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29th - 30th April 2022

ICOCS - 2022

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International Conference on Communication Systems

ICOCS-22

29th-30th April, 2022

Virtual Conference

Organized By

Institute For Engineering Research and Publication (IFERP)

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IFERP-Explore

Editorial

We cordially invite you to attend the International Conference on Communication Systems (ICOCS-22) as Virtual Conference which will be held on 29th-30th April, 2022. The main objective of this conference is to provide a platform for researchers, students, academicians as well as industrial professionals from all over the world to present their research results and development activities in relevant fields of Communication Systems. This conference will provide opportunities for the delegates to exchange new ideas and experience face to face, to establish business or research relationship and to find global partners for future collaboration.

These proceedings collect the up-to-date, comprehensive and worldwide state-of-art knowledge on cutting edge development of academia as well as industries. All accepted papers were subjected to strict peer-reviewing by a panel of expert referees. The papers have been selected for these proceedings because of their quality and the relevance to the conference. We hope these proceedings will not only provide the readers a broad overview of the latest research results but also will provide the readers a valuable summary and reference in these fields.

The conference is supported by many universities, research institutes and colleges. Many professors played an important role in the successful holding of the conference, so we would like to take this opportunity to express our sincere gratitude and highest respects to them. They have worked very hard in reviewing papers and making valuable suggestions for the authors to improve their work. We also would like to express our gratitude to the external reviewers, for providing extra help in the review process, and to the authors for contributing their research result to the conference.

Since February 2022, the Organizing Committees have received more than 90 manuscript papers, and the papers cover all the aspects in Communication Systems. Finally, after review, about 62 papers were included to the proceedings of ICOCS-22.

We would like to extend our appreciation to all participants in the conference for their great contribution to the success of ICOCS-22. We would like to thank the keynote and individual speakers and all participating authors for their hard work and time. We also sincerely appreciate the work by the technical program committee and all reviewers, whose contributions made this conference possible. We would like to extend our thanks to all the referees for their constructive comments on all papers; especially, we would like to thank to organizing committee for their hard work.

Acknowledgement

IFERP is hosting the International Conference on Communication Systems (ICOCS-22) this year in month of April. The main objective of ICOCS-22 is to grant the amazing opportunity to learn about groundbreaking developments in modern industry, talk through difficult workplace scenarios with peers who experience the same pain points, and experience enormous growth and development as a professional. There will be no shortage of continuous networking opportunities and informational sessions. The sessions serve as an excellent opportunity to soak up information from widely respected experts. Connecting with fellow professionals and sharing the success stories of your firm is an excellent way to build relations and become known as a thought leader.

I express my hearty gratitude to all my Colleagues, Staffs, Professors, Reviewers and Members of Organizing Committee for their hearty and dedicated support to make this conference successful. I am also thankful to all our delegates for their pain staking effort to make this conference successful.

Er. R. B. Satpathy
Chief Executive Officer
Institute for Engineering Research and Publication (IFERP)

Keynote Speaker

Prof. Dr. STEVEN FURNELL
Professor of Cyber Security,
University of Nottingham,
Nottingham, England, United Kingdom.

Message

I am delighted to be joining you to participate in the International Conference on Communication Systems and to be delivering a keynote presentation. In my talk I will be looking at the challenge of cyber security, and giving consideration to how seriously the issue is really being taken. Various cyber threats have existed for years, and many organisations readily claim to recognise the importance of security to protect their business. However, the reality often seems somewhat removed from this, with an ongoing lack of attention towards aspects of protection that would be likely to help. The talk will explore this in more detail and will provide some examples to illustrate the concern.

I hope that you will find the talk interesting and that it will give a basis to reflect upon our cyber security behaviours. I would like to thank the organisers for the invitation and pass my good wishes to all the other presenters that are speaking within the exciting programme for the event.

Keynote Speaker

Dr. RAZIQ YAQUB
Associate Professor,
Electrical Engineering and Computer Science,
Alabama A&M University,
Huntsville, AL.

Message

I feel honored to be invited as a Keynote Speaker at the International Conference on Communication Systems (ICOCS-2022), 29th-30th April, 2022, organized by Institute for Engineering Research and Publication (IFERP). I express my sincere appreciation to the Institute for Engineering Research and Publication (IFERP) for taking concrete steps in organizing intellectual activities leading to disseminating the knowledge. It is an excellent service to the nation and the entire world, for which the organizers, committees, and facilitators deserve congratulations.

Though Covid-19 was a pandemic on the one hand, on the other hand, it took the culture of webinars to the next step that vanished the barriers among researchers and scientists around the globe to join and present their findings to their peers. Though virtual, I am confident that this international conference will bring several critical issues to the table and discuss their possible solutions. I sincerely believe that the conference will provide networking opportunities and a platform for students, professors, researchers, and decision-makers to establish collaborations and promote Research and Innovation in Science, Technology, and Management.

Finally, I want to extend my sincere gratitude to IFERP, the conference organizer, and all those behind the stage for making this remarkable event a great success. I am also thankful for making me part of this reputed event. I feel honored to offer my support for collaborative research, cross-institutional online teaching, and joint services to the institutions.

I wish all presenters and participants good luck having a fruitful and enjoyable conference.

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International Conference on Communication Systems (ICOCS-2022)
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Development of Closed Loop Traffic Control System using Image Processing

[1] **Jyoti M. Kharade,** [2] **Vishal Ashok Honrao,** [3] **Digvijay Dasharath Hajare,** [4] **Aniket Shivaji Mote,** [5] **Shridhar Ganapati Chavan**

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Abstract:

To apply picture processing method using Python open CV library it is done the mathematical strategies that govern the site visitor's density. Normally, massive quantity of time is being wasted on the sign even though there's isn't visitors because the red timmings and inexperienced lights are constant to all lane that's not dependent of the visitor's density. That allows you to make the system extra powerful an internet digital cam is fixed on motor which rotates 360 and captures the pics of all the lanes. while waiting for a site visitors light, the driver loses time, manpower and increases air pollution and the car waste gasoline. To make visitors mild controllers clever, this project take advantage of the emergence of novel technology, consist of communique network and sensor networksas well as the use of greater sophisticated algorithms for putting visitors' light. It's critical to determine the density of incoming site visitors in order to examine and for the law of the visitors relying on operations management. We will be able to identify traffic based on density, and we will be able to detect the most automobiles because of the maximum density going through the junction at a certain time.Using Python open CV library instructions, this technique allows you to compute the image's brink.

Keywords:

Image Processing Arduino, Traffic control

Research on Error Correction Signal in Wireless Communication by AWGN

Surya Sharma

Electronics and Communication Engineering, Suyash Institute of Information Technology, Gorakhpur, Uttar Pradesh, India

Abstract:

This study focuses on three basic digital modulation techniques: ASK, FSK, and PSK. The conveyed signals of these modulation techniques are defined by a distinct system of values appearing at gradually separated times. The bandwidth efficiency and easy implementation are important factors in deciding which digital modulation method to use for a given application, but so are the bit error rate (BER) & signal to noise ratio. Binary modulation systems employ two values, are simple to implement, give adequate error substantiation. The bit error rate (BER) is an important statistic for evaluating systems that transmit signal data from one location to another. The SNR is a well-known metric for comparing signal and noise power. It has a direct impact on a system's chance of bit error rate. Authors used MATLAB to construct BPSK, QPSK, QAM in this paper. As a carrier wave, the cosine signal was used. The analysis is carried out with SNR over AWGN channel as the reference factor in this work, which proposes a comprehensive examination of BER performance of QPSK, BPSK, QAM for channel usage.

Keywords:

Digital Modulation, ASK, FSK, PSK, QAM, AWGN Channel, Signal-to-Noise Ratio, Probability of Bit Error

Performance Analysis of Prototype Filters in FBMC Waveform for Next Generation Wireless Communication System

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Abstract:

In 5G cellular mobile communication there are various techniques used to make its waveform suitable for radio frequency equipment. There is a certain characteristic of these waveforms like low Out of Band (OOB) leakage. Low Peak to Average Power Ratio (PAPR), Low Bit Error Rate (BER), Good Time-Frequency Localization, good spectral efficiency. Various researches have been going on to make 5G waveform follow these characteristic ones of the waveform, Filter Bank Multi Carrier (FBMC) in which prototype filter is set before each subcarrier to make it suitable for radio frequency equipment. This paper investigates FBMC waveform over various prototype filters like Physical Layer for Dynamic Spectrum Access and Cognitive Radio (PHYDYAS), Hermite, and Root Raised Cosine (RRC). find out at which prototype filter the FBMC waveform has the least PAPR, BER over the same spectral efficiency. Also, compare the spectral leakage of OFDM and FBMC over three different prototype filters PHYDYAS, Hermite, Time RRC. This paper also finds out at which prototype filter there is less spectral leakage. Python 3.9 is used throughout the simulation.

Keywords:

FBMC, Prototype Filter, PHYDYAS, Time RRC

Design and Implementation of Full Adder Using Interconnects For Low Power and High Speed Application

[1] R.Agilesh Saravanan, [2] S.A.Sivasankari, [3] S.Karthick, [4] S.Ananthakumaran

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[4] Associate Professor, School of Computing Science and Engineering, VIT Bhopal University, Madhya Pradesh, India

Abstract:

Nowadays power dissipation is a more important problem in dense electronic devices. This power dissipation majorly affected the battery backup, due to this power dissipation the energy efficiency is consider as notable factor in the portable equipment to achieve competent performance with less power dissipation. However the various logics where introduced to reduce the size but the integration density is increasing due to that power consumption also increasing .In this paper the CMOS 2 bit Full adder is designed using various Adiabatic logic such as Efficient Charge Recovery Logic (ECRL), Positive Feedback Adiabatic Logic(PFAL) without interconnects and with interconnects has been implemented and the power delay relationship by using interconnects also has been analyzed.

Keywords:

ECRL, PFAL, Adiabetic, Positive Feedback, Full Adder

Utility System for Tomato Diseases Detection and Classification Using Deep Learning with IoT

[1] R. Ramya, [2] P. Kumar, [3] M. Senthil kumar, [4] V. Sounthar Raj V, [5] M. Mohamed Faizal

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Abstract:

Agriculture is indisputably the backbone of our nation. India is the second-largest producer of agricultural products globally. Indian agriculture is desperately lagging in per hectare yield in almost all crops compared to other countries concerning the population needed to feed. Plant diseases cause major economic and production losses and curtail agricultural production quantity and quality. Producers need to monitor their plants regularly and observe any primary symptoms to prevent plant sickness at a low cost and save a significant part of the production. In recent days, technology has played a vital role in all research fields. So, the help of technology is used to detect plant disease. In India, technology-based modern agriculture is the most required to make more profit in every part of agriculture. Thus, the use of technology in agriculture may help increase productivity and improve the condition of Indian farmers and protect their products with the use of precision agriculture. Thus, the overall progress of production is obtained. Detection of diseases in crop management is peremptory for agriculture to be sustainable. However, automated crop disease detection and prediction is a radical problem due to its cluttered background in the present-day agricultural industry. Internet of Things (IoT) and deep learning have played a massive role in the last decade, as it gathers a vast level of contextual data to recognize crop diseases. This work is a real-time method based on a deep convolutional neural network for identifying tomato leaf disease. Deep neural network performance improves by tuning the hyper-parameters and adjusting the pooling combinations on a system. The pre-trained deep CNN model deploys onto raspberry pi 3 (RBI) using a neural compute stick consisting of dedicated CNN hardware blocks. During the detection of the leaf diseases, the deep learning model achieves more accuracy in the feasibility of this method.

Keywords:

Plant disease, Tomato, CNN models, ResNet, MobileNet, Classification, MATLAB, Deep learning

A Review on Electric Vehicle Based on Space Compatible Conventional Scooter

[1] Dr.Mohan Dass, [2] Dr.Vinod Kumar, [3] Sridharshini Sarvanan, [4] Varun Sham Kumar, [5] Ateeq Ur Rahman, [6] Pavan Kumar

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Abstract:

Among the world's manufacturers and producers of two-wheelers, India ranks second. It stands after Japan and China with regards to the number of two-wheelers that are produced and also with respect to the sales. The Indian vehicle industry has seen extraordinary progress in the past decades. The reality of the vehicle industry that was completely changed by the advent of fuel-efficient technology is about to be revealed as the dawn of a new era in two completely different industries. Rather than petroleum or other fuel, electricity has begun a revolution for the two-wheeler industry.

The Indian market welcomed the idea of Electric vehicles which have become a famous means of transportation in countries that are developed. Thus electric vehicles have a great future. This Paper shows the studies on design, development and also the comparison of various parts of components. Also regarding the electric vehicle parts such as BLDC motor, Charger, Controller, Battery, and the Dc-Dc Converter is explained in this paper.

Keywords:

Battery, , DC-DC converters, Brushless DC Motor, Hub Motor, Permanent Magnet, Miniature Circuit Breaker , Field-Oriented Control, Electric Vehicles

FPGA Implementation of UaL Decomposition, An Alternative to the LU Factorization

[1] Sai Ruchitha, [2] Ramesh Chinthala

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Abstract:

Matrix decomposition is an important method used in many applications such as circuit simulations, for example Modified Nodal Analysis (MNA matrices), and in communication systems, for example to find minimum mean square error (MMSE) in MIMO systems for detecting the transmitted symbol vector from the received symbol vector. In this paper, an FPGA based hardware implementation of an alternative solution to LU factorization technique called UaL decomposition method is proposed. The RTL code of the UaL algorithm is developed and simulated using Xilinx Vivado software. The RTL code of the proposed FPGA based UaL decomposition hardware architecture is synthesized by targeting Virtex-5 FPGA which supports the data input in single-precision Floating-point representation format. The FPGA implementation of the UaL decomposition method is compared with the existing FPGA implementations of LU, LDL, Cholesky and QR decomposition methods in terms of area, frequency and computational time. The proposed sequential FPGA implementation of UaL decomposition utilizes 47% less resources than the existing best parallel LU factorization FPGA implementation but requires 50% more computational time, and operates at 210 MHz which is approximately three times than the operating frequency of best existing decomposition implementation (LU decomposition). The parallel implementation of UaL decomposition is expected to reduce the computational time by 32% compared to sequential UaL and 68.9% compared to LU decomposition.

Keywords:

LU factorization, UaL decomposition, FPGA, QR, LDL, Cholesky, LKU

Food Ordering App Like Zomato

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Abstract:
In our time, the fast ascent of remote innovation and cell phones is significantly affecting our lives. Early endeavors to union and exploit both of these advances in the improvement of the accommodation business have been made. This study means to automate the food requesting strategy in the prompt area. In this document we examine the execution & plan of food ordering application with real time user feedback for restaurant proprietors and delivery boy. The application on user's android mobile will show all the menu specification on the screen. The orders from customer's android application are updated wirelessly stored in database and thereby sent to restaurant owner's android application and after restaurant owner accepts the order it sent to delivery boy. The restaurant owner can deal with the menu changes without any problem. The android application on device provides a method for accommodation, comfort, improving productivity and precision for restaurant owner by saving time, lessening human blunders and real-time users feedback.

Keywords:
Global Positioning System (GPS), Firebase Database, Google Map API, Food Ordering Application

Forensic Image Pseudo Detection

[1] Sreemukhi Kottada, [2] Emani Bhanu Prakash Reddy, [3] Gummadi Srikanth, [4] Yaganti Srikanth, [5] Kadali Gowtham

[1][2][3][4][5] Lovely Professional University, Pagwara, Punjab, India

Abstract:

Reproduction-circulate forgery detection method with adaptive over-segmentation and characteristic factor matching is proposed on this paper. The proposed scheme integrates each block-primarily based totally and Interest points-primarily based totally forgery detection strategies. At beginning, the technique of Adaptive over-segmentation set of rules segments the host picture into well-separated and abnormal blocks flexibly adaptive. Then, the characteristic factors are extracted from every block as block capabilities, and the block capabilities are matched with each other to discover the categorised characteristic factors; this process can about imply the suspected forgery areas. To hit upon the forgery areas extra accurately, we suggest the Forgery Area Extraction set of rules, which replaces the characteristic factors with small super pixels as characteristic blocks after which merges the neighbouring blocks which have comparable nearby shade capabilities into the characteristic blocks to generate the merged areas; sooner or later, it applies the morphological operation to the merged areas to generate the detected forgery areas. The experimental consequences imply that the proposed reproduction-circulate forgery detection scheme can attain lots higher detection consequences even below diverse difficult situations in comparison with the present trendy reproduction-circulate forgery detection strategies.

Keywords:

reproduction-circulate Forgery Detection, Local shade Feature, Forgery Area Extraction, adaptive Over-Segmentation, Feature point matching, merged areas

Statistical Review of Dataset and Mathematical Model for Software Reliability Prediction Using Linear Regression

[1] Mayuri H. Molawade, [2] Dr. Shashank.D. Joshi, [3] Dr. Rohini Jadhav
[1][2][3] Bharati Vidyapeeth (Deemed to be University) College of Engineering, Pune, India

Abstract:
Software reliability that will be very helpful for any developer to make any changes at early stages, so by thinking about this we are defining advance software reliability prediction model. Here in this paper we have introduce some of mathematical expression to calculate reliability of each parameter to check efficiency of parameter we used ready dataset and also perform analysis using linear regression for machine learning. We have taken some of dataset from previous paper to check behavior of mathematical expression for each parameter. In this paper we have taken only few parameter and used concept of linear regression.

Pareto Optimization of Product Material Selection

[1] Ch.Sriya, [2] Mounika Chatharajupalli, [3] Veena K

[1][2][3] Department of Computer Science and Engineering, Sathyabama Institute of Science and Technology, Chennai, Tamilnadu, India

Abstract:

Rectifying our adverse effects on the environment, Waste Management, is one of the most significant problems humanity faces and it begins with reducing the production of consumer waste; the waste caused by product materials. Consumer waste can be reduced by choosing sustainable product materials. To choose sustainable product materials, the product designer must take into account not only environmental factors but mechanical and economic factors as well. This ensures the maximum efficiency of the chosen material concerning the product requirements. It is often difficult to accurately weigh the various properties of the materials and derive the most optimal material that adheres to all the objectives of the product. A cohesive machine learning solution of differential evolution (DE) and back propagation neural networks (BPNs) is proposed to optimize the Pareto product material selection. This approach has been validated by a model that can select the most optimal material given a list of potential materials for a product. The model has been created such that it will assist product designers during the planning stages of product designing to reduce consumer waste.

Keywords:

Material Selection, Pareto Optimization, Differential Evolution, Waste Management

Analysis of Optical Modulation in Fiber Optic Communication

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Abstract:
In the quick transmission of signals from the sender to the receiver, modulation and its kinds play a key role. Modulation is the process of superimposing a low-frequency message signal on to a high frequency carrier wave to assure speedier transmission. The basic goal of modulation in a communication system is to provide a modulated signal that is appropriate for the transmission channel's properties. In this paper the implementation of different modulation technique is being analysed for ultra-long distance optical transmission. Each method is designed and output is verified and also the parameters of each technique are compared. By altering the wavelengths of laser beams, wavelength division multiplexing (WDM) is a technique for multiplexing numerous optical carrier signals across a single optical fibre channel. Subcarrier multiplexing (SCM) is a technique for transmitting several RF signals across the same optical fibre in order to take advantage of its enormous bandwidth. This approach is extremely important in the future 5G standards. This research offers a low-cost SSB/WDM system solution and more effective spectrum usage.

Effectiveness of Artificial Intelligence Based Recruitment process in the Employment of Indian Hardware Industry

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Abstract:

Artificial intelligence (AI) inference in human resource management, especially in the recruiting process, was discussed in the paper. The study's aim is to learn whether artificial intelligence will replace human participation in the recruiting process in a few Indian hardware companies. The modern method of recruiting has supplanted the old method of recruitment. AI is ushering in the new phase of recruiting. Via numerous outsourcing firms, AI-based recruiting is being introduced into top businesses, and a few companies are privately playing with it. This study focuses on using AI to help understand the multiple factors for exclusion and what emotional intelligence requirements are taken into account. When the cause for rejection has been established, the skills and other criteria will be applied in a manner that can turn the rejection into a benefit. All of the data are gathered from secondary sources such as newspapers, blogs, websites, and academic papers. Artificial intelligence has a positive impact on human succession in the recruiting process, according to the report. Meanwhile, the research is intended to assist the organizations being analyzed in formulating management plans and policy interferences in order to create an efficient recruitment method for recruiting efficient teams in order to compete in the marketplace and develop a viable atmosphere.

Keywords:

Artificial Intelligence, Recruitment, Behavioral Factors, Learning Ability, Personality Test, Team Skills

Comprehensive Review About Automatic Classification of Medicinal Plants

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Abstract:

The word Taxonomy is the way of Classification .It is the science of naming and classifying all the living organisms as well as extinct organisms of the world. Swedish Botanist Carlous Linnaeus was the father of taxonomy; there are more than 8000 medicinal plant species present in India. Traditional Indian medicinal formulations are multi-component mixtures whose therapeutic use is based on empirical knowledge rather than a mechanistic understanding of the active ingredients in the mixture. These mixtures involve the use of plant extract. The World Health Organization (WHO) estimates that 80 % of the people in developing countries rely on traditional medicine for their primary health care[1]. In the current era of pandemic medicinal plant species like citrus spp, allium sativum, allium cepa found effective in management of COVID 19. As per WHO guidelines, for the performance of a clinical trial under controlled conditions requires a constant supply of a product whose botanical identification and characterization can be verified[1]. Traditional identification and classification methods are not quick, efficient and reliable. Automated Classification of medicinal Plants help to conserve knowledge of medicinal plant species, share it from one generation to next generation and help the whole society to improve the knowledge about medicinal plants. The paper presents traditional and recent trends using Computer vision and machine learning for classifying medicinal plant species. The main focus is on Leaf image as input. It presents the challenges as well as opportunities in identifying and classifying medicinal plant species by performing comprehensive review of traditional methodologies.

Keywords:

Automated Classification, WHO guidelines, medicinal plants, Computer Vision, leaf image, machine learning

Soldier Health and Position Tracking System

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Abstract:
It is critical to protect our country from the enemy in today's world. In this, our soldiers perform a critical and important role. There are numerous factors to consider when it comes to the soldiers' safety. As a result, a variety of equipment or devices are attached to troops' bodies for security purposes in order to monitor their health and position. Health-related sensors such as pulse rate sensors, temperature sensors, and oxygen sensors can thus be used to create low-cost wearable health monitoring devices. To find the actual location of the soldier, GPS is employed to point out latitude and longitude. As a result, we're attempting to create a low-cost, extremely reliable life-guarding system for the soldiers using this equipment. The soldier can use this technology to monitor his health & actual location employing GPS technology. The Internet of Things will be used to send this information to the control room. As a result, the control room can periodically monitor the soldier's activities. A panic button is also provided to the soldier in case of an emergency. This approach is quite beneficial in terms of saving lives on the battlefield.

Keywords:
GPS Tracking system, Arduino, Heath Monitoring

A Survey on various Metrics Methods and Classification Techniques for Software Defect Prediction

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Abstract:
In this survey, the authors have examined the common defect prediction methods used in prior literatures, as well as how to measure defect prediction performance. Second, using metrics, models, and algorithms, we compared several defect prediction strategies. Third, we addressed a variety of methodologies for predicting cross-project defects, which has been a hot issue in recent years. We have them talk about defect prediction applications and other hot subjects. Finally, we identified software defect prediction issue areas, laying the groundwork for future research in the discipline.

Keywords:
Software Defect Prediction; Software Metrics; CPDP; Bug; Error; Fault

A Blockchain-based Clean and Green Energy Monitoring System

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Abstract:

Energy trade and monitoring system that is cost-effective, open-source and Peer-to-Peer (P2P). It facilitates peer-to-peer trading and monitors data in a centralized system that generates MIS data for peer sharing. A system is proposed that provides real-time data acquisition, monitoring, control and maintenance of self-generated energy at a remote location, mainly Pico Hydel Power, Wind Power and Solar Power. Which is also clean & green energy, as it produces zero carbon footprint. The trading & maintenance are done through a web interface that uses a private Ethereum blockchain. The Ethereum blockchain is used for a smart contract and JS (JavaScript) is used to record trading activities on the web interface via a tamper-proof blockchain. The Internet of things (IoT) platform is used for monitoring and controlling self-generated energy. Energy & Maintenance data is collected and processed using ESP 8266, microcontroller Boards using field Sensors, which are connected to the voltage source, load current, real-time clock and other environment monitoring sensors essential for the maintenance of the generating unit. An open-source decentralized Peer-to-Peer (P2P) energy trading system as well as monitoring systems, designed on the blockchain and internet of things (IoT) architecture is proposed. The hardware setup includes a current sensor, a voltage sensor, a real-time clock, other environment monitoring sensors, a built-in Wi-Fi unit, and a NodeMcu microcontroller, which actually forms the Edge Node. The Message Queuing Telemetry Transport (MQTT) protocol is used over a local network for data transfer. NodeMcu is set up as MQTT client and Raspberry Pi 3/4 forms as IoT server is used as MQTT broker, as Fog node cluster. Finally, all these Fog node clusters are also linked to Desktop PC as Cloudlet Server. The hypertext Transfer Protocol (HTTP) request method is implemented to connect the Node server with the web interface developed using an open-source library program.

Visual Image Caption Generator using Deep Learning

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Abstract:
The combination of computer vision and natural language processing in Artificial intelligence has sparked a lot of interest in research in recent years, thanks to the advent of deep learning. The context of a photograph is automatically described in English. When a picture is captioned, the computer learns to interpret the visual information of the image using one or more phrases. The ability to analyze the state, properties, and relationship between these objects is required for the meaningful description generation process of high-level picture semantics. Using CNN -LSTM architectural models on the captioning of a graphical image, we hope to detect things and inform people via text messages in this research. To correctly identify the items, the input image is first reduced to grayscale and then processed by a Convolution Neural Network (CNN). The COCO Dataset 2017 was used. The proposed method for blind individuals is intended to be expanded to include persons with vision loss to speech messages to help them reach their full potential and to track their intellect. In this study paper, we meticulously follow a variety of important concepts of image captioning and its standard processes, as this work develops a generative CNN-LSTM model that outperforms human baselines.

Keywords:
CNN, LSTM, Image Captioning, Computer Vision, Natural Language Processing, Deep Learning

Aspect Methodology for Improve Security and Performance of Automobile System

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Abstract:

Methodology of aspects is a combination of multiple concerns. Multiple types of concerns are facts, logic, area of interest, security, properties of systems. In the Development phase of the aspect model Aspect considers different systems concerns, aspects divide these system concerns into software modules, Different aspects modules use as a way for analysis of systems requirements. In some aspects, methodology use UML design modeling for understanding system requirements, in aspects Methodology UML class is for knowing the system necessities in modeling phases. a UML class structure is used in the Aspects process model for requirement analysis of the system. Class design in UML design consists of various types of attributes, classes, objects, methods, Join of points & Point of cut, various approaches to defining various concerns of the system. Few tools for crafting graph grammar rules for analysis system concerns, crafting G- graph grammar rules start from pre-condition G-grammar rules after that crafting post condition G-graph grammar rules, after crafting G-graph pre and post condition grammar rules G-graph transformation process done on rules in tools, next step is a method of creating a matrix, a matrix is basically cross applying rules to each other and find output, Two types of the matrix created first is a matrix of dependency and matrix of conflicts, this matrix for analysis conflict and dependency in crafted G-graph grammar rules, these G-rules apply as input to aspect methodology Tool. Next step transformation G-graph grammar, G-graph rules shows pre and post transformations of G-graph grammar rules when applying matrix of dependencies with a matrix of conflict, the conflict shows clash in G-graph rules, dependencies show requirement among the G-graph rules.

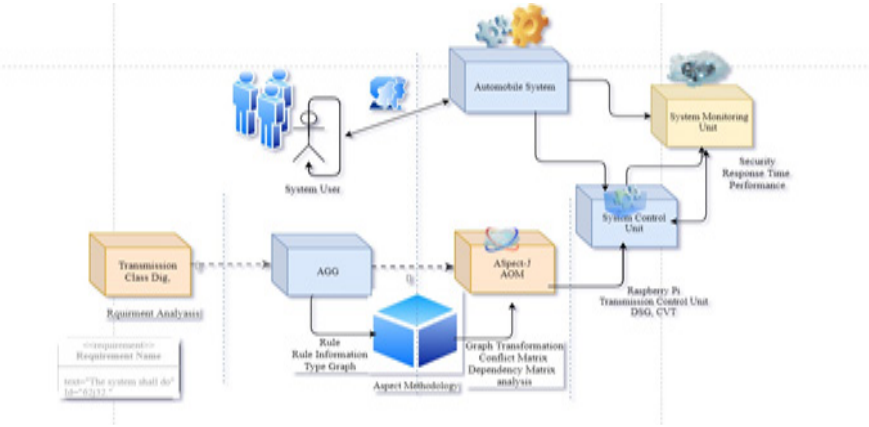

FIG. Aspect model for automobile system

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Optimized Self-Supportive Architecture of Networked Microgrids using Differential Evolution Algorithm

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Abstract:

A self-supportive architecture was implemented in this paper for normal and abnormal mode of operation of independent Networked Micro-Grids (NMGs). NMG means linking the number of individual MGs via a typical common physical bus. In this architecture, each MG will transfer electric power with each other. This NMG contains a double layered cyber communication network. The two layers are a lower and upper layer. In the lower layer, each MG operation will be scheduled by the Energy Management system (EMS) within MG. Communication & global optimization are done in the upper layer by connecting the number of EMS. Scheduling the distributed generators (DGs), Energy Storage system (ESs) and controllable loads in order to optimize the operational cost and minimize the supply- load mismatch is the aim of the normal mode of operation. Curative mode occurs whenever the generator deficiency and fault takes place in the NMG. Investigation is carried out to identify and apply suitable optimization technique to utilize the power generated by the healthy MGs of the NMG to aid the faulted MGs. The total required power of all MGs will be supported by the power production of healthy MGs. A differential evolution algorithm is used to dispatch the required power support to each MG. The effectiveness of this architecture is demonstrated using test cases.

Keywords:

Cyber Communication Network, Differential Evolution Algorithm (DEA), Distributed Generators (DG), Networked Microgrids (NMG), Self Supportive Architecture

Brain Tumor Detection Using EBT through Image Segmentation

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Abstract:

Over the years, AI has developed a lot and contributed its own share to make human life easy and compact. Neural network is one of the small components under this big umbrella of artificial intelligence. Medical field has also developed itself over the time. The challenging tasks in medical field is detecting brain tumor at the early stages. This project provides a model that helps detect brain tumors through image segmentations. MRI images are pre-processed and then segmentation is done using edge-based techniques like Canny edge detection algorithm. For optimization of edge detection, a Genetic algorithm is used and followed by feature extraction is done using GLCM and CNN. For classification, this paper makes use of learning algorithms such as SVM (Support Vector Machine) where accuracy is improved. This detection and classification will in turn be useful to detect tumor and classify the type of tumor detected.

Thermal Analysis of Laser Cutting P Using Ansys

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Abstract:
Laser cutting is a thermal, non-contact and highly automated process well suited for various manufacturing industries. The objective of current research is to investigate the thermal and structural characteristics of specimen subjected to laser beam incidence using package of ANSYS simulation package. The heat flux incident is 1000W. The temperature plot, heat flux plot and equivalent stress plot is generated from the FEA analysis. Coupled field analysis is performed on a steel sample using the ANSYS FEA simulation package. The thermal analysis results have shown regions of high temperature and high heat flux. The structural analysis results have shown high equivalent stress near the regions of laser beam incidence. The equivalent stress generated is more than 5100MPa. The HAZ zone is also determined from the analysis.

Keywords:
Laser cutting, FEA, Thermal Analysis

Noise Reduction in Clinical MRI Scans Employing Filter Combining Techniques

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Abstract:

The implementation of Magnetic Resonance Imaging (MRI) pictures in the initial identification and treatment of a variety of disorders has become integral. These images are a set of data intended for visual inspections that are susceptible to specific noises and artefacts. Noise free MRI images are necessary for increasing the overall accuracy and clarity of assessment and therapy analytical evaluation. While gathering, processing and distribution many clinical images are influenced by various forms of sounds, resulting in the degradation of details pertaining with the image, which can impact the performance of illness treatment. To decrease the noise in medical scans for subsequent assessment, numerous filtering techniques are applied. The variety of digital filters, namely the Anisotropic filter, Median filter, Wiener filter and Non-Local Mean filter are discussed in this paper and their combinations are implemented with respect to all static parameters such as the Peak Signal to Noise Ratio (PSNR), Mean Square Error (MSE), Root Mean Square Error (RMSE) and Universal Quality Index (UQI). A noise removal strategy based on the Wiener filter is developed in this study analysis for enhancing the image quality of diverse diagnostic imaging. The optimum outcome is obtained by combining the Wiener filter with all the static parameters. Existing noise reduction filtering approaches are outperformed by the suggested method.

Keywords:

MRI images, Wiener filter, Noise, PSNR

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A Reliable Eye Blink-based Home Automation System using False Free Detection Algorithm

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Abstract:
In this paper, we have developed a smart home control system that uses brain wave technology to achieve brain-computer interaction. We have captured the brain signals using a mind link sensor placed over the head of a user. And the signal generated by the brain will be received by the mind link sensor and then transmitted to a processor through Bluetooth module. In the processor, it eliminates the noise and remove the artifacts from the data to represent true brain signals and the signal processed will be actuated based on the set algorithm.
In the considerable number of papers and previous works in which there are concepts of home automation with aid of eye blink detection where the system detected an eye blink when it was not present and missed blinks which in turn may lead to operations in the wrong direction. So, to overcome this limitation, we have designed an algorithm that eliminated false detection and the missed blinks.
The False detection is eliminated by considering the two peak values of the blinks detected and the peak values act as a bridge between the set of choices pointed in the GUI (Graphical User Interface) and thus helps the user to control the household appliances using eye blink detection.

Keywords:
Brain Computer Interaction, Eye blink Detection, Graphical User Interface (GUI), mind link sensor

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A Secure Smart Home Automation System for Determining Power Consumption and Image Detection

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Abstract:

In this article, we are measuring the power consumption of electrical devices. By assessing individual power, we can avoid severe loads that cause short circuit of the system. It will be simpler for the billing system if each appliance's individual power usage is tracked separately. Taking into account the security system, In this project, we have installed video surveillance at the entrance, which will take photographs and deliver them to the user. The entire system can be configured in two ways: manually by the user or automatically by the system. Our system will comprise an Arduino board as well as sensors such as fire, temperature, and humidity that will be connected to it. In the Thing View app, we can check the output and get information about the power usage of all the sensors. If the power consumed by any device crosses a specific level, the user will be alerted by a graphical representation of the power consumed by the devices. It can detect the load on each component and break the circuit to prevent load failure. A motion sensor is used for security purposes; it detects motion and takes a picture of the individual, which is then sent to the admin through telegram. It is not limited to a small number of devices and, as a result, can be employed in industries with the addition of more Arduino microcontrollers.

Keywords:

MRI images, Wiener filter, Noise, PSNR

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Recommendation System using Clustering and Comparing Clustering and Topic Modelling Techniques

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Abstract:
In this paper, we have used a technique called clustering to recommend the products to the customer and also tried to compare clustering and Topic modelling to find out which technique is better for our purpose. Around 40 papers have been reviewed, we observed that the greater part of the proposal approaches applied content-based filtering (55%). Collaborative-based filtering was applied by just 18% of the looked into approaches, and hybrid based by 16%. Other suggestion ideas included generalizing, thing driven proposals, and crossover suggestions. The content-based filtering approaches overwhelmingly utilized papers that the clients had made, marked, examined, or downloaded [1]. To begin with, it stays muddled which suggestion ideas and approaches are the most encouraging. For instance, analysts demonstrated different results on the presentation of content based and collaborative filtering. A portion of the time content-based filtering performed better contrasted with collaborative filtering sand a portion of the time it performed all the more regrettable.

Keywords:
Recommendation systems, filtering, clusters, topic modelling, content-filtering

A Review on DC Distribution for Residential Distribution Network-Performance Enhancement of Hybrid AC DC Distribution Network

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Abstract:

A microgrid is used to control and manage architecture at the distribution level, which makes it easy to implement smart grid techniques at power distribution level. They are emerging from pilot projects to commercial markets as driven by improved technology, increased reliability and other benefits. This review article explains 1) the conventional use of grid energy and 2) provides a model to enhance reliability of power at residential buildings. In present times the use of DC loads is rapidly increasingly. This paper shows that having a centralized DC power generation provides an opportunity to integrate the renewable energy resources without any need of converting into AC can increase the efficiency by 2% to 6% which is more than that of AC-DC-AC conversions. The discretion of the controller unit will Chance reliability of electricity by operating any more than one of the following schemes a) AC distribution system including AC appliances b) AC distribution system including DC appliances c) DC distribution system including DC appliances d) DC distribution system including AC appliances e) Peer to peer energy sharing. Thus DC appliances and AC appliances will be energies with renewable energy and conventional grid. The reliability shall be increased by by operating in more than one mode.

Coronary Artery Disease Prediction and Analysis using Machine Learning Techniques

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[2] Associate Professor, Department of Computer Science, Vels Institute of Science Technologies and Advanced Studies (VISTAS), Chennai, India

Abstract:

Coronary Artery Disease (CAD) contains a huge variety of heart-associated illnesses are the main reasons of dying globally in current decades. Cardiovascular illnesses are liable for 31 percentages of all fatalities worldwide. The scientific affiliation generates a huge quantity of scientific information associated with cardiovascular disease, which need to be well tested on the way to forecast cardiovascular disease. In current days, Machine learning (ML) has emerge as the number one method for the evolution of predictive fashions within side the health-care industry, and it become determined to check numerous algorithms to peer how correct their prediction ratings are primarily based totally at the information collected. The contemporary dataset from the UCI Heart repository database is utilized. they have a examine proposal, which employs machine learning approaches. To look at the coronary illness, the ones strategies use 13 clinical parameters from the patient. As a result, supporting human beings in identifying whether or not or now no longer they are at threat for coronary heart illness is tremendously desirable. Gradient Boosting, Decision Tree, Random Forest, SVM, KNN, and Logistic Regression are some of the Supervised ML classifiers employed in this study to deploy a model for heart disease prediction. A 10-fold cross-validation attempting out opportunity became used to assess the algorithms performance. Also researcher finished tuning of the hyper parameter, k huge sort of nearest neighbors, within side the instance-based (KNN) classifier. Result indicates that compared to unique ML strategies, Gradient Boosting Classifier and Ada Boost Classifier algorithms gives 86.88%, Random Forest Classifier gives 88.15% and K Neighbors Classifier and SVM producing 90% accuracy in lots much less time for the prediction. This model (KNN) or SVM can be useful to the medical practitioners at their medical institution as Decision Making Support System.

Keywords:

Machine Learning, Random Forest, KNN (K nearest neighbors), Logistic Regression, Decision Trees, Gradient Boosting, Ada Boost

Segmenting and Classification of Covid-19 in Lung CT Scan Images Using Various Transfer Learning Algorithms and Performance Enhancement by Ensemble Based Approaches

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Abstract:

Covid-19 Pandemic has affected India's economy and way of life. Early detection is the key to avoid further spread. For accurate detection of Covid-19 on different imaging modalities, many Deep Learning based image processing algorithms have been proposed. This paper proposes a methodology to detect Covid through CT scans of the Lungs. They are segmented to remove the noise and then classified using various transfer learning-based approaches. U-Net is used for segmenting the CT scans. The ground truths for segmented CT scans required for U-Net were created using Otsu's global thresholding algorithm which produced higher PSNR value of 2.3898 db and lower MSE value of 37800.5621 when compared to other algorithms such as K-Means, Watershed, Fuzzy C Means and local thresholding. U-Net produced 97.50% accuracy. IOU for Covid and Non Covid images were found to be 94.22% and 94.87% respectively. Dice Coefficients for Covid and Non Covid images were found to be 97.02% and 97.37% respectively. These segmented images were given as input to the classification algorithms like Convolution Neural Network (CNN) and transfer learning-based algorithms like VGG-16, VGG -19, DenseNet-169 and DenseNet-201. The accuracies for these models were found to be 85.45%, 88.05%, 88.48%, 94.74%, 98.78% respectively. The DenseNet-201 outperformed all the algorithms. CNN, VGG16, VGG19 showed average performance. In order to make these average learners into strong learners the ensemble models like model averaging, weighted average ensemble, majority voting were considered. The respective accuracies were found to be 91.11%, 91.71% and 89.89%. Weighted Average ensemble performed better than other ensemble-based approaches.

Keywords:

CT scan, Covid Detection, segmentation, Otsu thresholding, Transfer Learning, Classification algorithms, Ensemble Ensemble-based approach

Aquaculture Monitoring System Using IoT

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[5] Faculty of School of Electronics and Communication Engineering, Lovely Professional University, Phagwara, India

Abstract:

Internet of Things (IoT) is a technology that is rapidly gaining popularity, and traction in every sphere of life. Innovative applications in aquaculture are advancing thanks to the advancement in computers. Using Arduino and various sensors, we have developed and implemented a system for monitoring the water quality of aquaculture. Even though the quality of water might seem like an insignificant issue, but there are many factors involved, like carbonates, ammonia, turbidity, dissolved oxygen, pH, salt, nitrates, and temperature. Data from sensors used in the proposed system will be sent via the cloud to aquaculturists to monitor water quality parameters in real-time. Thus, reduction in losses and an improvement in productivity will be undertaken. The present paper proposes a system for efficiently monitoring and controlling environmental parameters including pH, temperature, and turbidity relating to aquaculture.

Keywords:

Aquaculture, Internet of Things (IoT), Water Quality, Monitoring, Temperature, pH, Turbidity, Dissolved Oxygen (DO), ThingSpeak server, ESP8266

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User-Centric Biomedical Document Ranking Model using Hadoop Framework Based on Genetic Disease

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Abstract:

The volume of disease-related documents in the PubMed repository is expanding at an exponential rate due to the huge expansion of biomedical knowledge in the repository. Because of this, healthcare workers have a major challenge in understanding gene-disease based biological papers manually. Biomedical ranking models utilizing MeSH words or gene or protein entities have been suggested in a wide range of studies in the literature. All of these models, however, may only be used with documents that are static and have a restricted number of characteristics. This research uses gene and illness datasets to construct a new hadoop-based document ranking methodology. The approach delivers higher performance, fewer resources, and smaller computational costs on large document collections. A variety of document ranking methods were tested on large gene-disease datasets using Hadoop in this study. The suggested ranking model has superior ranking prediction and runtime than the usual ranking measures, according to the findings of the experiments conducted.

Keywords:

Biomedical knowledge, hadoop based document ranking methodology, gene-disease datasets

A Retrospective on Filtering Techniques for Noise Reduction in MRI Images

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Abstract:

Magnetic resonance imaging (MRI) methods are integral in image analysis in the medical world. To minimize the noise in scans numerous filtering techniques are applied in clinical study and healthcare. The frequently implemented diagnostic scanning procedures are ultrasound (US), computed tomography (CT), and magnetic resonance (MR), which are frequently affected by dangerous noises like speckle, salt and pepper, Poisson, and Gaussian.

Based on various noise removal filtration approaches like median, Wiener, mean, hybrid median, Gaussian, bilateral, non-local means, and anisotropic diffusion various studies and analysis is been made. Several digital filters are used in this article to remove various noises that are added individually in MR scans by using numerous filters.

Keywords:

MR scans, Noise, Filters

Target Corporation Sales Prediction

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Abstract:
Nowadays, competition among business corporations is very high and supermarkets are one such type of business corporation. Customers' pleasure is the deciding element in supermarket sales.. Providing the customers with the variety of products they need and also the required quantity under one roof is a big task and to achieve that corporations like Target Corporation, which has several stores across the globe keep track of every product's sales data. This data repository comprises the attributes of numerous items as well as information about specific customers, which is subsequently utilized to forecast potential consumer demand and meet those demands as needed. Mining the data warehouse's data storage is a common way to find anomalies and general trends. The generated data can be utilized by retailers like Target to anticipate future sales of products by implementing various machine learning approaches. As a result, a predictive model for estimating the sales of a company like Target Corporation was constructed utilizing Xgboost, Linear regression and, Ridge Classifier approaches, and it was concluded and observed that the model beats existing models. It was able to provide a quick overview of how many products were sold for each product.

Keywords:
XgBoost Regression, Linear Regression, Ridge Classifier

A Systematic Review of Identity Management Models for Cloud Environment

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Abstract:
Identity Management is an emerging area due to the evolvement of cloud and IoT research areas. The advancements in cloud and IoT has forced to design the new models of identity management due to the addition of various resources in cloud environment and the pattern of linking of devices and their usage. This paper has proposed the identity management Model features that each identity management model should focus on and presented the comparison of different identity management models used in various companies. The comparison reveals that each company is lacking one feature of token storage which leads to the breach of once identity, as per the cloud environment. The proposed features do not include the token storage which leads to the better model of Identity Management.

Keywords:
Identity, Identity Management, Identity Management Models, Security, Cloud Computing

Attendance Management System using Face Recognition with Voice Assistant

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Abstract:
A facial recognition system is a technology capable of matching a human face from a digital image or a video frames against a database of faces, typically employed to authenticate users through ID verification services, works by pinpointing and measuring facial features. Development began on similar systems in the 1960s, beginning as a form of computer application. Since their inception, facial recognition systems have seen wider uses in recent times on smartphones and in other forms of technology, such as robotics. Because computerized facial recognition involves the measurement of a human's physiological characteristics, facial recognition systems are categorized as biometrics. Although the accuracy of facial recognition systems as a biometric technology is lower fingerprint recognition, it is widely adopted due to its contactless process.

An Efficient and Secured Framework for Face Recognition System Using LBP, PCA And FLD

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Abstract:
This research work present a novel and efficient secured face recognition system the face image is represented and the features of the face image is taken for classification is done for face recognition LBP, PCA, LDA methods are used. In LBP the face image is segregated into several regions helps for representing the face image. The purpose of PCA is reduce the large dimensionality of the data space to the smaller intrinsic dimensionality of features space. LDA is to make the classifier different. To secure the face image cryptography is used if offers much security and more robustness against malicious attacks, a complete security examination is achieved to confirm the secrecy of face recognition, in cryptography symmetric, asymmetric, and hybrid are the method in that hybrid is applied for the best security.

Traffic Signs Recognition using Convolution Neural Network

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Abstract:

A tremendous interest in deep learning has emerged in recent years . The most established algorithm among various deep learning models is convolutional neural network (CNN), a class of artificial neural networks that has been a dominant method in computer vision tasks since the astonishing results were shared on the object recognition competition known as the Image Net Large Scale Visual Recognition Competition (ILSVRC) in 2012. Medical research is no exception, as CNN has achieved expert-level performances in various fields. Gulshan et al. Esteva et al. and Ehteshami Bejnordi et al. demonstrated the potential of deep learning for diabetic retinopathy screening, skin lesion classification, and lymph node metastasis detection, respectively. Needless to say, there has been a surge of interest in the potential of CNN among radiology researchers, and several studies have already been published in areas such as lesion detection, classification, segmentation, image reconstruction, and natural language processing.

Keywords:

CNN, Detection, Classification, Segmentation

A Review on Smart Energy Meter Based on IoT

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Abstract:

In recent years, electrical appliances are increased in a huge amount. Along with this, the consumption of electrical power has also increased. so that the demand for electrical power is also increased. As the decrease in electrical energy sources due to the high consumption of the individual appliances. it should be controlled in order to overcome the above problem. Here it can be measured, controlled, and tracked the power consumption of electrical power of individual appliances. An accurate power measurement can't be achieved by using a conventional type of energy meter. As the customer cannot control and monitor the power consumption by each appliance. In the growth of the smart grid in the power system, efficient energy consumption plays a major role. By using the implementation and design of an Internet of Things (IoT) the above problems can be minimized. It is a cost-effective, minimalistic, efficient, and iot based energy meter. The smart energy meter will measure the individual unit power consumption of the appliances. It also sends notifications when it reaches the maximum load. The energy meter is classified into 3 types. They are electro-mechanical meters, electronic meter, and smart energy meter.

Preloaded Leaf Diseases Recognition through Image Processing

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Abstract:

India is a democratic country hugely dependent on cultivation and about 75% of the populace relies on agriculture. Farmers nowadays got large number of diverse crop options and their related suitable pesticides which, controls the plant diseases and yield more. However, any disease of plant may leads to reduced quantity and quality of the particular crop. In most of the cases, the studies of such diseases regarded as observations of patterns on the plant leaves manually. Monitoring of disease and health of a particular plant plays a symbolic part in better planting of crops in the farm. Earlier, the initial monitoring, analysis, conclusions were done manually by an expert person. Which, in turn required a huge amount of time, efforts, and processing time for the results. The digital image processing approaches that can be further applied for the process of disease detection. There are mainly limited portions of plant from where disease symptoms can be seen such as, on the leaves, on the branches and leading stem and also the fruit and flowers. The plant leaves are targeted first by any disease and the detection starts always from them, which signifies various symptoms of disease. In this paper we are providing the introductory information to image processing techniques that may be used for detection of various plant diseases.

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Medicine Intake Reminder and Monitoring Using GSM

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Abstract:

This paper presents an advanced drug input monitoring and control system. The proposed system consists of a smart medicine box that's designed to help cases to take their medicines on time. cases having Endless conditions like diabetes, blood pressure, breathing problem, heart problems, cancer conditions etc should consume medicines regularly, therefore the time of taking the medicine is crucial. Announcement sound and display of Bright light in certain lozenge boxes is set up for the patients to identify which medicine they should consume at that time. So, patients can know the specific number of boxes from which he/she has to take out the drugs. All lozenge boxes are pre-loaded in the system and the system has a specific quality that it can smell if the case had taken out the medicines from the box or not. Also the amount of drugs dispensed from the box is also monitored in order to avoid excess intake of medicines. An additional feature of this monitoring system is that it notifies the caretaker of the patient through SMS that the patient didn't consume the medicine at that particular period of time as well it also notifies when there is an excess intake. Another interesting feature is that a notification is sent to their pharmacist that the drug box is short of medicines. Thus, the final result of our advantageous monitoring and control system provides medication adherence and an easy job for the caretakers.

Keywords:

Personal Portable Medicine Reminder, Permanent Diseases, Medicine adherence, Notification, Sensing, GSM

A Retrospective on Filtering Techniques for Noise Reduction in MRI Images

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Abstract:

Magnetic resonance imaging (MRI) methods are integral in image analysis in the medical world. To minimize the noise in scans numerous filtering techniques are applied in clinical study and healthcare. The frequently implemented diagnostic scanning procedures are ultrasound (US), computed tomography (CT), and magnetic resonance (MR), which are frequently affected by dangerous noises like speckle, salt and pepper, Poisson, and Gaussian.

Based on various noise removal filtration approaches like median, Wiener, mean, hybrid median, Gaussian, bilateral, non-local means, and anisotropic diffusion various studies and analysis is been made. Several digital filters are used in this article to remove various noises that are added individually in MR scans by using numerous filters.

Keywords:

MR scans, Noise, Filters

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