

ICFTEN-2021

07th - 08th July 2021

Virtual Conference

2nd

International Conference on Futuristic Trends in Embedded Systems and Networking

Organized By

Department of Electronics and Communication Engineering & IQAC
Rao Bahadur Y.Mahabaleshwarappa Engineering College, Ballari

in Association with

Institute For Engineering Research and Publication (IFERP)



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Publisher: IFERP Explore

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Preface

The “2nd International Conference on Futuristic Trends in Embedded Systems and Networking (ICFTEN 2021) - Virtual Conference” is being organized by Department of Electronics and Communication Engineering & IQAC, Rao Bahadur Y.Mahabaleshwarappa Engineering College, Ballari in Association with IFERP-Institute For Engineering Research and Publications on the 07th-08th July, 2021.

Rao Bahadur Y.Mahabaleshwarappa Engineering College (RYMEC) has a sprawling student – friendly campus with modern infrastructure and facilities which complements the sanctity and serenity of the major city of Karnataka.

The “International Conference on Futuristic Trends in Embedded Systems and Networking” was a notable event which brings Academia, Researchers, Engineers, Industry experts and Students together.

The purpose of this conference is to discuss applications and development in area of “Futuristic Trends in Embedded Systems and Networking” which were given International values by Institute for Engineering Research and Publication (IFERP).

The International Conference attracted over 120 submissions. Through rigorous peer reviews 49 high quality papers were recommended by the Committee. The Conference aptly focuses on the tools and techniques for the developments on current technology.

We are indebted to the efforts of all the reviewers who undoubtedly have raised the quality of the proceedings. We are earnestly thankful to all the authors who have contributed their research works to the conference. We thank our Management for their wholehearted support and encouragement. We thank our Principal for his continuous guidance. We are also thankful for the cooperative advice from our advisory Chairs and Co-Chairs. We thank all the members of our local organizing Committee, National and International Advisory Committees.

Acknowledgement

On behalf of Institute For Engineering Research and Publications (IFERP) and in association with Rao Bahadur Y.Mahabaleshwarappa Engineering College (RYMEC), Ballari. I am delighted to welcome all the delegates and participants around the globe to Rao Bahadur Y.Mahabaleshwarappa Engineering College for the “2nd International Conference on Futuristic Trends in Embedded Systems and Networking (ICFTEN-2021) - Virtual Conference” Which will take place from 07th-08th July, 2021.

It will be a great pleasure to join with Engineers, Research Scholars, academicians and students all around the globe. You are invited to be stimulated and enriched by the latest in engineering research and development while delving into presentations surrounding transformative advances provided by a variety of disciplines.

I congratulate the reviewing committee, coordinator (IFERP & RYMEC) and all the people involved for their efforts in organizing the event and successfully conducting the International Conference and wish all the delegates and participants.



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

About V.V.Sangha

Veerasaiva Vidyavardhaka Sangha is established in the year 1916 with a view to focus on providing education to all strata of the society in the rural areas of Ballari. This crusade against illiteracy and ignorance has now archived epic proportions. The Sangha today runs more than 40 educational institutions in Ballari, Koppala and Davanagere districts, covering Primary Education to Post Graduation courses in Arts, Commerce, Science, Engineering and Management. It aims to carry on the good work to the society in the years to come.

About the Institution

Rao Bahadur Y.Mahabaleswarappa Engineering College is established in the year 1980, under the aegis of Veerasaiva Vidyavardhaka Sangha, Ballari.



Rao Bahadur Y. Mahabaleswarappa Engineering College has grown as one of the reputed Engineering Colleges in Karnataka and has contributed thousands of engineers to the society who have carved name for themselves in various fields in India and abroad. The Institute is affiliated to VTU, Belagavi, Approved by AICTE, New Delhi. The institute offers 7 UG, 6 PG programs and 7 Research centers. The institute has excellent sports facilities, well equipped labs and digital class rooms & in addition separate hostel facilities for boys & girls. The Institute is located 50 Kms away from the world famous historical place “Hampi”.

About the Department of ECE

The Department of Electronics and Communication Engineering is established in the year 1983 with an intake of 40. The current intake is 120 with M.Tech Course in DCN & Research Centre. The Department has accredited twice by NBA, New Delhi (2005 & 2008).

The Department has been actively organizing International/National Conferences, Workshop, Seminars/FDPs/Symposium and students are participating in State Level Project Exhibitions and International/National Level Conferences and has consecutively stood first.

The Department has procured Rs.50 Lakhs under MODROBS AICTE, New Delhi. The Department has received Rs. 20 Lakhs grants from VGST, GOK for KFIST level-1 and Rs 3 Lakhs grants for Students Project from NAIN, Govt of Karnataka, Bengaluru. The Department has the state of art laboratories and research facilities, in the field of Image Processing, Antenna Design, Analog Mode VLSI, Pattern Recognition, Embedded Systems, Communication & Networking.

Message from President



Sri H M Gurusiddha Swamy

President

V V Sangha, Ballari, India

Message

I am really happy to know that the Department of Electronics and Communication Engineering, RYMEC, Ballari is Organizing 2nd International Conference on Futuristic Trends in Embedded Systems and Networking on 7th and 8th July 2021. I hope that this Conference would surely induce Modern ideas among the Participants paving way for new inventions. I wish that deliberations of conference with innovations shall be useful to scholars and technocrats. New findings of technical conference should always help to solve society related problems.



Sri H M Gurusiddha Swamy

Message from Chairman



Sri Allum Channappa

Vice President, V V Sangha, Ballari, India
Chairman, RYMEC, Ballari, India

Message

It is great pride that the Department of Electronics and Communication Engineering, RYMEC, Ballari is organizing 2nd International Conference on Futuristic Trends in Embedded Systems and Networking- ICFTEN 2021 in association with IFERP on 7th & 8th July 2021. The conference aims at providing virtual platform for knowledge sharing, exchanging & dissemination as well as an excellent opportunity to interact with industry experts & academicians. The innovative ideas and research findings presented in the conference has to contribute to scientific community & indeed nation's development. I convey my warm greetings to the E&CE Department for organizing and the participants, also extend my best wishes for the success of the conference.



Sri Allum Channappa

Message from Principal

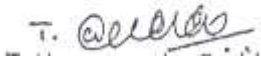


Dr. T. Hanumantha Reddy

Principal
RYMEC, Ballari, India

Message

It is indeed immense pleasure to greet on occasion of conduction of International Conference on Futuristic Trends in Embedded systems and Networking on 7th and 8th July 2021 by Department of Electronics and Communication Engineering Department. Academic leadership of the department always strives hard to impart quality technical education to stake holders of the department. The adage of Things do not happen, things are made to happen is very apt for Department of Electronics and Communication Engineering department. Conference offers very valued platform for all scholars to exchange research trends in embedded systems. I congratulate organizers of international conference for commitment and active participation and wish you all the success.



Dr. T. Hanumantha Reddy

Message from Conference Chair & Vice Principal



Dr. Savita Sonoli

Vice Principal & Head
Department of E&CE, RYMEC, Ballari, India

Message

We are happy to note that E&CE department is organizing 2nd International Conference on Futuristic Trends in Embedded Systems and Networking On 7th and 8th July 2021 This conference is a venue for researchers to deliberate and exchange new findings in research areas of Engineering, Science and Management and its allied fields. The topics of the conference are very important and will help researchers to enhance their Knowledge. We thank the Veerashaiva Vidyavardhaka Sangha, Ballari, Management, Chief Patrons and Patrons who are always supportive for the Department to reach the pinnacle of perfection through various such activities. Congratulations to the Delegates for presenting their papers in the conference and publishing the best papers in the UGC refereed, Google Scholar and Scopus Indexed Journals. Best wishes to the Editorial Team for their determined efforts in bringing out the Conference Proceedings and Thanks to IFERP team for their invariable support.

A handwritten signature in black ink that reads "Savita".

Dr. Savita Sonoli

Message from Convener



Dr. S. Prabhavathi

Professor
Department of ECE, RYMEC, Ballari, India

Message

2nd International Conference on Futuristic Trends in Embedded Systems and Networking on 7th and 8th July 2021 (ICFTEN) The conference is jointly organized by the Institute for Engineering Research and Publication (IFERP) and RYMEC, Ballari. The aim of the conference is to bring together researchers, scientists, engineers and practitioners to share and exchange their experiences, new ideas and research results. After rigorous peer review process, the submitted papers are selected on the basis of originality, significance and clarity for the process of conference. I am grateful to all those who have contributed to the success of ICFTEN-2021, especially all the authors and the participants who responded to our call for papers. My sincere gratitude, for the efforts made by the conference technical committee, program committee, organizing committee and advisory committee members.

Dr. S. Prabhavathi

Keynote Speakers



Justin Dauwels

Associate Professor
Technische Universiteit Delft
Netherlands

Biography

Dr. Justin Dauwels is an Associate Professor at the TU Delft (Circuits and Systems, Department of Microelectronics). He was an Associate Professor of the School of Electrical and Electronic Engineering at the Nanyang Technological University (NTU) in Singapore till the end of 2020. He was the Deputy Director of the ST Engineering – NTU corporate lab, which comprises 100+ PhD students, research staff and engineers, developing novel autonomous systems for airport operations and transportation.

His research interests are in data analytics with applications to intelligent transportation systems, autonomous systems, and analysis of human behaviour and physiology. He obtained his PhD degree in electrical engineering at the Swiss Polytechnical Institute of Technology (ETH) in Zurich in December 2005. Moreover, he was a postdoctoral fellow at the RIKEN Brain Science Institute (2006-2007) and a research scientist at the Massachusetts Institute of Technology (2008-2010). He has been a JSPS postdoctoral fellow (2007), a BAEF fellow (2008), a Henri-Benedictus Fellow of the King Baudouin Foundation (2008), and a JSPS invited fellow (2010, 2011).

He served as Chairman of the IEEE CIS Chapter in Singapore from 2018 to 2020, and serves as Associate Editor of the IEEE Transactions on Signal Processing (since 2018), Associate Editor of the Elsevier journal Signal Processing (since 2021), and organizer of IEEE conferences and special sessions. He is also Elected Member of the IEEE Signal Processing Theory and Methods Technical Committee and IEEE Biomedical Signal Processing Technical Committee, both since 2018.

His research on intelligent transportation systems has been featured by the BBC, Straits Times, Lianhe Zaobao, Channel 5, and numerous technology websites. Besides his academic efforts, the team of Dr. Justin Dauwels also collaborates intensely with local start-ups, SMEs, and agencies, in addition to MNCs, in the field of data-driven transportation, logistics, and medical data analytics.

Keynote Speakers



Mr. Dhananjay Singh

Vice President
Engineering at Innoviti Payment Solutions
Bangalore Urban, Karnataka

Biography

Dhananjay Singh Currently serving as a VP- Engineering, eGovernment Foundation, from Dec-2018 also served as a Head of Engineering/Principal and IT at British Telecom, Feb 2015-Dec 2018. Having 18+ years of IT Experience with 10+ years in Leadership roles. Exposure of handling large Engineering teams. Managed large teams for Product, Platform, and R&D. Excellent exposure in Organization Strategy, Transformation initiative, Migration strategies, AIML, Agile, Vendor Management, CQT Management, P&L, and Stakeholders Management. Good exposure to managing large Telecom, Healthcare, Urban Governance, Retail, Manufacturing, CPG domain portfolios. Was part of Top 20 High Potential Leaders of Infosys China, 2012 HIPO (Org level leadership). Good exposure of managing large Urban governance, Telecom, Healthcare, Retail, Manufacturing, CPG domain portfolios with a team size of 600+. Certified in the areas of AWS, Python, Agile, and the Service Delivery. Served as Group Project Manager at Emids Technologies Pvt. Ltd from Sept 2014- Feb 2015, Senior Project Manager in Infosys Limited, Bangalore, Feb 2006- Sept2014. And Software Engineer with Cybercom Resources (P) Ltd, Bangalore, Oct 2002 - Feb 2006.

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**2nd International Conference on
Futuristic Trends in Embedded Systems and
Networking**

ICFTEN-2021

**07th-08th July, 2021
- Virtual Conference**

ABSTRACTS

Organized by
**Department of Electronics and Communication Engineering & IQAC
Rao Bahadur Y.Mahabaleshwarappa Engineering College, Ballari**

In Association with
Institute For Engineering Research and Publication (IFERP)



Customised Toolbox Using RFID Readers

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Abstract

The manufacturing of automated machines is done by skilled engineers with the required tools in reach at time and place of easy reach. Tool misplacing is a phenomenon that is leading to efficiency loss of 20-25% working hours which is indirectly related to cost to company. Toolbox and tool chest have a definite position and slot for each size and type of tool. Due to day to day increasing non track-ability of tools, a RFID Arduino circuit which checks the employee details and grants access to the toolbox/tool chest. This methodology can be used for service engineer SPC tracking. This integrated system can reduce toolbox replacement from 3-4 months to once in a year. System can be installed and customised to industrial standards and other requirements.

Keywords

Tool misplacement, Toolbox, RFID, Arduino circuit



IoT Enabled Plant Soil Moisture Monitoring using Wireless Sensor Networks

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Abstract

In recent years, the increasing demand on organic farming necessitates continuous monitoring of plant health. In order to ensure the quality and quantity this becomes more essential. Hence, the objective of this research is to develop a remote monitoring system that continuously monitors the soil moisture of the plant. The Wireless Sensor Network (WSN) is integrated with Internet of Things (IoT) to achieve the above objective. Further, to enhance the network lifetime, Exponential Weighted Moving Average (EWMA) event detection algorithm is adopted in the proposed research.



IoT based Stockpile Management

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Abstract

In this paper, we are presenting a fundamental model for managing the stockpile which deals various kinds of tangible and intangible assets. We use IoT technology to ease the process and reduce manual errors. We implement this model by using ultrasonic sensors along with NodeMCU to collect and store the data on internet. The status of the stockpile is informed to the user by a web-based service.

Keywords

IoT, NodeMCU, Stockpile, Ultrasonic sensor



Detection of Covid-19 Symptoms using Adriuno

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Abstract

The Coronavirus COVID-19 pandemic is the defining global health crisis of our time and the greatest challenge we have faced since World War two.

Scientists first identified a human Coronavirus 1965. It caused common cold. Later that decade, researchers found a group of similar human and animal viruses and name them after the their crown like appearance.

Seven coronaviruses can infect humans. The one that causes SARS emerged in southern China in 2002 and quickly spread to 28 other countries. More than 8000 people were infected by July 2003 and 774 died. Signs and symptoms include respiratory symptoms and include fever, cough and shortness of breath. In more severe cases, infection can cause pneumonia, severe acute respiratory syndrome and sometimes death. To prevent the spread of Covid -19 various measures have been taken.

In our project we use automatic hand sanitizer with Ultrasonic sensor that uses ultrasonic sound waves to detect the object which saves time and produces better results. It can reduce the risk of spreading infections between coworkers. This allows for minimal contact with other surfaces and has stronger bacteria killing agent than average hand soap. The temperature is detected using Ultrasonic sensor HC-SR04 and Infrared thermometer MLX90614. This contactless temperature detector does not need to be operated by a human hence reducing the chance of getting infected. A pulse oximeter is a painless and reliable way for clinicians to measure a person's blood oxygen levels, this is done by using MAX30100.

Keywords

Arduino UNO board, MAX30 sensor1, MLX9061 sensor, Ultrasonic sensor



Pipelined FFT Processor Power Optimization

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Abstract

This project presents the pipelined Fast Fourier Transform (FFT) processor power optimization. Pipelined FFT processor consists of several sub-modules like data buffer, shifter, and rotator (butterfly) which has introduced power consumption to the circuit in a hierarchical design. The objectives of this project are, first, to study the power consumption in term of power during the hierarchical condition for different type of pipelined FFT and next, the objective is to review the facility saving after the optimization process, where the planning is flattened without sub-modules. This project focuses on 64-point pipelined FFT radix-8 algorithms. The design process is in Verilog coding and simulation is in ISIM. Total power for before and after the optimization process is compared. However, all pipelined FFT show lower power consumption after the optimization process.

Keywords

pipelined, FFT, power, radix-8



Sun Tracker Turret

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Abstract

Availability of sunlight is globally uneven. Due to revolution of earth, fixed solar panel cannot get enough sunlight. So our project is on overcoming this problem by implementing sun tracker which will be perpendicular to sun and will rotate 360 degree with one degree of freedom fixed. Also, this paper gives the comparison of voltages produced between fixed solar panel and rotatable solar panel.

Keywords

One Degree of freedom Fixed, Sun Tracker, Solar Panel, Voltage comparison



Child Rescue System from Open Borewell using Robot

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Abstract

In today's world, children fall in borewell is mainly because of the carelessness nature of the society. Due to this, many children life is in danger. The system which are available in the present world to save the child's life are costly and less effective. This systems follow a long procedure in saving the child, as they dig a parallel hole in horizontal path to reach the child, hence it is a time consuming process. Hence the society is very much in need of a new technique which is more efficient and effective. So we have come up with a borewell rescue system which is capable of moving inside the same borewell where the child has been trapped and performs various actions to save the child life[3]. The child is continuously monitored by the CCTV camera. Our paper includes series of process development from hand drawn sketches to computer generated design. In this system implementation of modern equipment's in various paths of the system, Since the system performs a life rescuing activity. The light weight servomotor and safety air bag are implemented for the system's operation.

Keywords

Air bag, CCTV Camera, NI my RIO Controller, Robotic Arms



Basic Medical Check Up Through Online

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Abstract

In order to avoid visiting to the hospital physically for Basic health check-up for the aged patients we have developed an application. Through this App they can complete the general medical Check-up in assistance with the doctor through this app. This application would serve better in times of pandemic and also for patients at farthest place from the doctor. This application will save both time, money and health of the patients which otherwise would wait for long queues in regular traditional methods as we see in general clinics and hospitals.



Facial Recognized Attendance Using Deep Learning

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Abstract

We are Living in a 21st Century where everything around us has become dependent on technology to make our life much easier and to work faster. People often use technology to complete the daily task . To the best of our knowledge, the process of recording attendance at the schools, universities, offices is still manual. In schools and universities the Attendance sheet is passed to all the students to sign on it and record attendance. Where as in office the employee should sign on the record book to make sure that he is present in office. This is slow, inefficient and time-consuming. This project is to offer system that can automate the process of recording and tracking the attendance using Facial Recognition Technology using Deep Learning. Facial Recognition Technology is becoming much popular in different areas such as Airports, Banks, Military, etc. Best example is our Mobile phone where we can unlock device using Face Recognition Technology. We will use Deep Learning techniques to detect, recognize and verify the captured faces. We aim to provide a system that will make the attendance process faster and more precisely.

Keywords

Deep Learning; Face Recognition; Attendance



Design and Fabrication of Low Cost MEMS Based Listening Device for Hearing Impaired

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Abstract

MEMS-based capacitive microphone and low-cost amplifier are designed for low cost power efficient hearing aid application. The developed microphone along with the associated Circuitry is mounted on a common board in the form of pocket type (Body worn) device. The incident acoustic waves on the sensor cause deflection of the diaphragm to alter the air gap between the perforated backplate and the diaphragm which causes the change in capacitance. The acoustic pressure applied to the microphone is from 0-100 pa for an operating range of 100 hz-10 khz which corresponds to the audible frequency range in case of human beings. The main purpose of this work is to increase the longevity of battery used in conventional hearing aid. The designed MEMS microphone with diaphragm is capable of identifying acoustic frequencies (100 hz -10 khz) which corresponds to the specific change in absolute pressure from 0-100 pa for 2 micron thick diaphragm with a sensitivity of about 0.08676 mv/pa. Finally, the prototype is designed using MEMS microphone and low-cost amplifier with biasing components in the form of pocket type (body worn) hearing aid.

Keyword

MEMS -based capacitive microphone, Low cost amplifier, Conventional hearing aid



Voice and Gesture Controlled Smart Vehicle for Physically Challenged Incorporated with Home Automation

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Abstract

A voice and touch controlled smart vehicle prototype was developed using a commercially available manual vehicle to assist people with both upper and lower limb disabilities. Smart vehicle is controlled by user interface where the human makes decisions at the highest level of operation and the smart control technology makes the rest of the motion automatic. An Arduino microcontroller processes the voice command as well touch based from the speech recognition process and controls the motor movement of the vehicle. Bluetooth module was also used to do away with messy wiring and an optional joystick command was also incorporated into the prototype design. The Bluetooth module of the vehicle to recognize the voice commands in English was incorporated. The overall cost of the prototype was kept low to make it affordable. With these modules we can control basic home automation like lights and fan with voice.

Keywords

Smart Vehicle, Arduino, Home automation, Voice, Gesture



IoT Based Self Driving Car

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Abstract

This explores autonomous (also called self-driving, driverless or robotic) vehicle benefits and costs, and implications for various planning issues. It investigates how quickly self-driving vehicles are likely to be developed and deployed based on experience with previous vehicle technologies, their benefits and costs, and how they are likely to affect travel demands and planning decisions such as optimal road, parking and public transit supply. This analysis indicates that some benefits, such as more independent mobility for affluent non-drivers, may begin in the 2020s or 2030s, but most impacts, including reduced traffic and parking congestion (and therefore infrastructure savings), independent mobility for low-income people (and therefore reduced need for public transit), increased safety, energy conservation and pollution reductions, will only be significant when autonomous vehicles become common and affordable, probably in the 2040s to 2050s, and some benefits may require prohibiting human-driven vehicles on certain roadways, which could take even longer.

Keywords

Autonomous, Driverless, Safety, Techniques



Disinfectant Robot

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Abstract

The source of the infections in operating or patient rooms in hospitals can be difficult to identify, as patients, visitors, and physical objects can be transfer agents. Therefore, a comprehensive disinfection is necessary to minimize the risk of transmission and infection. If sanitization is done by human there is possibility that a person might get infected. Hence an Ultraviolet (UV) sterilization technology, along with sprayer, is used to aid in reduction of micro-organisms that may remain on the surfaces after a standard cleaning to the minimum number. Disinfectant Robot is used to sanitize an operating or a patient room and has UV lamps mounted on top of the robot platform covering 180° direction. The robot also has sprayers placed at the front end. The disinfectant robot is employed by an embedded system based on a Arduino UNO to aid in navigation to avoid obstacles.

Keywords

OR, UV



Wireless Sensor Network for Non-Contact Temperature Measurement

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Abstract

Food safety and monitoring the quality of food is very important. Current techniques for food temperature detection are time-consuming, costly and sometimes require professional experts and specializes tools. As wireless sensor network(WSN) can applied in any environmental conditions, food monitoring becomes easy and convenient. In this paper, a real-time food monitoring system based on wireless sensor network is proposed. This is a prototype design. The nodes can build a network and these nodes transmit and received at a in the network via wireless communication link using radio frequency transmitter receiver protocol. This paper focuses on the development and performance analysis of wireless sensor network for non-contact temperature monitoring of food. The network collects data and transmits through nodes wirelessly.

Keywords

non-contact, sensor nodes, WS



Design and Implementation of Multilayer Security for ATM Machines

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Abstract

Automated teller machine (ATM) nowadays are a favourite spot for attackers as they are available everywhere and are much easier to rob. Majority of the existing systems authorize transactions using card verifications alone which does not provide enhanced security to the customers. In this paper the idea of an ATM system with multilayer security is proposed with the help of internet of things (IoT), fingerprint identification and face recognition. Generally, ATM attacks can be either physical ATM attacks or ATM-related fraud attacks. The physical ATM counter attacks using explosives, cutting with gas cutters or breaking with sledge hammers can be identified by using specific sensors to detect changes in vibration and temperature in the ATM counter. To prevent ATM related fraud attacks by manipulating ATM cards, the proposed system has additional security features like fingerprint identification and face recognition along with ATM number verification. The convolutional neural network (CNN) and machine learning based face recognition is used in this work which is quite reliable. Failures in any of the above steps cancel the transactions and so the proposed system provides multi layer security. Thus the additional features provided in the system makes it impossible for the attackers to break the ATM security.



Intelligent Attack Detection Model in IoT using Optimal Feature Selection incorporated with Optimized Deep Learning Architecture

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Abstract

Attacks and Anomaly recognition in the Internet of Things (IoT) foundation is a rising worry in the space of IoT. With the expanded utilization of IoT framework in each space, dangers and assaults in these foundations are additionally developing comparably. Some attacks like node tampering, malicious code injection, malicious node injection, DoS Attacks, Malicious scripts such assaults and inconsistencies which can cause an IoT framework failure. In this paper deep learning models have been contrasted with foresee attacks and anomalies on the IoT frameworks precisely. The main phases of the proposed anomaly or attack detection model are Feature Extraction and Detection. In feature extraction process, the attributes in the dataset is considered as features, which are like Source ID, Source Address, Source Type, Source Location, Destination Service Address, Destination Service Type, Destination Location, Accessed Node Address, Accessed Node Type, Operation, Value, Timestamp, and Normality. Since the numbers of feature are high, which increases the length of the feature vector, optimal feature selection process will be developed to extract the most significant features with unique information. Finally, the optimized DBN(Deep Belief Network) categorizes the data into normal as well as attacks, and detects each category of attacks.

Keywords

Anomaly recognition, Feature Extraction, optimized DBN(Deep Belief Network)



A Neural Network based Autonomous Driving Vehicle Simulation

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Abstract

An Autonomous vehicle is a vehicle which detect it's surroundings and drives safely without any human necessity. And also a major research topic on which many multi-national companies are working right now. The actual idea of autonomous vehicle is of 1920s and some of the trails are also done in 1950s. Due to lack of resources and technology, the idea couldn't move further. But in 1980s, technology got boomed and many new technologies came into existence which is sufficient to start making research on autonomous vehicles. As this is a new concept, one cannot directly take autonomous vehicles on to roads, instead simulation will help to see what is actually happening with the vehicle. To achieve and introduce such beautiful model into human life, this paper have some software components of autonomous vehicle simulation that includes usage of technologies such as Convolution Neural networks, Open CV, Udacity Simulation tool, TensorFlow, Keras, Flask and SocketIO. This paper describes some of the drawbacks in the existing technology and gives some in-sights or solutions to overcome.



Trends in Embedded Systems

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Abstract

Embedded systems are leading and widely spread in the field of computer science field. It is a microprocessor based hardware system with is dedicated to do particular tasks as an independent system or as a part of large system. It is most of the time uses to carry out real time processing and its complexity depends on the task for which it is designed. These embedded system uses sensors, A-D and D-A converter and actuator to perform to its assigned tasks. The application of this embedded systems are vary from small watches to large complex robots. The factors that influences the embedded systems are artificial intelligence, big data, machine learning and deep learning, internet of things etc. In this article it is tried to describe these factors in brief way.



Multi Level Home Security and Intrusion Detection System Using Arduino Mega and GSM

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Abstract

In this paper, a Multi level home security system using Arduino mega and GSM has been proposed. The fundamental capacity of this security framework is to recognize the presence of person and make the client alert about it at whatever point it is essential, by sending instant message to client's cell phone-number, enrolled already. In the essential stage, presence of any individual will be detected by a Pyroelectric (PIR) movement sensor and from that point forward, the individual should enter the correct secret phrase through a keypad. Oneself created secret key assurance gives a twofold sided advantage to this framework viz. any obscure individual should demonstrate his/her personality by entering the correct secret word to the security framework. Each time a secret key is utilized, it lapses, and another secret phrase gets produced by the framework and is shipped off the enlisted versatile number. The ongoing insurance has been performed utilizing a GSM SIM800L module which sends and gets instant text messages between client's cell phone and microcontroller for example Arduino mega. This security framework has given minimal effort and less convoluted home security insurance conspire by distinguishing any unapproved section to our home or whatever other spot that should be gotten.

Keywords

Multi level Home Security, Arduino Mega, Self-Generated Password, GSM SIM800L Module



A Survey on Fabric Defect Detection and Related Techniques

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Abstract

The textile industry is primarily concerned with the design, production and distribution of yarn, cloth and clothing. The fabric defects detection is important for the product to have good reputation in the market. Human detection is less effective. This paper summarizes various machine operated techniques for fabric defect detection.



A Novel Topology for PV-Powered SRM Drive of Electric Vehicle for Driving/Charging Control

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Abstract

During the last few decades, environmental impact of the petroleum-based transportation infrastructure, along with the fear of peak oil, has led to renewed interest in an electric transportation infrastructure. This paper proposes a Novel topology for PV-powered SRM drive of Electric vehicles. The Proposed topology is used to coordinate the PV panel, battery, and SRM and six working modes has to develop to achieve flexible energy flow for driving control, driving/charging hybrid control and charging control. And also, a PV-fed Battery charging control scheme is developed for improving the solar energy utilization. Since PV-fed EVs are a greener and more sustainable technology than conventional ICE vehicles, this work will provide a feasible solution to reduce the total costs and CO₂ emissions of electrified vehicles. This topology may also be applied to similar applications such as fuel cell powered EVs. The proposed topology has to analyse theoretically, and its validity also verify by using simulation software.

Keywords

Electric Vehicle, PV-fed Battery charging control scheme, Switched reluctance motor (SRM) drive



Automatic Obstacle Identification and Collision Reporting System for Fishing Vessels

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Abstract

Presently, Collision of fishing vessels with other ship or boat has become one of the most hazards faced by marine industry. Because of the shortage of proper communication system, fishing vessels stumped doesn't get any information about the oncoming obstacles. One amongst the motives behind my proposed project is supposed for avoiding collision between merchant ships and fishing boats. Since there aren't any proper systems for alarming the fishing vessels to avoid collisions, the accidents keep happening, and that they continue to be unnoticed. There don't seem to be any proper communication systems to inform the surface world, if an accident occurs. Hence, a LIDAR sensor is employed to detect the incoming ships or objects and alerts the staffs of the watercraft employing a buzzer sound and a display message at the LCD stating, "obstacle detected" at captain's bridge as first stage. but that, as second stage if a disaster occurs, then the accident detection system which has a vibration sensor for detecting the crash happened between the obstacles and vessel are going to be reported to the rescue team at nearby coastal area together with GPS location and boat details using Arduino UNO where it's processed and send a message using the GSM module. For sudden rescue a buzzer is attached to achieve attention from neighboring waterborne vessels sailing at hand to accident area. Hence, we are able to safeguard marine activities with none harm to the human kind also as living beings within the ocean that helps in early rescue.

Keywords

Alert system, Lidar sensor, location tracking, obstacle detection



Automated Ground Harvesting Machine Using Image Processing

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Abstract

Agriculture is a main part of India's economy and at present it is among the top two rank makers in the world. This field provides roughly around 52 % of the total number of occupations in India and contributes around 18.1 percent to the GDP. In India, the greater part of land used for rural section which produces semi-completed item. Around 65% of individuals rely upon agribusiness as a principle occupation. Since antiquated occasions cultivating is done physically which causes lesser efficiency and additional time requirement. The opportunity has arrived to modernize our cultivating cycle so profitability.

The fundamental target of the task is to build up the under grounded plants harvester thinking about the necessities of Indian farmers. Among the field activities concerned with cultivation, collecting is the most difficult and exorbitant undertaking. Existing ground collectors are too gigantic to possibly be helpful for limited scope farmers and in situation like multicroping. The existing harvester accessible currently is financially heavy which just only plucks the evacuated plants not the under established plants.

Key words

Automated ground harvester , Agriculture Robot , Robotic Arm , Rover , Processor , Controller , Arduino, Irrigation , Tradational cultivating rehearses , Motor, Motor Driver, Pump, Camera



Design and Control of an Automaton to Check Safety Status

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Abstract

As industries evolve into technology, it is vital to identify places where we need mechanical help and replace humans with robot assistance to avoid life threats. Human–robot collaboration is one of the key factors for the development of industries of the future, a place in which humans and robots can work and carry out tasks together. Safety is one of the most critical aspects in this collaborative human–robot archetype. Robot assistants are clever helpers in environments for assembly, handling, machining, measuring, fetch and carry jobs, etc. Often in these environments, we might face potential threats in many forms, and it is obligatory to identify these threats before any crisis occurs. These threats may be in the form of a gas leak, fire, explosions, unexpected shutdown of systems, and more. An automaton/robot is a machine that performs various functions according to a predetermined set of instructions. Our automaton aims at avoiding any catastrophe by constantly monitoring different units of the industry. A microcontroller acts as the brain of this automaton/robot. This automaton, in succession, handles the sensors and actuators of the system.

Keywords

mechanical, robot, automaton, microcontroller, sensors, actuators



Stem Cell Segmentation using Generative Adversarial Networks and Transfer Learning

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Abstract

We address the issue of dividing cell shapes from microscopy pictures of human prompted pluri potent Retinal Pigment Epithelial foundational microorganisms (iRPE) utilizing Convolution Neural Networks (CNN). We will likely think about the exactness gains of CNN-based division by utilizing (1) unexplained pictures by means of Generative Adversarial Networks (GAN), (2) explained out-of-bio-space pictures by means of move learning, and (3) deduced information about magnifying lens imaging planned into mathematical expansions of a little assortment of clarified pictures. In the first place, the GAN learns a theoretical portrayal of cell objects. Then, this unaided learned portrayal is moved to the CNN division models which are further calibrated on few physically sectioned iRPE cell pictures. Second, move learning is applied by pre-preparing a piece of the CNN division model with the COCO dataset containing semantic division marks. The CNN model is then adjusted to the iRPE cell area utilizing a little arrangement of clarified iRPE cell pictures. Third, enlargements dependent on mathematical changes are applied to a little assortment of explained pictures. All these ways to deal with preparing CNN-based division model are contrasted with a standard CNN model prepared on a little assortment of clarified pictures.

Keywords

Generative Adversarial Network, Transfer Learning, Deep Learning, Cell segmentation, iRPE.



B+ Tree used For Database

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Abstract

This is an examination based undertaking and the fundamental point persuading this task is learning and executing calculations that lessens existence intricacy. In the initial segment of the venture, we lessen the time taken to look through a given record by utilizing a B/B+ tree instead of ordering and customary successive access. It is reasoned that plate access times are much more slow than fundamental memory access times. Regular look for times and rotational postponements are of the request for 5 to 6 milliseconds and normal information move rates are of the scope of 5 to 10 million bytes each second and consequently, fundamental memory access times are probably going to be at any rate 4 or 5 significant degrees quicker than plate access on some random framework. Accordingly, the goal is to limit the quantity of circle gets to and along these lines, this undertaking is worried about strategies for accomplishing that goal for example methods for organizing the information on a circle so that any necessary piece of information, say some particular record, can be situated in a couple of I/O's as could be expected. In the second piece of the undertaking, Dynamic Programming issues were addressed with Recursion, Recursion With Capacity, Emphasis with Capacity, Cycle with More modest Stockpiling. The issues which have been addressed in these 4 varieties are Fibonacci, Tally Labyrinth Way, Check Board Way, and Longest Basic Aftereffect. Every one of the 4 varieties are an improvement throughout each other and in this manner existence intricacy are decreased fundamentally as we go from Recursion to Cycle with More modest Stockpiling. Catchphrases—Center Java, Information Design, Calculation. Presentation.

Keywords

Core Java ,Data Structure, Algorithm



Design and Development of Biometric System for Financial Document Verification using Blockchain

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Abstract

Blockchain is an expanding list of records, called blocks, that are linked using cryptography. Each block contains a cryptographic hash of the previous block, a timestamp, and transaction data. By design, a blockchain is resistant to modification of the data. To counter these problems of traditional databases, blockchain technology can be used instead. Blockchain technology is a decentralised storage network, where each data of each user/ customer is stored in blocks within their host systems, but the difference here is that, each block is connected with each other over the decentralized network using the hash values. Credential Verification is performed to check if the customer is original. Usual applications of customer profiling are done in the bank and security sector, where every new customer or user must undergo a background validation before his/her data is stored on the database. In usual practice, all the data collected by the banks are stored in a single, centrally controlled database. There are numerous disadvantages of the current system of storage of data. It is easy for the hackers to break through the database security and get all the customer's all details. Once the hacker or any unauthorized user accesses any one rows of the database, that person can access the entire database of sensitive information.

In order to tackle this problem, one solution is to use decentralized blockchain technology replacing the old centrally owned database system. In this technology, every user's data will be stored in the blockchain. How blockchain works is that each block contains some data and using a cryptographic technique called secured hash algorithm 256 (sha256), the hash value of length 256 bits is calculated for every block. This hash value of a particular block is stored inside the next block, creating the blockchain.

The use of blockchain here provides immense security as if the data of the block is accessed without authorization, and if the data is changed, the entire hash value for the block will be changed, and when this happens that particular block will get disconnected from the chain, and hence give an error signal. The blocks are stored in a server, but no human intervention can actually access these blocks, but only smart contract code blocks can access the blocks. Once the data is stored on the blockchain, it cannot be modified without authorization from the user.

To use blockchain with authentication, facial recognition and audio recognition are used as security measures. The facial recognition model was trained using SVM and KNN for comparison purpose. KNN approach gave an accuracy of 96 % whereas the SVM approach gave an accuracy of 98%. The threshold for distance calculation was 0.58, at which it gave the maximum accuracy. Also the blockchain creation was done using python and hash for every block was calculated using SHA-256. Audio recognition was performed using Multi Layer Perceptron model. An accuracy of 88 percent was achieved.

Keywords

Blockchain, Python, Machine Learning, Neural Network



Spectrum Sensing In Cognitive Radio Network: A Survey

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Abstract

In cognitive radio networks, the first cognitive task preceding any form of dynamic spectrum management is the spectrum sensing and spectrum hole identification in a wireless environment. In cognitive radio, spectrum sensing is fundamental crucial task. Energy detection method is a basic method, that requires knowledge of noise power, however it suffers from noise uncertainty problem. Covariance based detection exploits space-time signal correlation that does not require the knowledge of noise and signal power. The covariances of signal and noise are generally different which can be used in detection of licensed user. However, there are not many studies that show the feasibility of the detectors and analyze their performance under fading channels. In this project, we analyzed the detector performance exploiting TV White Space under Rayleigh and Rician fading channel by setting probabilities of false alarm and measuring probability of detection. We further analyze the effect of smoothing factor and overall correlation coefficient on the performance of covariance based detector. Covariance based detector outperformed the energy detector with noise uncertainty even under the time-varying fading channel.



Realtime Crowdsensing Application

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Abstract

Recently, different sensing applications have grown a lot in the market and are growing attention because of their suitability for an enormous range of new types of context-aware applications and services. This is attributed to the fact that modern devices are equipped with unprecedented sensing, computing, and communication capabilities that allow them to perform more complex tasks. Despite a number of merits, RCA confronts new challenges due to network dynamics, the huge volume of data, sensing task coordination, and the user privacy problems. Our real time crowd sensing application is going to identify crowds in real time and it will gather data from many devices like CCTV, drones and will then process it accordingly. The application also aims to identify objects, count objects in real time. A smart system will also be there that will recommend the suitable action. This application will be useful while dealing with huge crowds.

Keywords

Machine Learning, Artificial Intelligence, React, Python, Microsoft visual code, Node.js, AWS , API , Web Development



ToI Stereopticon for Rural E-Learning Education System

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Abstract

E-Learning is a very integral part of smart education system even called to be as a smart-work method of educating. The contemporary challenge is to easily integrate the e-learning education system into a smart educational environment, considered that to be in rural areas with one of the most emerging technology called Internet of things (IoT). The e-learning services rely on a software system that allows access to all the materials that are related to the education and makes them electronically available to all students/teachers on the internet using whenever they need and at wherever they are being stated. The whole system of e-learning system is a critical part of the educational process as it reflects on the usage of the complex system too. In this paper, the design and implementation of e-learning systems through ToI (Things on Internet) stereopticon is described. The proposed ToI Stereopticon for Rural E-Learning Education System is designed using off-the-shelf and open-source software engineering model, programming tools, raspberry pi circuit as hardware and database models. The system is tested to prove the new design concepts and features. The method used in the back-end and front-end design and implementation allows flexible usage and integration of the whole system by the educational institutions in rural areas.

Key words

Android Studio, Database, E-Learning, Education, Educator, Firebase, Internet of things (IoT), Institution, LED-Projector, Raspberry-Pi, Raspicast, System of System (SoS)



Performance Analysis of R-2R DAC Converter using Cadence Tool

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Abstract

A digital-to-analog (D/A) converter based on the R-2R ladder is first analysed in terms of the power consumption, to point out that the current-mode is the lowest power dissipation counterpart of the voltage-mode. The integral nonlinearity (INL) analysis and the characterization methods of the current-mode D/A converter are applied to an 32-bit D/A converter fabricated. The capacity of number of transistor(logic) that can be fabrocatd on chip is 5nm.

Keywords

digital-to-analog converter, resistive ladder, CMOS, integrated circuit, current-mode, low power.



The Design and Implementation of GPS Controlled Environment Monitoring Robot based on IoT and ARM

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Abstract

Environment monitoring is the collection of data and information on environmental parameters. Monitoring and evaluating the health of our natural resources is also essential for effective environmental planning, policymaking and solving environmental pollution. For the extremely polluted region, it carries the health risk for monitoring manually. To avoid these risks, remote monitoring techniques along with a robotic system that has intelligent data acquisition, communication and processing are crucial in revolutionizing monitoring and protection. For remote monitoring, developing a system will be an efficient solution so that the monitoring can be done without any human intervention.

Recently, robotic systems are utilized as data-gathering tools by scientists for a greater understanding of environmental processes. Robots are also being designed to explore areas with harmful gases, monitor climatic conditions, and to study about a remote place that is quite risky for the human. Keeping the above statement in the forefront, the new trending wireless sensor and ARM-based embedded system technology are getting integrated on a single board, intended towards the advancement of this system. The core part of our designed system is based on the Arduino microcontroller which presents a high-cost performance, code density, excellent period interrupt response and low electricity consuming with a small piece of a silicon chip. Specifically, the Arduino is an ideal option for the embedded system that might assume additional significant functions while other simple Arduino boards. It also has enough pins for GPIO and serial communication pin that can be connected to the number of sensors. All those benefits make Arduino the most effective selection for completing the system.

In order to deploy a scalable and remote monitoring system, an efficient platform that enables users to monitor their daily exposure to air pollutants by giving air quality information provided by various sensing infrastructure is proposed. The sensors periodically monitor air quality. The data can be monitored and accessed from anywhere using mobile phones or PC with Internet access. The

implementation has sensors for air quality, CO, CO₂, and temperature and humidity to monitor the environment around. The NodeMCU ESP8266 has been used to interact with the IoT platform and sensors. The Arduino UNO microcontroller is used for control and navigation of the robot. The system has been developed by embedded C programming language. The robotic system with blue-tooth controlled feature enables to move according to user's instruction autonomously and collects sensor data from targeted locations. An Android app has been developed for the user friendly interface. All collected data is sent to the ThingSpeak IoT platform in order to be accessed by the user from a wireless connection. Real-time cloud graphical visualization is performed to analyze the collected data. This multipurpose robotic system is capable of remote monitoring without any human intervention and keeping away environmental hazard risks.



Smart Shield for Women Safety

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Abstract

In light of the present situation of the metro cities and other big cities, women security has emerged as one of the most important requirements in our country. In this world of advanced technology and smart electronics it is required to have a simple and cost-effective safety gadget that helps the victims during unforeseen dangers. This paper covers descriptive details about the design and implementation of prototype for an electronic gadget which has the potential to serve as a safety wear in the coming years. The device consists of a switch, Arduino Uno Board, GSM module (SIM900), GPS module (Neo-6M), buzzer, and pulse sensor (SEN-11574). The main working of this project is that anytime a woman senses danger, all she has to do, is to hold on the button of the device. Once the device is activated, it tracks the place of the women using GPS (Global Positioning System) and sends emergency messages using GSM (Global System for Mobile communication), to already registered mobile number and the police control room. The pulse sensor checks the pulse of victim and in abnormal health situation the device also sends current GPS location to ambulance at every 10 sec in form of SMSs. The main advantage of this system is that this device small and easy to carry. The use of sophisticated components ensures accuracy and makes it reliable.



VANET Based Vehicle Tracking Module for Safe and Efficient Road Transportation System

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Abstract

Vehicular ad-hoc networks (VANETs) include vehicle-to-vehicle and vehicle-to infrastructure communication. This paper describes a project for implementing major applications of VANETs. In this, a novel smartphone integrated driving safety application along with a traffic signal priority control method in an effort to clear the path for emergency vehicles is modeled. VANET Based vehicle tracking module for safe and efficient road transportation system Page 4 The system consists of an On-Board Unit (OBU), an android app titled SMART DRIVE (Systematic Management of Road Traffic through Data Retrieval in VANET Environment), a server and Road Side Units (RSUs). The OBU is placed inside the vehicle. RSU is to be placed at the road intersections. The server constitutes a hosted database and a web application.



Text Segmentation using Maximum Likelihood and Viterbi Algorithm

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Abstract

In any communication channel, encoding and decoding are necessary to ensure minimum losses and better receptivity. There are a lot of techniques in order to minimize errors and obtain the best possible path. The Viterbi algorithm can be used to get to the most likely hidden state sequence to any observable sequence, the probability of an unobservable sequence can be decomposed into a product of probabilities. This technique is suitable for conditions when the transmitted signal is corrupted by additive white gaussian noise. In this project, the aim is to segment text using this algorithm and find out the most likely sequence to the words. This has been further implemented by Natural language processing and named entity recognition. The results have been compared with convolutional coding techniques as well.



AI Based Person Locator

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Abstract

One of the greatest fears of person is to lose their loved ones. Each year approximately 100000 people gets lost in India. In some cases, lost person gets found easily, but in some critical cases, missing persons are never reunited with their relatives. Finding lost person can be difficult task. The currently available Manual System for finding missing person have very long procedure and takes more time. More time is required for launching an FIR (First Information Report) in police station. Also, time required for finding lost person is more. During the manual process amount of manpower for searching lost person is less. And in some missing person related website they required FIR No for upload complaint on their website.

To make task of finding missing person easy I developed a Desktop Application using Python that will register new cases to with the database and tell if there is a match. Through a mobile app the users will be able to upload pictures of people with the location.



An Eagle's View on Different Types of Digital Watermarking Techniques

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Abstract

The large availability of digital data for everyone's needs such as text, audio, images and videos became accessible to the public through the availability and expansion of the internet. Digital watermarking technology is a technique adopted to ensure and facilitate data authentication, security and copyright protection of all these digital media. It is considered as the most important technology in today's world, to prevent illegal copying of data without knowing about ownership of the originator of digital data. This paper gives an eagle view of variety of digital watermarking technologies starting from basic definition to the understanding level details.

Keywords

Water marking, technology, Digital data, Technique



Online Food Ordering Application for College Canteens and Messes (Menufy)

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Abstract

Menufy is an aggregating application that aggregates the menus in canteens and messes around colleges who can update their daily menu online. The orders for delivery or pickup or inhouse can be placed through the application or on call through the contact details that will be provided along with the menu of the corresponding messes and canteens that are providing such services. Menufy makes it easy for students/faculties to learn the menu depending on the day and time without actually being physically present. This gives the user the opportunity to scan through the various menu provided at the tip of the finger and plan accordingly according to their conveniences. In doing so the application prevents the time spent on traveling and the time spent on deciding what to have upon reaching the destination. This also prevents the scenario where the customer does not find what he desires to have upon reaching the place and thus contributes in saving more time. This application works similar to market leaders like Zomato and Swiggy but focuses primarily on eateries in and around colleges, thus making the primary target for the application as students and faculties. Along with making the customers process easier, the app also facilitates ease of usage for the partnering eateries. Upon using the application, the partnering eateries can display their menu which will be made available to all the users of the application and thus need not have to spend extra money on advertising. Moreover, they can use the platform provided by the application to display the menu of the day or any special offers that may be available at a particular period of time does also help the customers avail these offers. The intuitive design provided by this application makes it very easy for both the customer and the partners to use the application with ease. Thus, Menufy Intends to bridge the gap that is found within the sector. As mentioned earlier, Menufy is primarily targeted for the students in colleges. As we are all aware the daily lifestyle of a college student is filled with a busy schedule and thus most students decide either on skipping the meal or go to any nearby location and have whatever is available. Due to these habits there is a lot of compromise made on their daily food habits. Such compromises can have adverse health effects especially when these students are under constant stress. The main reason as to why the students do so is because of the time-consuming process involved and this is exactly where Menufy comes into play. Furthermore, it also helps the restaurateur to help boost their business and also make special offers and deals available to all. Due to its accessibility and ease of use on the customer's as well as the service provider's phone makes this application a must use justifying the statement "Smart work is better than Hard work". This prototype is initially constrained to college canteens only.



Soldier Navigation and Health Monitoring System

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Abstract

These days, all countries keep their security at high need. Wars are being fought for land, water, and energy the position of the most powerful nation. A country's arm forces carry with it three masterly clad services: the military, the navy, and the air force. Troopers being the backbone of any armed force typically lose their lives due to lack of medical facilitate once in an emergency, also troopers unit are involved in missions or special operations get straggled on battlefields and lose contact with the authorities. To overcome these problems we implemented this project that, practice wireless body house device network (WBANS) like temperature device, heartbeat sensor, etc. will monitor the health standing of the soldier whenever required. Also practice GPS we've got an inclination as a unit of measurement, able to track the soldier's precise location whenever required. Using a gas level device, we incline to unit able to also monitor the condition, so authorities can provide essential aids. Communication is established between the troopers and authorities via GSM. Any abnormalities inside the readings of wireless body house device network (WBASNs) is taken into account as a trigger for GSM to figure out the association between the soldier and base unit and send the current location and health standing to the receiver. By practice, all this equipment we've got an inclination to tend to had tried to implement the basic guarding system for the soldier in low value, lightweight, transportable, and precise device.

Keywords

Arduino Board / Microcontroller, GPS, GSM modem, temperature sensor



Dyslexia Classification using an Ensemble of Feature Selection Algorithms

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Abstract

Dyslexia is a learning disability which causes difficulty in an individual to read, write and spell. It affects almost 10% of the global population and detecting it early is paramount for its effective handling. One of the cost effective way of detecting Dyslexia is using the eye movement of an individual when they are reading. The raw eye movement recorded while reading is converted into different useful metrics. These metrics can be analysed using various machine learning algorithms to predict Dyslexia. The dataset used for doing this work is from Kronoberg reading development project, Sweden. The work mainly focuses on using an ensemble approach for feature selection and to perform analysis on the results. Ensemble approach is one which uses two or more methodologies. The feature selection approaches used in this paper are Principal Component Analysis and Chi-square. The paper explores whether ensemble approach produces better accuracy or not in Dyslexia classification.

Keywords

Feature selection, PCA, metrics, ensemble, Chi-square



Agricultural Automation Using GSM Modem

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Abstract

Some wise scientist once said that a control system is a system where we can shut down the machine whenever we want. That's the difference between a controlled and uncontrolled machine. Our project is about making this control system efficient and dynamic. As the name suggests the automatic control is for controlling the motor from a remote place, look over its operating conditions, and get feedback from the motor itself. Our target is to control the motor from a distant place by mobile and also get feedback by SMS while it is in ON or OFF condition. In industrial sector we hope our project is become handy and cost effective to operate motor.

Keywords

GSM Modem, Microcontroller



Enhancement of ATM Transaction by Implementing Fingerprint Recognition

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Abstract

This paper deals with the drawback of identification and verification of a person is a common thing which is necessary for securing personal information. Methods like ID card verification or signature does not provide perfection and reliability. The systems employed at these places must be fast enough and robust too. Use of the ATM (Automatic Teller Machine) which provides customers with the convenient banknote trading is facing a new challenge to carry on the valid identity to the customer. Since in conventional identification methods with ATM, criminal cases are increasing making financial losses to customers. Authors design a simple fingerprint recognition system using Arduino UNO. The system uses GT511C3 fingerprint scanner to capture fingerprints. This system can be employed at any application with enhanced security because of the uniqueness of fingerprints. It is convenient due to its low power requirement and portability.

Keywords

GT511C3 Finger Print Fingerprint, ATM, PIN, Framework, SIM800 GSM GPRS Module



Study of clustering in Vehicular Ad hoc Networks (VANETs) and Clustering-Based Efficient Data Dissemination Algorithms for VANET'S

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Abstract

Vehicular ad hoc networks (VANETs) have recently attracted considerable attention owing to their wide range of applications. However, there are several challenges, such as mobility, routing, scalability, quality of services, and security. Clustering is an important control mechanism in high-mobility networks and has been verified to be a promising approach in VANETs as well, as it ensures a basic level of network performance. Accordingly, several clustering algorithms have been proposed for these networks, and different protocols typically focus on various performance metrics. In this study, we provide a review of clustering algorithms in VANETs. In this paper First, we present background material regarding the clustering process. Secondly, we are most concerned about the study of Clustering Algorithms which not only maintain the stability of the cluster based topology with minimum overhead but also minimize the number of cluster heads.

Keywords

VANETs, Clustering



An Efficient Traffic Congestion Monitoring System Using IoT

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Abstract

Traffic Congestion is a big issue in many large cities of India and traffic lights are basically used to control the flow of vehicle. Failure of signals, increasing number of vehicles, poor law enforcement, and bad traffic management has result in traffic congestion. One of the major issues with Indian cities is that we cannot expand the existing infrastructure more, so we have only one option available is better management of the traffic. The effectiveness of traffic control system depends on its ability to react on real-time traffic conditions. However, conventional traffic control system is not able to do this. Whatever the traffic density high or low the signals are timed and run according to that time only. This result in increased traffic congestion along the roads which again result in significant air pollution, an increased safety risk and negative impact on the economy and the overall quality of life. In this paper, we tend to planned development smart traffic management System based on the internet of Things (IOT).The traffic light management is proposed and developed to support decision making of traffic officers. The system can detect the congestion level of every road at the intersection based on the density of vehicles using ultrasonic sensor array placed on the road.

Keywords

ESP 32 Wi-Fi Controller, Internet of Things (IoT), Traffic Management System, Ultrasonic Sensors



Smart Irrigation System using IoT

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Abstract

India is mainly an agricultural country. Agriculture is the most important occupation For the most of the Indian families. It plays vital role in the development of agricultural country. In India, agriculture contributes about 16% of total GDP and 10% of total exports. Water is main Resource for Agriculture. Irrigation is one method to supply water but in some cases there will be Lot of water wastage. So, in this regard to save water and time we have proposed project titled Automatic irrigation system using IoT. In this proposed system we are using various sensors Like temperature, humidity, soil moisture sensors which senses the various parameters of the Soil and based on soil moisture value land gets automatically irrigated by ON/OFF of the motor. These sensed parameters and motor status will be displayed on user android application.

Keywords

Smart irrigation, ArduinounoR3, soil sensor, humidity sensor, temperature, sensor, water pump



An Autonomous IoT-Agrobot Controlled Over a Google Assistant with Solar Powered Agriculture Machine

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Abstract

Agriculture is the backbone of our nation. India being a land of agriculture majority of people in India still follow agriculture as their primary occupation. However due to shortage of labor and mechanized equipment's, Indian agricultural still follows obsolete methods which heavily affect productivity of agricultural produce. With technological advancements in many other fields, agriculture is still followed by obsolete methods, as majority of the farmers are not literate to operated highly complicated technological devices. Thus this paper simplifies the technology for farmers using Google voice. This paper involves development of completely autonomous agricultural machines which can be used for different applications such as spraying, sowing, irrigation using voice commands over IOT where farmers can operate the machine in the farm form any corner of the world using google voice. The machine is capable of performing multiple operations such as sowing, spraying, cutting and more. Since the machine is voice activated, the farmers can easily control the machine as it involves just voice commands. Further the machine operates over IOT and is autonomous, so that farmer can control the machine from any corner of the world. Thus this paper provides a completely economical solution to problems faced by farmers and automating agricultural operations improving productivity.

Keywords

Google voice, IOT, Sowing, Spraying, Irrigation, Labor, IOT, Autonomous



Implementation with Permissioned and Permissionless Blockchain Technology for Cybersecurity: Use Cases for e-Health applications

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Abstract

The purpose of the research insight into Blockchain technology for cybersecurity aspects. In today scenario, smart healthcare is generating a huge amount of sensitive data exposed to cyber threats. The most important objective of this paper to secure vulnerable information of healthcare , monitor every person's activity and overcome from data breaches and security threats. Blockchain plays an important role to secure data in many areas such as finance, supply chain, education, and cybersecurity. Confidentiality of data is ensures by encryption with cryptography algorithm and consensus mechanism. The data integrity is provided by hash functions. The digital signature gives authentication to the user; only authorized person can access the data. The above features guarantee the Blockchain technology is suitable for cybersecurity applications. To describe increased usage of Blockchain technology, this paper develops a permissioned and permissionlessBlockchain for medical applications securely do transactions and protect the sensitive information from data breaches. The author presented the scientific methodology implementation with Hyperledger Playground Composer, Ethereum smart contract and BitcoinBlockchain tools by using test cases for healthcare data transactions. The comparison result of Bitcoin, Ethereum, and HyperledgerBlockchain tools given in the discussion part. From the implementation we conclude permissioned blockchain is more secure than permissionless blockchain. . The platform in healthcare can perform as an advantageous method for data breaches; data stored in blocks is unique and immutable without central control entity. The distributed network can reduce risks of tampering and fraud. Furthermore, security vulnerabilities tools used in Ethereum and future work Blockchain sustainable framework for cybersecurity is in progress are given at end of section.

Keywords

Blockchain, Bitcoin, Ethereum Smart Contract, Hyperledger Playground Composer, Information Security



A Survey on Energy Efficient Cluster based Wireless Sensor Network for Prolonging the Network Life Time

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Abstract

WSNs are the best choice to observe the environment, monitoring and security purposes. Regarding the existing advances for WSNs, sensor nodes to supply their energies are still depend on low-power batteries. Also, because of employment of WSNs in the inaccessible environments, it is impossible to recharge or replacement the battery of sensor nodes. Due to these constraints, optimal energy management is one of the most important problems in WSNs. Thus, to develop a new protocol in this kind of networks, the network lifetime improvement requirements should be considered. The sensor nodes exhaust their energy eventually due to limited energy source. Based on energy efficiency data transmission methods are to be designed to achieve energy efficiency and the sensor network should operate for a prolonged time. In mobility based schemes, MSs decrease the energy consumption of the network by transferring the power consumption from nodes to the sinks which are usually equipped with unlimited energy supplies. Most of the existing cluster based schemes adopt direct data transmission between the sensor nodes for intra-cluster communication, which leads to the unbalanced energy consumption of sensor nodes and results in wastage of energy in the network. Several schemes focus exclusively on optimizing the sojourn locations of MS to balance the energy consumption among sensor nodes. However, in most of them, MS stays at only one location within a cluster which leads to the unbalanced energy consumption of MNs. Furthermore, the time limitation for balancing the energy consumption of nodes has not to be considered, which is required to work the sensor network for a longer duration. The network performance, In this paper, Energy-Efficient sensor network schemes, works, survey has been done which may lead to develop the new schemes on WSN to achieve the energy efficiency in the cluster based sensor network.

Keywords

Mobile nodes, Mobile Sink, Intra-cluster Routing, Sojourn Location



Eyeball Movement Based Wheel Chair Control using Opencv and Arduino

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Abstract

The main aim to his paper is to Provide a system to paralyzed peoples they can travel by in wheel chair independently without need another Person. In Previous System they are giving remote control type of wheel chair controlling system is present in wheel chair. But this system is not much helpful for all the paralyzed peoples because handicapped people unable to move their hands freely. So, we go for some alternative solution is to Provides an eyeball-based wheel chair control. Camera Connected to the PC running python will capture the Eye ball and it fix the centroid of the eye based on the centroid we track the position. Then the different variation on pupil position get different command set for wheelchair. The signals pass the motor driver to interface with the wheelchair itself. The motor driver will control both speed and direction to enable the wheelchair to move forward, left, right and stop.

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