ROHINI

COLLEGE OF ENGINEERING AND TECHNOLOGY

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International Conference on AUTOMATION, INTELLIGENT COMPUTING AND COMMUNICATION

[ICAICC'20]

Organized By

Department of Electronics & Communication Engineering

Rohini College of Engineering and Technology

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

2020-INTERNATIONAL CONFERENCE ON AUTOMATION, INTELLIGENT COMPUTING AND COMMUNICATION(2020-ICAICC)

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2020- INTERNATIONAL CONFERENCE ON AUTOMATION, INTELLIGENT COMPUTING AND COMMUNICATION

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Preface

Conference World and AR Research Publication is fast growing group of academicians in Engineering, Sciences and Management. AR Research Publication is also known for fast reply and zero error work. Conference world has organized a various conferences at renowned places namely Delhi University; New Delhi, Jawaharlal Nehru University; New Delhi, PHD Chamber of Commerce and Industry New Delhi, YMCA New Delhi, India International Centre New Delhi Sri Venkateswara college of Engineering and Technology, Andhra Pradesh, Dhananjay Mahadik Group of Institutions (BIMAT), Shivaji University, Maharashtra, Vedant Engineering Kota and many more places across the country.

We are very pleased to introduce the proceedings of the *2020-International Conference on Automation Intelligent Computing and Communication.* As for previous conferences, the theme was the link between the information provided by conference world and the use made of this information in assessing structural integrity. These were the issues addressed by the papers presented at the conference. The level of interest in the subject matter of the conference was maintained from previous events and over 78 suitable papers were submitted for presentation at the conference.

Papers were well represented in the conference to arouse a high level of international interest. Three countries were represented in the final program from Europe, North America and Asia. In the event, the conference was highly successful. The presented papers maintained the high promise suggested by the written abstracts and the program was chaired in a professional and efficient way by the session chairmen who were selected for their international standing in the subject. The number of delegates was also highly gratifying, showing the high level of international interest in the subject. This is also indicated by the large number of countries, 01 represented by the delegates. This Proceeding provides the permanent record of what was presented. They indicate the state of development at the time of writing of all aspects of this important topic and will be invaluable to all workers in the field for that reason. Finally, it is appropriate that we record our thanks to our fellow members of the Technical Organizing Committee for encouraging participation from those areas. We are also indebted to those who served as chairmen, without their support, the conference could not have been the success that it was. We also acknowledge the authors themselves, without whose expert input there would have been no conference. Their efforts made a great contribution to its success.

BRIEF HISTORY OF THE COLLEGE

Rohini College of Engineering and Technology is an ISO certified institute was founded by the great industrialist and philanthropist, Shri. K. Neelamarthandan. The main objective of our college is to advance the knowledge base of the engineering professions and to influence the future directions of engineering, education and practice.

RCET – Best Engineering Colleges in Kanyakumari District believes not only in educating the students, but in also grooming characters, with moral and ethical values, thus building the nation. Since the beginning the college has been providing world – class facility & infrastructure in education and learning. The emphasis is on transformational leadership rather than directional leadership. The aim is to establish new trends, introduce innovative teaching methodologies, and thus guide students the road to success .

About Conference

The conference will explore new horizon of innovations from distinguish researchers, Scientist and eminent authors in academia and industry working for the advancements in Science, Engineering and Technology from all over the world. ICAICC-2020 aims to bring together Academicians, Scientist, Research scholars and Students, to share and disseminate information on knowledge and scientific research works related to Automation. Intelligent Computing and Communication topics and confers the practical challenges encountered and the solutions adapted. The conference will create the path to establish a research relation for the authors and listeners with opportunities for national and international collaboration and networking among the universities and institutions form India and abroad for promoting research and developind technologies.

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ICAICC – 2020

PROCEEDINGS

International Conference On Automation, Intelligent Computing And Communication (ICAICC-2020)

Memory Optimization For High Performance Virus Defection Processor

Mr.S.Soban, Kanagaraj R Ajith Kumar C Jinu Krishnan J Jaya Kumar D

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Machine learning is one of the fastest-growing fields nowadays and its application to cybersecurity is gaining much attention. With the development and increased adoption of cloud computing, numerous malware threaten both service providers and consumers. Many machine learning algorithms were used to predict the future behavior of cloud systems to protect them from malicious insiders and external attacks. However, conventional machine learning algorithms have the limitation that they show weak performance when the dataset is large and sparse. In this paper, we explore a gradient boosting decision tree, especially LightGBM, which is a relatively new and powerful method, to predict future malware attacks on cloud computing systems. We use a large and sparse dataset provided by Microsoft and show that our approach is suitable for predicting malware attacks using large datasets with 73.89% accuracy compared to conventional machine learning methods.

ZIGBEE BASED WIRELESS HEALTH MONITORING

[1]Mr.P.Gowthaman, [2]Gnana Jibinson M, Kumaravel P, Kannan V, Ashok T A

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The existing health monitoring systems do not have the privilege of central monitoring via wireless media.Hence the following paper proposes an advanced wireless health tracking system. This system uses the **low power ZigBee wireless trans-reception technology along with an ARM based micro-controller**. Vital health signs like heart rate, temperature & blood sugar level can be monitored in real time using this system. It also employs unique feature of sleep (physiological not biological) tracking with gesture monitor using an accelerometer. Monitoring is done at a central node which is connected in a Star topology with the wireless patient modulation.

International Conference On Automation, Intelligent Computing And Communication (ICAICC-2020)

Secured Communication And Energy Efficient For Vanet Using Location Dependent Key Management

[1]Dr.Anand J Dhas, [2]Berliya R,Ajitha P, Anu R, Bala Samitha G

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Vehicular Ad-hoc Networks (VANET) are a unique form of Mobile Ad-hoc Network (MANET) for carrying out the operations in the network nodes with high dynamic, vehicles form the nodes of the network. Clustering algorithm is utilized for clustering the nodes and selecting cluster head. A node with minimal average distance is nominated as cluster head. In the developed work, location dependent key management is inhibited for secured data transmission and neighbor nodes are discovered with Modified AODV routing protocol. Packet drop evaluations are made to find the better data transmission. By dual scheduling algorithms the technique is processed for waiting and execution queue then chaotic encryption algorithm is used for improved packet delivery ratio, reduced security threat. Thus the works aims in improvising the performance of MAODV and security of packets.

Design And Implementation Of An Automatic Fire Extingusing Alert System With Safety Ladders

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[2] Student, Rohini College of Engineering and Technology

Fire disaster is a common threat to lives and property. An automatic fire extinguishing strategy provides real time monitoring, exploration and programmed fire alarm. This paper presents the design of a low cost, robust and secure fire protection system for buildings .It sends early alarm when the fire occurs and helps to reduce the fire damage. This system consists of a smoke detector and a temperature sensor whose outputs are connected to the controller. The system takes into account the density of smoke and thus the probability of false alarms can be avoided. A PIC16F84A micro-controller is considered here to control the total arrangement and the test

results through hardware prototype show that the validity of proposed approach which achieves design requirements as well as increase system reliability.

Foot Step Power Generation System

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[2] Student, Rohini College of Engineering and Technology

In this foot step power generation project is designed to convert foot step, walking and running energy into electrical energy. It is used to generate electricity from by walking or running on foot step. The demand of electrical energy is increasing day by day. But power generation conventional resources are now not enough for total demand of electrical energy. Therefore many researchers and engineers are working on non conventional ways of electrical power generation. Foot step power generation system is also a non conventional electrical energy production system. It converts mechanical energy of foot steps into electrical energy by using transducers. This power generation system can become very popular among populated countries like Pakistan, china, India. It can be implemented on roads, bus stations and many public places. Although this system is little bit expensive, but it can make a huge difference in electrical power generation of country.

Smart Farming And Crop Protection System From Natural Disaster Using Mobile Phone

[1]Mrs.S.Geetha, [2]Jeya Priya G, Briskillal D, Bhagavathi S, Manimekala N

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Agricultural lands are subjected to various kinds of dangers and threats natural disasters like flood, heavy rainfall etc causes loss of crops and in certain cases loss of human life is inflicted upon. The vast majority of land structure in Nepal is agricultural and is heavily affected by vandalism caused by wild animals. The news of wild elephants rampage in Eastern Nepal is an incident which is heard from years to years. This wild animals and their rampage can be stopped if proper detection and protection system are used against them. The crops and paddy fields

cannot always be fenced. The possibility of crops being eaten by cows and crows are pretty much persistent. This leads to huge loss of crops. So in order to prevent this course of actions a proper protection system should be devised. The use of GSM module 808 is used with Arduinomega2560, Buzzer, PIR sensors and Flame sensors. If any intruders or obstruction is felt the system warns the farmer.

Design And Implementation Of An Intelligent Motor Cycle Helmet For Large Vehicle Approach Intimation

[1]Mr.C.K.Morarji, [2]Brathiba S, Jegatha T, Anlin Reena Y, Manju K

[1] Assistant Professor, Rohini College of Engineering and Technology

[2] Student, Rohini College of Engineering and Technology

This paper proposes an intelligent motorcycle helmet that includes two miniature infrared (IR) transceivers, a miniature image sensor (camera), an embedded computation processing (ECP) module, a battery charging module, a microphone, and earphones. Two large truck/bus vehicle registration plate image recognition modes (day and night) are designed and implemented for the purpose of large truck/bus approach intimation. In total, 600 images of rear-approaching trucks/buses on an actual road from 10 motorcyclists during day and night conditions are used to test the accuracy of the vehicle registration plate recognition. The experimental results show that the intelligent helmet proposed can successfully recognize an image of the vehicle registration plate of a large truck/bus in Taiwan. The accuracy of the vehicle registration plate recognition is up to 75% during the day and 70% at night. As a result, the intelligent motorcycle helmet proposed can detect the vehicle registration plate of an approaching large truck/bus in real time within a distance of 5 meters.

Automatic Railway Gate Controller With High Speed Alerting System

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Automation basically means to devise a method to reduce or eliminate human efforts/intervention. In this tutorial we are going to explain how to automate a railway gate with Arduino using servo motor along with the Proteus software.

The complexity of the automation can vary from a basic" on/off "control to highly complex multivariable algorithms. The control systems for the automation purpose can either be open loop or closed loop meaning it can work either with a single input parameter or in response to the output fed as the input as in case of closed loop systems. The automation in the railway industry is an important need as we are stepping into the advanced era and to reduce the risk of accidents due to human induced errors it is very important that we let these tasks be handled by these smart machines.

Multi-Classification Of Brain Tumor Images Using Deep Neural Network

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[1] Assistant Professor, Rohini College of Engineering and Technology

[2] Student, Rohini College of Engineering and Technology

In recent advancement towards computer based diagnostics system, the classification of brain tumor images is a challenging task. This paper mainly focuses on elevating the classification accuracy of brain tumor images with transfer learning based deep neural network. The classification approach is started with the image augmentation operation including rotation, zoom, hori-zontal flip, width shift, height shift, and shear to increase the diversity in image datasets. Then the general features of the input brain tumor images are extracted based on a pre-trained transfer learning method comprised of Inception-v3. Fi-nally, the deep neural network with 4 customized layers is employed for classi-fying the brain tumors in most frequent brain tumor types as meningioma, glioma, and pituitary. The proposed model acquires an effective performance with an overall accuracy of 96.25% which is much improved than some existing multi-classification methods. Whereas, the fine-tuning of hyper-parameters and inclusion of customized DNN with the Inception-v3 model results in an im-provement of the classification accuracy.

Disaster Alert System For Fishermanby Light House Using Lifi Technology

[1]Mrs.Jasmine.J.C. Sheeja, [2]Nanthini C, Rama Selitha R, Mupperundevi B, Pavithra C

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Anglers are currently facing a slew of problems in the sea due to communication concerns. Because anglers from the Ramanathapuram and Rameshwaram regions stupidly wandered past Indian seas, the Tamil Nadu-Sri Lanka marine border has been the subject of constant debate on the international stage. Examples of Indian fisherman being slain and detained as suspects by the Sri Lankan naval force have sparked outrage in the majority, with common freedoms being violated. Social activists are clamouring for a pre- programmed warning system to alert anglers when they are about to cross the line, preventing a potential emergency. The discussion that follows revolves around the creation of a warning system that might intimate the fishers regularly when they get nearer the sea limit. Introducing Global Positioning System (GPS)will possess more expensive. Rather than relying on GPS to track location, It will be more beneficial to use a LiFi network that is specifically intended to send signals to the boat. The correspondence has grown in importance as a means of sending remote information via light force and data transmission via Visible Light Communication (VLC). This framework works together to maintain a constant eye on the vessels. It provides a reliable response for ready anglers before they accidentally exceed the limit.

Deep Representation Learning With Part Loss For Person Re-Identification

[1]Ms.Priyanka, [2]Shiny Priya D, Ratha T, Siva Malar R, Subashini K

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Learning discriminative representations for unseen person images is critical for person Re-Identification (ReID). Most of current approaches learn deep representations in classification

tasks, which essentially minimize the empirical classification risk on the training set. As shown in our experiments, such representations easily get overfitted on a discriminative human body part among the training set. To gain the discriminative power on unseen person images, we propose a deep representation learning procedure named Part Loss Networks (PL-Net), to minimize both the empirical classification risk and the representation learning risk. The representation learning risk is evaluated by the proposed part loss, which automatically detects human body parts, and computes the person classification loss on each part separately. Compared with traditional global classification loss, simultaneously considering part loss enforces the deep network to learn representations for different parts and gain the discriminative power on unseen persons. Experimental results on three person ReID datasets, i.e., Market1501, CUHK03, VIPeR, show that our representation outperforms existing deep representations.

Multilevel Halfrate Phase Detector For Clock And Data Recovery Circuit

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In this brief, a half-rate (HR) bang-bang (BB) phase detector (PD) with multiple decision levels is proposed for clock and data recovery (CDR) circuits. The combination allows the oscillator to run at half the input data rate while providing information about the sign and magnitude of the phase shift between the PD inputs. This allows a liner control of the frequency of the oscillator in the phase-locked loop (PLL) of the CDR circuit, which results in up to 30% less output clock jitter than with a conventional two-levels HR BB PD. Thanks to this, the bit error rate can be decreased by up to 5× in a 5-Gb/s CDR circuit. The proposed topology was implemented in a 28-nm FDSOI CMOS technology providing average power consumption below 76 μW with a supply voltage of 1 V. Although multilevel (ML) BB PDs have already been proposed in some PLL-based CDR with very interesting results, a specific design of the PD has to be implemented for an HR system. This brief provides the first ML-HR-BBPD.

A Smart Multifunctional Safety Jacket For Fore Fighters

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[2] Student, Rohini College of Engineering and Technology

One of the riskiest modern jobs is firefighting, which is the process or the action of extinguishing fire. A design of a multi-functional safety jacket for firefighters was attempted. The design includes: 1) a firefighting jacket, 2) various sensors, 3) a communication system, 4) LED bars, 5) a touchscreen, and 6) a battery bank. The safety jacket provides many functionalities to a firefighter at task. The embedded heat sensors measured the skin temperature of the firefighter, the room temperature, and that of all inanimate objects, such as walls, doors, and ceilings. An alert was given if a potential fire was hidden behind these objects. The gas sensor measured the level of carbon monoxide (CO), combustible gases, and smoke in the room. A warning signal would also be generated if the gas level became hazardous. A wireless radio module was attached to the jacket to facilitate team communication. The safety jacket would also alert firefighters of any obstacles ahead to avoid collision. In case a firefighter fell suddenly, a message would be sent to the external base to request for help. Sensitivity tests revealed the accuracy, the complexity, and performance of the prototype.

An IoT Based Icu Care Taker System

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[2] Student, Rohini College of Engineering and Technology

Mr.R.V.Nagarajan, [2]Perumal R, Pradeepan K, Melben Raj S, Karthick D

One of the riskiest modern jobs is firefighting, which is the process or the action of extinguishing fire. A design of a multi-functional safety jacket for firefighters was attempted. The design includes: 1) a firefighting jacket, 2) various sensors, 3) a communication system, 4) LED bars, 5) a touchscreen, and 6) a battery bank. The safety jacket provides many

functionalities to a firefighter at task. The embedded heat sensors measured the skin temperature of the firefighter, the room temperature, and that of all inanimate objects, such as walls, doors, and ceilings. An alert was given if a potential fire was hidden behind these objects. The gas sensor measured the level of carbon monoxide (CO), combustible gases, and smoke in the room. A warning signal would also be generated if the gas level became hazardous. A wireless radio module was attached to the jacket to facilitate team communication. The safety jacket would also alert firefighters of any obstacles ahead to avoid collision. In case a firefighter fell suddenly, a message would be sent to the external base to request for help. Sensitivity tests revealed the accuracy, the complexity, and performance of the prototype.

IoT Based Unwanted Tollbooth Monitoring System

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Managing multiple toll booths is a very complicated task. The system here is a smart card based toll booth system that is monitored using IoT. The Internet server maintains all the data of user accounts and also their balance. All vehicle owners would possess an RFID (Radio Frequency Identification) based card that stores their RFID number. The system at toll booths will monitor the cards scanned when a car arrives at the toll booth. The system then connects to the online server to check if the card is valid and if valid what is the balance. If user balance is sufficient, the toll amount is deducted online and web system sends signal back to the card scanner system that the user has been billed. On receiving this signal the system operates a motor to open the toll gate for that car. The system is controlled by a microcontroller to achieve this purpose. The microcontroller uses Wi-Fi connection to connect to the internet through which system interacts with web server to perform the online verification process. Also system allows to store data of all the vehicles passed at particular time intervals for later reference and surveillance. This system thus automates the entire toll booth billing and monitoring process with ease using RFID plus IoT based system.

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IoT Based Vehicle Tracking System

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Utilizing IOT based vehicle tracking solutions, your drivers, their paths, and current state of the cars can be obtained immediately. Using our solutions, you can get reliable information in real-time mode. The drivers can also generate reports of their entire movement using our software, which also boosts the efficiency of your operation. Vehicle tracking software enables you to monitor your fleet. It also optimized routes and provided detailed information on fuel use, driver behavior, engine idling, and other indicators. All this information can contribute to reducing your costs and risk. Our IOT based vehicle tracking system provides the best return on your investment.

Path Hole and Collision Detection System Using Visible Light Communication

[1]Mrs. S.Geetha, [2]M. Pavithra, V. Sumitha, S. Uma, A. Sahaya Mejin

[1] Assistant Professor, Rohini College of Engineering and Technology

[2] Student, Rohini College of Engineering and Technology

Roundabouts are a form of circular intersections adopted to secure road safety of the vehicles. However, collisions are not prevented entirely even when using roundabouts, since accidents may happen at specific intersection points leading to either traffic congestions or serious accidents. In this paper, a visible light communication (VLC)-based collision avoidance scheme is proposed to coordinate autonomous vehicles in traversing roundabouts, which has high effectiveness in vehicular environments. In particular, roadside units (RSUs) are deployed at the roundabout entrances to coordinate the vehicles in a vehicle-to-infrastructure (V2I) mode. By adopting the synchronization approach, vehicles can pass the roundabout simultaneously if their paths are concurrent with each other. Otherwise, vehicles are prioritized according to their arrival time and reasonable decelerations are applied to waive potential conflicts. Simulation results showed that our proposed approach satisfies the roundabout traffic demands in terms of concurrency, safety, and time utilization as vehicles are strongly recommended to decelerate in only 22% of the cases studied in different scenarios.

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Novel visible light communication approach based on PAM-DMT-based hybrid optical OFDM

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In this letter, we present a novel hybrid intensity modulation and direct detection communication system, which integrates asymmetrically clipped optical orthogonal frequency division multiplexing (ACO-OFDM) and on-off keying (OOK) modulation schemes. First, the negative ACO-OFDM is proposed based on the conventional ACO-OFDM system to accommodate the on case with direct current in the OOK modulation, while the ACO-OFDM can match the off case in the OOK modulation. Therefore, the novel hybrid system combines the ACO-OFDM and OOK modulation schemes, while the signals can be recovered at the receiver to support the different qualities of service with high spectral efficiency and can be adapted to various receivers with different complexities. Simulation results are reported for the visible light channel and show that both the ACO-OFDM and OOK signals can be well recovered.

Smart helmet and intelligent bike system for road safety

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The main objective of this paper is to build a safety system which is integrated with the smart helmet and intelligent bike to reduce the probability of two-wheeler accidents and drunk drive cases**.** The flex sensor checks if the person wearing the helmet or not. Alcohol sensors detect the alcoholic content in riders' breath. If the rider is not wearing the helmet or if there is any alcohol content found in rider's breath, the bike remains off. The bike will start until the rider wears the helmet and if there is no alcoholic content present. When the rider crashes, helmet hits the ground, sensors detect the motion and tilts of helmet and reports the occurrence of an accident. It sends information of the corresponding location to family members of the rider and emergency contact number Index Terms: Biker's safety, Accident detection, Smart helmet, Alcohol detection.

International Conference On Automation, Intelligent Computing And Communication (ICAICC-2020)

Multi use smartcard scheme for railways

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Contactless smartcards are being progressively introduced as an alternative option to paper ticketing on the National Rail system of Great Britain. Tickets for use on National Rail services can be loaded onto any ITSO card. The ITSO standard has been developed to cover all types of public transport. It has been included as a requirement by the Department for Transport for all new rail franchises in the last few year. It is also the format that ENCTS concessionary passes and rail staff passes are issued in. Three train operating companies have launched pay-as-you-go systems where fares are automatically deducted by touching-in-and-out at the start and end of the journey. Branded as keyGo on Govia Thameslink Railway (GTR) and Tap2Go on South Western Railway (SWR), they require use of GTR's The Key and SWR's Touch smartcard respectively. Great Western Railway (GWR) also launched a pay-as-you-go system called GWR Touch in August 2022, which required the use of GWR’s Touch smartcard.

Fishermen's emergency kit using IoT

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[1] Assistant Professor, Rohini College of Engineering and Technology

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Area based alarm administrations are basic parts for fishermen, because of terrible atmosphere conditions and slacking of innovation in salvage bolster our anglers' confronting a lifetime issue with neighbor nations. On considering the issue we proposed a minimal effort and simple climate Alert framework for angler's which is utilized to follow their family members, companions and other anglers in the event that some angler confronting any issues like unexpected climatic changes or crises mean this framework will support the angler. In this venture, we are going to screen climate state of the angling zone and furthermore if angler cross the outskirt by utilizing sensors like stickiness and temperature, wind speed sensor and Rain sensor this sensor persistently faculties the angler angling zone and send information to the server utilizing Zigbee module consistently at whatever point they need any assistance implies there is crisis button is there in the event that they press mean alarm was sent to the specific principle server where they get the opportunity to safeguard and GPS Location is additionally sent. On the off chance that the climate condition isn't acceptable likewise ready will be sent naturally and the buzzer will begin to ring to caution the other individual in the vessel. In the event that anglers cross the outskirt mean it ringer is begun to ring and the vessel engine is halted. In typical climatic conditions, the information from the sensor's and GPS area of the pontoon is constantly refreshed in the primary server and furthermore showed in a LCD.

International Conference On Automation, Intelligent Computing And Communication (ICAICC-2020)

Maritime boundary and natural calamities detection

[1]P.Benesh Selva Nesan, [2]Anusha, A. Anusha, S. Dayanarose, R. Anisha Devi
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The aim of this doctoral dissertation was to investigate and resolve cartographical issues in maritime delimitation, to determine the limitations of existing software solutions and to develop and implement a comprehensive methodology to address them in a digital environment. Its findings comprise three automated methodologies -and their implementation in digital environment- namely that of the identification and determination of juridical bays according to the UN Convention on the Law of the Sea, that for the Voronoi Tessellation on the ellipsoidal Earth and that for the automated delimitation of maritime zones and boundaries for all coastal states in the dataset and for any combination of normal and straight baselines, as well as the selection of the most appropriate cartographic projection for the presentation of maritime zones and boundaries. The findings of this dissertation contribute to cartographers' work and substantially improve the accuracy and reliability of the end-results as they examine all available spatial information and are independent of user's perception. Furthermore, they significantly reduce the time of maritime delimitation as they comprise fully automated processes with no need for supervised intervention and, finally, contribute to the correct cartographic portrayal of maritime zones and boundaries.

A multifeatured automatic headlight lamp using ultrasonic sensor

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This project proposed to create and design new system of streetlights automatically which consists of ultrasonic sensor that detect movement of project that produced in front or near the meanwhile LDR used to detect sunlight at the project site. The main objective of this project is to stop momentary the operation of streetlights. Besides, the effectiveness of this system depends on the sensors we used that able to save electricity of streetlights. Generally, many losses regard of wastage from short circuits or streetlight that lit up for 12 hours in night due to LDR that covered by other plants. After we applied this project, the problem can be solved and the system can be used at urban and rural roads to avoid an accident. In conclusion, this system can facilitate and save electricity by using sensors that can be found near of the Street Lighting Consumer.

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IoT Based Environmental Monitoring For Continuious Data Acquisition In Weather Monitoring

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To improve weather forecasts in a very specific location, it becomes important to understand and identify microclimate conditions. Whether it's the topography or construction elements affecting different weather factors, accurately collecting data is essential for microclimates around the world.

So how does a microclimate form? It depends on different topographical features that would affect normal climate and weather patterns. For example, the contrast in topographies can affect airflow, ambient temperature, and cloud formation. The particular soil composition of land can have an effect on its rate of evaporation. Heavy vegetation on a specific area can affect airflow as well as moisture levels; this can be natural or manmade.

Microclimates aren't limited to differences in nature; unnatural additions to a particular landscape can also create them. Urban centers generate high amounts of heat and smog, which can affect low- and high-level winds. Several acres of parkland in the middle of a city can cause multiple microclimates to emerge in a very small geographic area as well. The same principles apply to agriculture as well; differences in crops, irrigation practices, etc. can affect the microclimate as well.

Underground mining safety warning by using IoT

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Safety is the most vital part of any type of industry. In the mining industry safety and security is a fundamental aspect of all. To avoid any types of accidents mining industry follows some basic precautions. Still accidents take place in underground mines due to rise in temperature, increased water level, and methane gas leakage. Here we provide safety to worker. When worker in danger he can press panic switch inform security. To enhance safety in underground mines, a reliable communication system must be established between workers in underground mines and fixed ground mine system. The communication network must not be interrupted at any moment and at any condition. A cost effective zigbee based wireless mine supervising system with early-warning intelligence is proposed in this project. Worker status can be monitor over IOT.

IoT Based Environmental Pollution Monitoring and Controlling

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Industrial monitoring is the collection of information at different locations of industries and at regular intervals of time in order to provide the data which may be used to define current conditions. Due to the complexness of parameters large variations are found between different industries. To build a robust system that can measure the industrial pollution and help to cut back it and to decrease human interference in monitoring the industrial pollution to cut back pollution and provide a healthy environment for the workers to work in. The various industrial pollutants like smoke, radiation, over temperatures, are monitored using smoke and temperature sensors. These sensors will sense the pollutants from the organizations and give the signals to the Arduino controller. The Arduino controller produces the control signals to the GSM through UART using the MAX232 IC. When the sensors reach tolerated pollutant levels it will produce high signals to the controller. The controller processes the signals and gives them to the GSM module. The GSM module will send short messages to the registered mobile. Immediately through IOT, we can cut the power supply of those industries. That means when the signal receives from the IOT with the help of the GSM module, the Arduino controller provides the signal to the relay driver for turn off the power supply. This system inherits lots of advantages due to Arduino and IOT controller.

An Efficient Method To Reduce PAPR In OFDM

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In the recent times, Orthogonal Frequency Division Multiplexing (OFDM) has been under intense research for broadband wireless transmission due to its robustness against multi-path fading. In this paper, a joint selected mapping and clipping method is proposed to reduce the peak-to-average ratio of OFDM signal. Here cyclically shifted mapping data is used to generate a set of data blocks which represent the original information. This will increase the data rate when compared with the conventional SLM technique. Then clipping operation has done to reduce the PAPR further. Simulation results show that the proposed scheme may obtain significant PAPR reduction while maintaining good performance in the BER compared to other methods.

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Smart Monitoring System For Alzheimer's Patient

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In the last decade, the Internet of Things (IoT) has become a new technology that aims to facilitate life and help people in all aspects of their lives. This technology is used for smart homes, smart grid stations, smart agriculture, health systems, transport services, smart cities, etc. The number of sensors and IoT devices along with applications is used for monitoring the health condition of patients. These devices will monitor the movement of targeted patients at home or out of their homes. Based on their behavior and movement, the treatment will be provided to Alzheimer's patients. The data will be collected from multiple sensors installed at patient's homes and smartwatches for checking their blood pressure level and temperature, which is too important in the current Corona Virus Disease (COVID-19) pandemic for these types of patients. On the other hand, due to the diminishing mobility of people around the world, increasing environmental pollution and stress which is caused by modern machine life and various brain and neurological diseases including Alzheimer's, Parkinson, etc. are widespread among people all over the world. The different types of communication protocols such as Message Queue Telemetry Transport (MQTT) and WebSocket (with authentication and autoclosing of connection) for sensors and the smartwatch have been used. The secure backend admin panel is used for tracing the location of doctors, patients, and ambulance. These protocols are implemented with security to protect the privacy of patients also.

Visual Enhancement Techniques For Underwater Images Using IoT

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Most underwater vehicles are nowadays equipped with vision sensors. However, it is very likely that underwater images captured using optic cameras have poor visual quality due to lighting conditions in real-life applications. In such cases it is useful to apply image enhancement methods to increase visual quality of the images as well as enhance interpretability and visibility. In this paper, an Empirical Mode Decomposition (EMD) based underwater image enhancement algorithm is presented for this purpose. In the proposed approach, initially each spectral component of an underwater image is decomposed into Intrinsic Mode Functions (IMFs) using EMD. Then the enhanced image is constructed by

combining the IMFs of spectral channels with different weights in order to obtain an enhanced image with increased visual quality. The weight estimation process is carried out automatically using a genetic algorithm that computes the weights of IMFs so as to optimize the sum of the entropy and average gradient of the reconstructed image. It is shown that the proposed approach provides superior results compared to conventional methods such as contrast stretching and histogram equalizing.

Motion-Based Object Detection And Tracking Using Automatic K-Means

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Multiple objects detection and tracking are amongst the most important tasks in computer vision-based surveillance and activity recognition. This paper proposes a real-time multiple objects detection method and compares its performance with three existing methods. `Good Features to Track' algorithm is used to extract feature points from each frame. Based on the motion-based information, feature points corresponding to moving objects are extracted from next frame. Then, the number of moving objects in each frame is determined according to their motion-based information and position, and are later clustered using the k-means algorithm. Clustering of moving objects in this paper is performed using feature vectors made of pixels' intensities, motion magnitudes, motion directions and feature point positions. In terms of accuracy and efficiency, the proposed method is shown to be highly accurate in determining the number of moving objects and also fast in tracking them in the scene.

High Quality Demosaicking Based On Logistic Edge Sensing G.

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Digital cameras that use color filter arrays (CFA) entail a demosaicking procedure to form full RGB images. To digital camera industry, demosaicking speed is as important as demosaicking accuracy, because camera users have been accustomed to viewing captured photos instantly.

Moreover, the cost associated with demosaicking should not go beyond the cost saved by using CFA. For this purpose, we revisit the classical Hamilton-Adams (HA) algorithm, which outperforms many sophisticated techniques in both speed and accuracy. Our analysis shows that the HA pipeline is highly efficient to exploit the originally captured data, but its oversimplified inter- and intra-channel smoothness formulation hinder its accuracy. Therefore, we propose a very low cost edge sensing scheme, which guides demosaicking by a logistic functional of the difference between directional variations. We extensively compare our algorithm with 27 demosaicking algorithms by running their open source code on benchmark datasets. Compared with the methods of similar computational cost, our method achieves substantially higher accuracy, whereas compared with the methods of similar accuracy, our method has significantly lower cost. On test images of currently popular resolution, the quality of our algorithm is comparable to top performers, yet our speed is tens of times faster.

Retinal Vessel Extraction Using Multiview-Knowledge Based Collaborative Deep Model For Diabetic Retinopthy Analysis

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This paper presents a comprehensive review of the principle and application of deep learning in retinal image analysis. Many eye diseases often lead to blindness in the absence of proper clinical diagnosis and medical treatment. For example, diabetic retinopathy (DR) is one such disease in which the retinal blood vessels of human eyes are damaged. The ophthalmologists diagnose DR based on their professional knowledge, that is labor intensive. With the advances in image processing and artificial intelligence, computer vision-based techniques have been applied rapidly and widely in the field of medical images analysis and are becoming a better way to advance ophthalmology in practice. Such approaches utilize accurate visual analysis to identify the abnormality of blood vessels with improved performance over manual procedures. More recently, machine learning, in particular, deep learning, has been successfully implemented in this area. In this paper, we focus on recent advances in deep learning methods for retinal image analysis. We review the related publications since 1982, which include more

than 80 papers for retinal vessels detections in the research scope spanning from segmentation to classification.

Design of microstrip patch antennas for thyroid cancer cells detection

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This paper presents the design of an **H-shaped** microstrip patch antenna to evaluate the SAR (Specific Absorption Rate) for thyroid gland cancer cell detection. This antenna is flexible and appropriate for wearable applications. The performance can be varied when the antenna is placed on the thyroid gland of humans.The parameters likereturn loss, gain, VSWR are measured. There are different varieties of the antenna but microstrip patch antenna provides low cost, low volume, lightweight etc. FR-4 (lossy) is used as a substrate to overcome low gain and high return loss. The patch conductor is made up of copper material to form a flexible antenna. The proposed antenna design provides a high SAR value of 0.0199W/Kg for 1g of tissue with microwave studio tool.