once dielectric fluid (acts as a semiconductor and flushing agent to clean and remove eroded debris from the region of the spark gap) flows, the workpiece is releases metal ions, and the tool is releases electrons. Therefore, a spark is formed between the tool and workpiece and induces a temperature of 8000-12000 °C, and due to this spark energy, the material is removed from the substrate. The maximum MRR, minimum TWR and SR are critical for the optimization technique.

MACHINABILITY INVESTIGATION AND COMPARISION OF DIFFERENT SUPER ALLOY (INCONEL 625, INCONEL 718, MONEL 400, NIMONIC ALLOY 80A) BY WIRE-EDM (WEDM)

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ABSTRACT

In this work, the defined problem has been pursued in multiple directions beginning from planning and designing the experiments to the optimization of machining parameters during Wire-EDM of Super Alloys (Inconel 625, Inconel 718, Monel 400, Nimonic 80A) material. The objectives of the present work are summarized below: Investigation of working ranges and levels of WEDM process parameters using one factor at a time approach. Experimental determination of the effects of the various process parameters such as pulse on time, pulse off time, corner servo voltage, flushing pressure, wire feed, wire tension. spark gap voltage and servo feed. On the performance measures like cutting rate, surface roughness and dimensional deviation in WEDM process. Optimization of the performance measures using TAGUCHI Method. Multi-objective optimization of process parameters of WEDM process using Grey Relational Analysis with SVNS. Multi Criteria decision making, optimization of process parameters of WEDM process by using Technique for Order of Preference by Similarity to Ideal Solution (TOPSIS) with SVNS. Validation of the results by conducting confirmation of experiments.

PERFORMANCE & EMISSION CHARACTERISTICS OF EUCALYPTUS OIL & DIESEL BLEND IN FOUR STROKE SINGLE CYLINDER DIESEL ENGINE

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ABSTRACT

The criteria of this study is to partial replacement of diesel fuel with eucalyptus oil and experimentally determines their effects on the engine performance, combustion and exhaust emissions such as brake specific energy consumption (BSEC), brake thermal efficiency (BTE), heat release rate, cylinder pressure and emissions such as smoke density, carbon monoxide (CO), oxygen (O2), unburned hydrocarbon (UBHC) and oxides of nitrogen (NO_2). For this purpose, five different blends containing 10, 20, 30% of eucalyptus oil with diesel fuel were prepared in volume basis and tested in naturally aspirated direct injection kirloskar TAFI diesel engine with constant speed of 1500 rpm at varying load conditions. Therefore, in this work the eucalyptus oil which is high octane biomass derived fuel is blended with diesel in different proportions by volume and used as fuel in four stroke single cylinder diesel engine.

EXPERIMENTAL INVESTIGATION ON ELECTROCHEMICAL MICROMACHINING OF STANDARD DUPLEX STAINLESS STEEL (2205) WITH BRASS TOOL

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ABSTRACT

The advancement in the field of mechanical engineering is very to meet the growing demands of the industry. In particular the demand for alloy materials having high hardness, toughness and impact resistance has grown multi fold due to high level of design constraints. Electro Chemical Micro Machining (ECMM) machines are used to cut metals of any hardness in micro- shapes that are difficult or impossible to cut with traditional methods. These machines also specialize in cutting complex contours or geometries that would be difficult to produce using conventional cutting methods. Machine tool industry has made exponential growth in its manufacturing capabilities in last decade but these machine tools are yet to be utilized at their full potential due to inadequate data on optimum operating parameters. From various tools we select Brass tool for machining, to check the Output Parameters in the workpiece. The selection of optimum parameters for machining of Standard Duplex Stainless Steel is a tough challenge for Aero space, Electronics and Bio-medical industries. Hence, the Standard Duplex Stainless Steel are specifically selected for this research. The objective of the present research work is to investigate the effects of the various ECMM process parameters on the MRR and dimensional deviation to obtain the optimal sets of process parameters to produce efficient high quality machining.

FINITE ELEMENT ANALYSIS OF DRUM BRAKE USING DIFFERENT COMPOSITE MATERIALS

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ABSTRACT

A brake is a mechanical device which inhibits motion. The brake drum is a critical component that experiences high temperatures and develop thermal stresses during application of brakes. So, in this project we design the model of drum brake (drum, liners, springs etc.,) and perform the structural and thermal analysis only. A model is created with the help of software Solid work and structural and thermal analysis are performed in ANSYS 15.0 work bench. A static structural and thermal analysis of different materials such asAluminium Alloy, Grey Cast Iron, Aluminium metal matrix composite, Mild Steel for a brake drum is done.

DESIGN AND ANALYSIS OF ROCKET NOZZLE WITH VARYING DIVERGENT ANGLE USING CFD

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ABSTRACT

A nozzle is used to give the direction to the gases coming out of the combustion chamber. Nozzle is a tube with variable cross-sectional area. Nozzles are generally used to control the rate of flow, speed, direction, mass, shape and the pressure of the exhaust stream that emerges from them. The nozzle is used to convert the chemical thermal energy generated in the combustion chamber into kinetic energy. The nozzle converts the low velocity, high pressure, high temperature gas in the combustion chamber into high velocity gas of lower pressure and low temperature. Our study is carried using software's like catia for designing of the nozzle and fluent for analyzing the flows in the nozzle. The Numerical study will be conducted to understand the air flows in a conical nozzle at different divergence degrees of angle using two-dimensional axisymmetric models, which solves the governing equations by a control volume method. The present study is aimed at investigating the supersonic flow in conical nozzle with different angle positions with divergence degree of angle. The throat diameter and inlet diameter is same for all nozzles with various divergence degree of angles. The flow is simulated using fluent software. The flow parameters like pressure, angle of nozzle at exit are defined prior to the simulation. The results will compare with that of the nozzles with

DESIGN AND FABRICATION OF AUTOMATIC HEADLIGHT DIM/BRIGHT AND DAYTIME OFF CONTROL

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ABSTRACT

The aim is to design and develop a control system based an electronically controlled automatic head light controller by using LDR Sensor Automatic head light dim/bright and daytime off controller is consists of LDR sensor circuit, Control Unit, Dim/bright light and frame. The sensor is used to detect the opposite side vehicle (Light Beam) on the path. There is any obstacle on the path, the sensor senses the obstacle (Light Beam) and giving the control signal to the Dim/bright Light.

DESIGN & FABRICATION OF PORTABLE HOT AND COOL SYSTEM

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ABSTRACT

Energy consumption has been rising globally in recent years, which is a major source of concern owing to its impact on climate change. Climate change has resulted in stronger hurricanes, more droughts and heat waves, rising sea levels, and predictions that the arctic will be ice-free by mid-century, according to NASA. The heating and cooling of buildings is one of the most noticeable energy consumption methods that has a detrimental impact on the climate. As a result, reducing the amount of energy used in buildings for heating and cooling has become a popular research topic. While energy efficiency has improved dramatically in recent years, the usage of hazardous refrigerants like R-410a has already had a significant negative impact on the environment. This created a requirement. Electrical energy has been ingrained in all human beings; nevertheless, demand for electricity has risen dramatically in recent years, and hence electricity provided through traditional means is in short supply. Solar, wind, and thermal power plants are the most common sources of electricity nowadays. However, because more space can be utilised as a result of this, fuel costs are rising every day, and power consumption in commercial sectors is at an all-time high. As a result, use a Thermo Electric Power Generator to avoid these issues (TEG).

OPTIMIZATION OF PROCESH PARAMETER FOR FABRICATING AZ31 ALLOY BY POWDER METALLURGY

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ABSTRACT

The Magnesium based materials found widespread in automobile industries and Structural applications due to their lower density. The manufacturing of magnesium based materials requires a protective atmosphere to prevent oxidation as it is more prone to it. This requires a continuous supply of gases like Argon, Co2, SF6, or strong vacuum. The present investigation involves fabricating AZ31 alloy by powder metallurgical route, in which sintering process is carried out in vacuum atmosphere. The parameters for fabricating the alloy are optimized using Taguchi's method, the part produced by trial run is subjected to Micro structural analysis.

EFFECT OF COMPOSITION OF SIC ON PARTICLE DISTRIBUTION AND MECHANICAL PROPERTICS OF ALUMINIUM COMPOSITE MATERIAL

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ABSTRACT

In this project work Al, Sic composite materials with Mg and copper has been fabricated by stir casting process at various stirring speed and the tests like Tensile, Wear, Micro hardness, and Micro structure to analyze. The high cost of fabrication hindered the actual application of metal matrix composite (MMC). Despite of their high stiffness, strength, corrosion resistance, wears resistance, non- reactivity with chemicals and so many other tailored quality which are never obtained in alloy of metals. to find out the process parameters at In this study, a modest attempt has been made which best mechanical properties of Al6061, 5% Cu and reinforced 14%, 16%, 18% Sic and 6%Mg MMC can be obtained. Addition of 5% Cu in Al6061 is more or less comparable to the composition of duralumin, which is widely used in aerospace applications. Sic is hard and having linear thermal expansion at high temperature. With reinforcement of Sic in Al-Cu alloy, it can be postulated that hardness of MMC retains at high temperature applications.

DESIGN AND ANALYSIS OF COMPOSITE LEAVE SPRING FOR LIGHT VEHICLES

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ABSTRACT

Reducing weight while increasing or maintaining strength of products is getting to be highly important research issue in this modern world. Composite materials are one of the material families which are attracting researchers and being solutions of such issue. In this paper we describe design and analysis of composite leave spring. The objective is to compare the stresses and weight saving of composite leave spring with that of steel leave spring. The design constraint is stiffness. The Automobile Industry has great interest for replacement of steel leave spring with that of composite leave spring, since the composite materials has high strength to weight ratio, good corrosion resistance. The material selected was glass fiber reinforced polymer E-glass epoxy, carbon epoxy and graphite epoxy is used against conventional steel. The design parameters were selected and analyzed with the objective of minimizing weight of the composite leave spring as compared to the steel leave spring. The leave spring was modeled in CATIA V5 and the analysis was done using ANSYS 12.0 software for better understanding. Then the model is analyzed for the deflection, max stress induced and strain for all above materials under same load.

DESIGN AND FABRICATION VERTICAL AXIS WIND TURBINE

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ABSTRACT

Wind energy is one of the promising renewable energy, used to generate electric power. The search for environmental friendly, sustainable energy has promoted in this industrial world. The present global technological society is depended on the availability of energy. The development of industry, agriculture and transportation, etc. is totally depended on the availability of power. In today's life, with the increase in demand of electricity its generation in huge amount has also become very important. In today's era, electricity is generated by burning the fossil fuels, but these fossil fuels will soon get depleted and this critical situation gives rise to the use of renewable sources of energy for generation of electricity. The main objective of the attempt is to produce electricity by using the force of air created by the moving vehicle on highways. On highways the vehicles face the problem while travelling at night due to less lightning. This problem can be overcome by using the vertical axis wind turbine (VAWT). This is one of the methods of power generation. Wind exerts force on the blade and this force will rotate the vertical turbine blade and this blade is coupled with the Dynamo through shaft and this generator will produce electricity. Wind is an unconventional source of energy, by which the electricity can be obtained by converting kinetic energy of wind into electrical energy by using wind turbine.

FABRICATION OF PNEUMATIC SHEET BENDING MACHINE

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ABSTRACT

One of the most common fabrication operations is metal bending. Bending of sheets and rods is done using bending machines mostly manually or using hydraulic pressure. Well we here develop a small and lightweight machine to bend low thickness metal sheets using pneumatic pressure. This machine makes bending a single operator work whereas 2 operators are needed for all manual bending processes. The machine makes use of a pneumatic control valve to operate the machine. The user may use the valve using his/her thumb to control a joystick. The valve button when pressed/moved drives pressure through the cylinder thus pressurizing and pushing the tool against the other v tool. This bends the sheet placed in between the tools to be bent as per the required angle. The pneumatic cylinder is mounted on a sturdy supporting frame so that the force does not affect its stability. This ensures sturdy and accurate bends each time using just pneumatic pressure. The base frame and supporting frame give some clearance to the machine for easy sheet insertion and bending.

STUDY OF MECHANICAL PROPERTIES OF FRICTION STIR WELDED ALUMINIUM ALLOYS OF 5052 AND 6061

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ABSTRACT

Frictions stir welding process in which frictional force is used to weld or join two or more metals. The idea behind using with the equipment of friction stir welding is heating the metal to the temperature below the recrystallization temperature which reduces the weld cracks such as porosity, under cut, etc. The quality of weld is good when compare to other fusion welding technique. We have selected our project material as aluminium alloy because of its light weight property. The main objectives of this project to optimize the process parameters in friction stir welding using response surface method. The main source of the project is to weld the aluminium alloy using fsw and have obtained the quality of weld by optimisation techniques.

FABRICATION OF DRONE FOR SURVEILLING TEMPERATURE AND HUMIDITY IN HAZARDOUS AREA

Hariharan G, Jeremiah Roshan Sj, Joseph Besky J, Kavikumar D, Mr. S. Anisii, M.E, *Department of Mechanical Engineering, St Joseph College of Engineering, Chennai*

ABSTRACT

The aim of this project is to develop an unmanned aerial vehicle (UAV) equipped with temperature and humidity sensors in order to monitor and send it to the ground base. The collected data is transmitted by a Bluetooth module to any devices within the range. High temperature and water vapour are mostly present in most of the hazardous area that can be deducted and monitored from this drone. The goal is to fly above the whole length of the area while recording and displaying the scene in real time. Temperature and humidity sensor are mounted on drones, providing a whole new level of security. In high temperature area maintenance crews and civilians can be instructed to be safety. In addition to the cost savings and environmental benefits for human safety, Cahill says that drones may prove more cost-effective than manned inspections. The sensitivity of the sensor can be adjusted by potentiometer. Aerial sensor platforms are powerful tools for understanding environmental conditions. Get real time data from anywhere your UAV can take it, including the current temperature and relative humidity conditions. Data logging and archiving accurate sensor data for later reference can also help with overall data analysis and interpretation. Understanding the bigger environmental conditions can help you infer details about how mining and maintenance processes are affected by air pollution and other parameters. These sensors are controlled with Arduino Nano. These controls are processed by the Arduino program.

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