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Contents

Simultaneous And Progressive Multiple Sc-Sf Fusion Based Hyper Spectral Image Classification

S. Sandhya, S. Sri Ishwariya, S. Subbulekshmi, R. Sridevi, Dr. R. B. Benisha

Abstract Hyperspectral image mostly have very large amounts of data which makes the computational cost and subsequent classification task a difficult issue. Firstly, to solve the problem of computational complexity, spectral clustering algorithm is imported to select efficient bands for subsequent classification task. Secondly, due to lack of labeled training sample points, this paper proposes a new algorithm that combines support vector machines and Bayesian classifier to create a discriminative/generative hyperspectral image classification method using the selected features. Experimental results on real hyperspectral image show that the proposed method has better performance than the other state-of-the-art methods. Keywords: hyperspectral image, band selection, classification, support vector machine, Bayesian.

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

Isha.C, Nithya Sree.I, C.K.Morarji

ABSTRACT

Vehicular adhoc network (VANETs) is the safety application to reduce accident and reduce traffic, a network adhoc create a adhoc connection where, different moving vehicles and other connecting devices come to contact over a wireless medium and exchange useful information to one another Vanet security using end to end authentication to avoid intrusion in the vanet. Therefore, this paper proposes an end-to-end transfer rate adjustment mechanism in the application layer for VANET. Keywords: Authentication, certificate, hierarchical, multidimensional, security, VANETs.

An Eeg-Based Human Machine Interface To Control A Smart Home Environment

Deepa. M, Mathika.A, Krishna Veni.K, Keerthika.P, Geetha S

Abstract
Objective: This paper presents an asynchronous EOG-based human machine interface (HMI) for smart home environmental control with the purpose of providing daily assistance for severe spinal cord injury (SCI) patients. Methods: The proposed HMI allows users to interact with a smart home environment through eye blinking. Specifically, several buttons, each

corresponding to a control command, randomly flash on a graphical user interface. Each flash of the buttons functions as a visual cue for the user to blink. To issue a control command, the user can blink synchronously with the flashes of the corresponding button. Through detecting blinks based on the recorded EOG signal, the target button and its corresponding control command are determined. Seven SCI patients participated in an online experiment, during which the patients were required to control a smart home environment including household electrical appliances, an intelligent wheelchair as well as a nursing bed via the proposed HMI. Results: The average false operation ratio in the control state was 4.1%, whereas during the idle state, no false operations occurred. Conclusion: All SCI patients were able to control the smart home environment using the proposed EOG-based HMI with satisfactory performance in terms of the false operation ratio in both the control and the idle states. Significance: The proposed HMI offers a simple and effective approach for patients with severe SCIs to control a smart home environment. Therefore, it is promising to assist severe SCI patients in their daily lives.

Design Of Wearable Patch Antenna For Wireless Body Area Networks

Marlia I, Nanthini N, Sapna V R, Sulaiha Shahema Ansari, Dr.S.Mohanalakshmi

Abstract
Wireless body area networks are being widely used due to the increase in the use of wireless networks and various electrical devices. A Wearable Patch antenna is used for enhancement of various applications for WBAN. In this paper, a low profile wearable microstrip patch antenna is designed and suggested for constant observation of human vital signs such as blood pressure, pulse rate and body temperature using wireless body area network (WBAN) technology. The operating frequency of the antenna is taken as 2.45 GHz which lies in industrial, scientific and medical (ISM) frequency band. Polyester textile fabric with a relative permittivity of 1.44 and thickness of 2.85 mm is used as a substrate material. The proposed antenna is designed to achieve better return loss, VSWR, gain and low value of specific absorption rate (SAR) as compare to other existing wearable antenna. The achieved antenna return loss at 2.45 GHz is about-10.52 dB and gain of 7.81 dB. The VSWR value achieved at 2.45 GHz is 1.84, which is good in terms of good impedance matching. Other antenna field parameters like 2D and 3D gain, radiation pattern, and SAR value have been calculated. High-Frequency Structure Simulator (HFSS) is used to design and simulate the proposed antenna. Keywords-High-Frequency structure simulator (HFSS); return loss; voltage standing wave ratio (VSWR); gain; specific absorption rate (SAR).

A Smart Safetly Helmet For Coal Mine Workers Using Lora Based Communication

Akila.G, Jeni.D, Jenisha.V , Jesi.T, Mr.P.Benesh Selva Nesan

Abstract
Air Quality becomes an important factor in mining areas where the health condition of the workers is prominently considered. The composition of many toxic gases under the mining area causes many fatalities that keep on increasing day by day. The Total Volatile Organic Compounds (TVOC) and Carbon-di-oxide creating a significant role in the health system of the workers. The unstable levels of these TVOC's cause many health issues like nausea, emesis, fatigue, epitasis and dyspnoea. Exceeding the standard levels of these toxic compounds in the air causes many problems like severe breathing trouble and headache. In this proposed work, Smart Helmet has been developed for mining workers using LoRaWAN to overcome the above mentioned problems. This device helps to alert user on the air quality. When the air quality changes, the device inform the user, so that they can take necessary actions. The effectiveness and performance of this smart helmet using LoRaWAN can be analyzed with the help of experimental results.

Cobot Arm Control Using Sound Recognition System

Ashtami Suresh ,C. Bavithra ,M. Jega Prabha ,Sreeja C, Mr. Nagarajan R

ABSTRACT

This paper introduces a novel voice-based programming approach and software framework for collaborative robots (cobots) based on the Web Speech API, which is now supported by most modern browsers. The framework targets human programmable interfaces and human-machine interfaces, which can be used by people with little or no programming experience. The framework follows a meta-programming approach by enabling users to program cobots by voice in addition to using a mouse, tablet, or keyboard. Upon a voice instruction, the framework automates the manual tasks required to manipulate the vendor-provided interfaces. The main advantages of this approach are simplified, guided programming, which only requires the knowledge of 5–10 voice instructions; increased programming speed compared to the manual approach; and the possibility of sharing programs as videos. The approach is generalized to other kinds of robots and robot programming tools using so-called meta-controllers, which leverage the power of graphical user interface automation tools and techniques.

An Intelligent Fpga Architecture Using Approximation Logic

Bavitha B.E, Bharathi.N, Muthul Akshmi.S, Nandhini.S, Mr.P.Nelson Kingsley Joel

Abstract:

This thesis describes VEGA, a special-purpose logic emulation processor and associated software, designed to achieve maximum usable logic block density per unit silicon area and fast mapping. Logic blocks are represented by instructions stored in on-chip memories. A circuit is emulated by sequentially executing the instructions that describe it. Three independent execution units and a two-level memory hierarchy offer high emulation performance. FPGA-based logic emulators are capacity-limited by the low gate density on FPGAs and typically achieve no more than 25% logic block utilization due to I/O restrictions. Using similar technology, VEGA achieves a fourfold improvement in raw density as compared to a Xilinx XC4010 FPGA. Furthermore, since VEGA achieves 89% logic block utilization on average, the effective density is roughly fourteen times that of a logic emulator based on the XC4010.

Plant Disease Detection Using Deep Transfer Learning

Abarna.S , Gobitha.T , Godwin Vinisha.T , Ms.J.Sushmitha

Abstract

A country's economy largely depends on crops. Crops are the most important factor in food production. Healthy plants lead to healthy crops. If the plants are infected, this can adversely affect the food production. Plant diseases are mainly caused by viral or bacterial organisms. Disease on a plant can be identified by a change in colour of the leaf or even shape. It becomes very important to detect plant diseases as early as possible so that food production doesn't get affected. Detecting plant diseases via technology is a significant step in this direction. Using Deep Learning methods for this task can help us to identify diseases in plants. In this study, we use the VGGNet-19 model that is pretrained using the weights of the 'ImageNet' dataset. By freezing the top layers and using transfer learning, we add a few layers to the model to try and improve the performance and accuracy of the model. This results in the accuracy of 97.52per cent for apple leaves and 95.75 per cent for grape leaves after running the model for 20 epochs. Keywords: Deep Learning, Plant diseases, Transfer Learning, VGGNet-19.

Human Following Behaviour Of A Mobile Robot Using Hand Gesture

Abisha ,Anu.R ,Ashika.K Ahila.S , Benesh Selvanesan P

Abstract

Interaction between a human and a robot can have positive effects on temperament and the development of children and can also be beneficial during psychotherapy. When a robot finishes a task, a user may want to give the robot a reward by means of emotional interaction. Here, we assume that a mobile robot is capable of emotional interactions. We design a mobile robot system which interacts with humans through the use of a LeapMotion sensor for elaborate hand gesture tracking. The designed mobile robot system combines emotional modeling and hand gesture tracking. From this, the user can express emotions and intentions using two hands at the same time. The left hand controls directions (forward, backward, right, left, and stop) and the right hand controls emotions (calm, proud, angry, passive, and depressed). If the user wants the robot to move upon a user command, the user should always consider the emotion and energy of the robot because it can move in the opposite direction or weakly when the emotion and energy levels are low. This study outlines how human can interact with a robot using intuitive hand gestures.

Fault Distance Detection And Position Of Underground Cable Using Gsm

Kartheesh.S ,Buvaneshwaran.N.B ,Ganesh.N ,Mohamed Faizal.A, Mr.P.Nelson Kingsley Joel

Abstract- To supply electric power we use Power cables. To avoid unwanted interference, we place them underground. This makes it very tough to work out the precise location of the faults that occur. A fault might occur thanks to a many of reasons such as digging, earthquake, construction work, etc. The maintenance process associated with that specific line is difficult thanks to unknown location of the fault within the line. The motive of the project is to detect and locate the fault in underground cable. The system developed here works on the idea of Ohm's law. The proposed technique is used for identification as well as it is also used to send the information about the fault to the authority using GSM and for security of people it cut the power supply on that particular location and display the fault location in KMs on LCD Display Key Words: Underground Cable Faults, GSM Module, PIC16F877A Microcontroller, LCD, USART.

A Bi-Directional Vehicle-To-Vehicle Accident Alert System Using Light Fedelity Technology

Kavi Priya.P , Kavitha.K , Malini.R , Sasikala.S, S.Geetha

Abstract

Li-FI technology is transferring of data using Led's in visible light spectrum. Basically Li-Fi is similar to that of Wi-Fi but this Li-Fi is 10 times faster than Wi-Fi, as Wi-Fi uses radio frequency which has some transmission limitation Li-Fi is very useful to replace such limitations. We can use this technology in many areas like hospitals air traffic control, vehicles and under water communications.in this Li-Fi technology we mainly use led's as a transmitter which will send stream of data by toggling with a speed that can't be identified by the human eye and photodiode as a receiver which converts light energy to electrical energy. Connecting vehicles can be obtained by replacing head and tail lamps of the vehicle with led's and photodiode should be attached at both front and rear end of the vehicle go get the data from both leading and following vehicles. By transferring the data about the motion of vehicle through led's we can reduce the collision of vehicles. This technology is also used to regulate the information about the traffic by replacing the street lights with led and transfer data about the traffic in that route for every vehicle that passes through.

Under Water Net Damage Detection Based On Image Processing Technology

K T.Ajith , G.Dhana Palan , A. Abish Dev ,A.Anish , Nagarajan.R.V

Abstract

Due to the importance of underwater exploration in the development and utilization of deep-sea resources, underwater autonomous operation is more and more important to avoid the dangerous high-pressure deep-sea environment. For underwater autonomous operation, the intelligent computer vision is the most important technology. In an underwater environment, weak illumination and low-quality image enhancement, as a preprocessing procedure, is necessary for underwater vision. In this paper, a combination of max-RGB method and shades of gray method is applied to achieve the enhancement of underwater vision, and then a CNN (Convolutional Neutral Network) method for solving the weakly illuminated problem for underwater images is proposed to train the mapping relationship to obtain the illumination map. After the image processing, a deep CNN method is proposed to perform the underwater detection and classification, according to the characteristics of underwater vision, two improved schemes are applied to modify the deep CNN structure. In the first scheme, a convolution kernel is used on the feature map, and then a downsampling layer is added to resize the output to equal . In the second scheme, a downsampling layer is added firstly, and then the convolution layer is inserted in the network, the result is combined with the last output to achieve the detection. Through comparison with the Fast RCNN, Faster RCNN, and the

original YOLO V3, scheme 2 is verified to be better in detecting underwater objects. The detection speed is about 50 FPS (Frames per Second), and mAP (mean Average Precision) is about 90%. The program is applied in an underwater robot; the real-time detection results show that the detection and classification are accurate and fast enough to assist the robot to achieve underwater working operation.

Healthcare Monitoring Of Mining Workers At High Altitude

Bala Anusha.P , Ajinsha.A , Mirthula.S.V , G.Golden Yasvini

Abstract - The Mine worker faces lots of health problems for the whole of their work, so this system is used to monitoring physiological of mining workers. The proposed system includes physiological variables: electrocardiogram, respiratory activity, and body temperature; and environmental variables: ambient temperature and relative humidity. The non-invasive sensors of the proposed system are embedded all throughout a T-shirt (first layer of protecting clothing) to achieve a functional device and maximum comfort for the users. The device is able to continuously calculate heart and respiration rate, temperature and humidity value in air and also concentrations of chemicals in human bodies. The sensor sensing any irregular activity in human body then LCD shows that problem with buzzer sound. To establish a wireless data transmission to a central monitoring station by using zigbee technology.

Key Words: Mining, Workers health, Monitoring, Multiple Sensors, Data Transmission.

Iot Controlled Battle Robot With Metal Detection For Military Applications

Akesh.T.A , Harish Kumar.V , Blessing.M , R.Prem Kumar

Abstract

The main goal of this paper is to present an " IOT based Robot which can monitor security conditions in military applications". In this system, a robot is fitted with motors. A micro controller is used to control all operations. According to the motor operations the ROBOT will operate in specified directions. This robot can be controlled by commands received from the user through IOT technology. The robot is having Ultrasonic sensor which will detect the persons. Another sensor is the Proximity sensor which will detect the land mines in the military, if any one of the sensor activate the robot gets stopped and the buzzer will be alert.

Keywords:IOT,Proximity and PIR Ssensors

Micro Controller Based Under Ground Fault Monitoring System

Haresh.R , Dinesh.V , Rajesh.J, G. Golden Yasvini

Abstract

The growing concern for safety and infrastructural proliferations in the densely populated urban and suburban areas as well as the quest to preserve the aesthetic values in many modern localities have necessitated the need for underground installations. The underground cabling installations are devoid of faults common to the overhead transmission lines but are associated with certain kinds of faults such as short circuit and open circuit faults. Locating the exact position of any of these kinds of faults is very exhausting, costly and time-consuming because its power distribution system is invisible. Hence, a microcontroller based underground cable fault distance locator powered by Arduino is designed to detect and pinpoint location of faults in underground cable lines.

Design Of Wearable Patch Antenna For Wireless Body Area Networks

Sulaiha Shahema Ansari, I. Marlia, N. Nanthini, V. R. Sapna,Dr. S. Mohanalakshmi

Abstract

Wireless body area networks are being widely used due to the increase in the use of wireless networks and various electrical devices. A Wearable Patch antenna is used for enhancement of various applications for WBAN. In this paper, a low profile wearable microstrip patch antenna is designed and suggested for constant observation of human vital signs such as blood pressure, pulse rate and body temperature using wireless body area network (WBAN) technology. The operating frequency of the antenna is taken as 2.45 GHz which lies in industrial, scientific and medical (ISM) frequency band. Polyester textile fabric with a relative permittivity of 1.44 and thickness of 2.85 mm is used as a substrate material. The proposed antenna is designed to achieve better return loss, VSWR, gain and low value of specific absorption rate (SAR) as compare to other existing wearable antenna. The achieved antenna return loss at 2.45 GHz is about -10.52 dB and gain of 7.81 dB. The VSWR value achieved at 2.45 GHz is 1.84, which is good in terms of good impedance matching. Other antenna field parameters like 2D and 3D gain, radiation pattern, and SAR value have been calculated. High-Frequency Structure Simulator (HFSS) is used to design and simulate the proposed antenna.

Keywords: High-Frequency structure simulator (HFSS); return loss; voltage standing wave ratio (VSWR); gain; specific absorption rate (SAR)

Iot Based Smart Helmet For Construction Workers

Subramonian S, Sameer S H, Nithish Kumar J, Suthan G T, Mrs.R.Subha Sharmini Devi

Abstract:

Day by day the death rate of the construction workers at the construction site is increasing. But still there are no such remedies to reduce this fatality rate. To provide continuous monitoring of the workers and to prevent them from any health hazards during working, this system proposes a smart flexible helmet for the construction workers to provide security and rescue measures in case of any emergency conditions. The proposed system describes a smart inexpensive helmet for the construction workers made up of chromium embedded with Accelerometer and Gyroscope sensor. The Gyroscope sensor is used to indicate the rotation and orientation of the person with respect to gravity whereas the Accelerometer sensor is used to measure the linear acceleration or motion of the worker. Both these sensors are used for fall detection that may result from drowsiness, fatigue, etc. The helmet monitors the physical conditions of the construction workers and sends notification to the Contractor via the Mobile.

A Combact Wearable Antenna For Wban Application

V.Pavithra, S.Selva Pradeepa, M.Sathiya, T.Sumitha, Dr.C.Jehan

Abstract:

In this paper, a compact flexible and wearable meandered structure microstrip patch antenna to resonate at 2.45 GHz frequency (ISM band) has been proposed. The proposed antenna substrate is designed using polydimethylsiloxane (PDMS) substrate with a dielectric constant of 2.71, loss tangent of 0.0134 and thickness of 1mm. The silicone polymer is highly flexible and well suited for wearable applications. The overall size of the proposed flexible antenna is $33\times30\times1$ mm^3. The parameters such as gain, return loss, directivity, VSWR, radiation efficiency and the surface current distribution of the designed antenna are analyzed and validated using finite element method based Ansys HFSS (High Frequency Simulator Software) software. The simulation results show that the antenna has a gain of 1.9 dB, -26.82 dB return loss, 100 MHz bandwidth (2.4 GHz - 2.5 GHz) based on $|S_{11}| \le -10$ dB, a directivity of 2.1 and 92% radiation efficiency. The compact size and high flexibility of the proposed antenna makes it suitable for Wireless Body Area Network (WBAN) applications.

Convolutional Neural Network With Pyramid Pooling Module Based Kidney Lesion Detection

Pon Arasi.T, Rinilda Sahaya Rivin.A, Subitha.M, Vijaya Nathiya.S, Mrs.Jasmine J.C. Sheeja

Abstract— Renal cancer is one of ten most common cancers in human beings. The laparoscopic partial nephrectomy (LPN) becomes a main therapeutic approach in treating renal cancer. Accurate kidney and tumor segmentation in CT images is a

prerequisite step in the surgery planning. However, automatic kidney and renal tumor segmentation in CT images is still a challenge work. In this paper, we propose a new method to perform precise segmentation of kidney and renal tumor in CT angiography images. The method mainly relies on a new three- dimensional (3D) fully convolutional network (FCN) which combines the pyramid pooling module (PPM) and gradually enhanced feature module (GEFM). The proposed 3D network

can utilize the 3D spatial contextual information to improve the segmentation of the kidney as well as the tumor lesion. According to the experimental results in the CT images of 140 patients, our proposed method can segment the kidney and renal tumor with a high accuracy. The average dice coefficients of kidney and renal tumor obtained by the proposed method are 0.923 and 0.826 respectively, which are higher than the other two advanced segmentation methods. Furthermore, our approach shows an

excellent performance for renal tumor detection in high sensitivity and specificity.
Keywords—Kidney segmentation, renal tumor segmentation, 3D fully convolutional network

Lossless Robust Image Reversible Watermarking In Its

H.S. Rinjush, S.U.Rohin, S.Sreeram, R.Praveen, Mr.R.V. Nagarajan

Abstract

In this paper, we propose a lossless robust watermarking method by using the polar harmonic transform with reversible and robust watermarking techniques. Firstly, a new quantization watermarking strategy is designed to embed bits into the polar harmonic transform moments. Secondly, the compensation information for recovery of the original image is computed by using the quantized error, the watermarked error and the rounded error to represent the difference between the original image and the robust watermarked image. Finally, the final watermarked image is achieved by reversibly inserting the compensation information into the the robust watermarked image. The proposed method is able to recover the original image lossless in case of no attacks. In case of attacks, the watermark can be directly extracted for copyright authentication. Experimental results show that the proposed method is reversible and

provides strong robustness to those content-preserving manipulations. Compared with previous state of the art methods, the proposed one not only provides stronger robustness to those noise-like image processing operations (e.g., JPEG compression with quality factor 10), but has an ability to resist geometric deformations like rotation and scaling.

Device For Surveillance And Control System Based On Iot

F.Praveena Rani, R.Preethi, B.Priya Dharshini, Dr.Anand J Dhas

Abstract:
With every enhancement in Internet in terms of speed and bandwidth, IOT (Internet Of things) is taking the market on a new node and knocking the door with new opportunities of inventions. This paper talks about an energy saving electrical device Surveillance and Control system based on IOT. A large amount of energy is consumed by lighting appliances, so making improved efficiency and quick fault detection is a significant challenge. In this work, two different model approaches is followed depending on the nature of application. For small areas or confined premises IEEE 802.11 wireless technology is used where all the appliances is connected to a common Wi-Fi network. In the second model like street lamp pole where number of appliances grows only in one direction, wired configuration is used to avoid range issue.

The Facial Recognition In The Internet Of Things For Security Applications

R. Priya Dharshini, V. Saranya, T. Shanmuga Bala, M. Sowmiya, Mr.P.Nelson Kingsly Joel

Abstract—In recent years, the security constitutes the most important section of the human life. At this time, the cost is the greatest factor. This system is very useful for reducing the cost of monitoring the movement from outside. In this paper, a realtime recognition system is proposed that will equip for handling images very quickly. The main objective of this paper is to protect home, office by recognizing people. For this purpose, the PIR sensor is used to detect movement in the specific area. Afterwards, the Raspberry Pi will capture the images. Then, the face will be detected and recognized in the captured image. Finally, the images and notifications will be sent to a smartphone based IoT by using Telegram application. The proposed systems are real-time, fast and has low computational cost. The experimental results show that the proposed face recognition system can be used in a real time system. Index Terms--Internet of things, Computer Vision, Raspberry Pi 3, Face recognition, Telegram.

An Interactive Smart Mirror Platform For Instant Newsfeed And Weather Report Using Rasberry Pi

A.Priyanka, C.Raja Pratha, R.Veena, S.Sowmiya, Ms.J. Sushmitha

Abstract: We are living in 21st century where all the work is done using technology and has become an integrated part of life. The internet of things which is very trending now-a-days is used in various electronic devices as we want all our work to be in fractions of a second. Based on needs, the new technologies are continuously introduced in a market that is demand and supply. We come up with solutions to problems which are very familiar to everybody as we all go to corporate offices at one time of our lifetime. As we go there we don't know anything about the office like about the infrastructure, various departments and all. When we don't know anything we ask the receptionist for help and this is time consuming. To solve this time consuming problems Smart Mirror is introduced which will act as the information desk for new visitors, employees and clients. This paper contains the problem statement and detailed technology stack along with our basic project idea. The internet of things, AI is used to implement this project. Keywords: IOT; Smart Mirror; Raspberry pi; Voice command; Magic Mirror; Matrix Server

Drowsiness Detection Using Iot

R.V.Saraswathy, S.L.Sivasankari, J.Sneha, B.Ragapradeepa, Mr.R.Venkatesh

Abstract

Generally, road accidents caused by a fatigue driver is a very serious problem causing in thousands of road accidents each year. According to the National Highway Traffic Safety Administration, every year about 1,00,000 police reported crashes involve drowsy driving. Drowsiness is one of the main causes of accidents alongside with other cases such as drunk driving, distractions, and so on. A way to overcome this issue would be with the use of sensors. They can detect, alert and can potentially save a person's life. For drowsiness detection, there are certain bio-indicators that can detect the driver's face for any signs of drowsiness and can alert them before anything harmful could happen. The buzzer will be activated if the driver's eye-blink and the health parameters are found abnormal.

Defogging And Demosaiking For Image Enhancement

Shanmuga Sundaram R, Rajiv S, Vinesh V, Thangaraj J, Dr.R.B.Benisha

Abstract—Image defogging is a technique used extensively for enhancing visual quality of images in bad weather condition . Even though defogging algorithms have been well studied, de - fogging performance is degraded by demosaicking artifacts and sensor noise amplification in distant scenes. In order to improve visual quality of restored images, we propose a novel approach to perform defogging and demosaicking simultaneously. We conclude that better defogging performance with fewer artifacts can be achieved when a defogging algorithm is combined with a demosaicking algorithm simultaneously. We also demonstrate that the proposed joint algorithm has the benefit of suppressing noise amplification in distant scene. In addition, we validate our theoretical analysis and observations for both synthesized datasets with ground truth fog-free images and natural scen e datasets captured in a raw format. Index Terms—Defogging/dehazing, demosaicking, image sensor noise, digital camera processing pipeline, image restoration

Siamese Network For Real Time Face Tracking

K.Rehana, S.M.Sumi, M.Sheela, S.Sowmiya, Dr.T.Sudarson Rama Perumal

Abstract

A **Facial Recognition System** is a technology that can capture a human face anywhere in an image or a video and also can find out its identity. A Face Recognition system has proven to be very beneficial in case of user identity verification in the recent past replacing the age-old authentication mechanisms like password protection or the One Time Passwords. In the last decade or so, we have seen a huge growth in the smart mobile industry for using face verification, and also numerous apps like Snapchat or Instagram which can put interesting filters on face. The ongoing research in this field has come up with a lot of scope in a wide range of applications, such as surveillance systems or law enforcement.

Wild Animal Alert System In Farm Areas Using Iot

S. Sabitha, B J. Sherin, K. Sangeetha, C. Vasanthakumari, Mrs.S.Geetha

Abstract

Now a day's wildlife entering in to the populated area has become one of the common problems. This issue arises due to the decrease in the leaving area of the wild animals. It makes incredible loss to property when wild animals enter in to the living area. In this paper, a low cost monitoring system has been proposed using IOT. The system tracks the images that are entering to the farming land and by using MATLAB the entered animal is get confirmed. After that an alert has been generated by using GPRS and GSM. It also threats the wild animal by means of arising alarm. That is, the proposed system sends SMS to the land owner and it also threat the animal by raising alarm and not allowing the wild animal to enter the farming land.

Simultaneous And Progressive Mutiple Sc-Sf Fusion Based Hyper Spectral Imag Classification

Sandhya S, Sridevi R, Sri Ishwariya S, Subbulekshmi S, Mr.C.K.Morarji

Abstract:

A spectral-spatial (SS) hyperspectral classifier generally implements a spectral classifier (SC) followed by a spatial filter (SF) for classification. This article develops a new approach to fusing multiple SC-SF classifiers for hyperspectral image classification (HSIC) as to improve classification performance. To accomplish this goal an iterative process is particularly designed to fuse the spatial-filtered classification maps (SFMaps) produced by each of SC-SF classifiers into one single SFMap via maximum a posteriori (MAP) criterion. Such fused SFMaps are then fed back and added to the current data cube to create a new data set for next round SC-SF classifier fusion. The same process is repeated iteratively until it satisfies an automatic stopping rule. To further fuse more than two SS methods, two approaches are also developed, called simultaneous multiple SC-SF fusion (SMSSF) method and progressive multiple SC-SF fusion (PMSSF) method. Experimental results demonstrate that fusing multiple SC-SF classifiers can indeed perform better than using an individual single SC-SF classifier alone without fusion.

Triple Band Inverted - F Antenna Using Qr-Obl Tlbo Algorithm For Rf Enery Harvesting Applications

Sritharan,M Vijishanth, Vignesh, Vishal, Mr.P.Beneshselvanesan

Abstract:
Radio Frequency Energy Harvesting (RF EH) is one of the popular emerging techniques in wireless sensor networks that can sufficiently supply low power electronic circuits. With the evolution of Internet of Things (IoT) technology, which exhibits an exponentially positive growth rate over the last years, RF EH can play a primary role in the next-generation wireless networks. In this paper, we apply an optimization technique by utilizing the Quasi-Reflected (QR) variant of opposition Based Learning (OBL) technique in Teaching Learning Based optimization (TLBO) algorithm to design a triple-band Inverted- F antenna (IFA) for RF energy harvesting applications. The proposed antenna is operating in the cellular communication frequency bands of EGSM-900 and GSM-1800, as well as at the Long Term Evolution (LTE) telecommunication networks frequency band of LTE-2600. Simulation results demonstrate that the designed antenna has features of operation which make it suitable for RF EH applications.

Microcontroller Based Blood Pressure Monitoring System

Supriya M,M Sushma T, Anusha V, M.Sumaiya, Mr.R.V. Nagarajan

ABSTRACT Blood pressure (BP) is one of the vital signs measured in a patient during a medical check-up. Abnormality in BP values is an indication or symptoms in most cardiovascular diseases. Innovations were established in dealing with the measurement of BP for the past years. In this paper, the researcher presented a wearable blood pressure monitoring device with SMS notification. Its design and processes were explained in this paper to further demonstrate the content of research. This paper aimed to determine whether the prototype is reliable enough with a novel approach for blood pressure monitoring purposes. The project is a device worn in a wrist using a microcontroller, battery and a cuff. The patient has a mobile app installed in his/her mobile phone. Information should be entered in the mobile app such as contact number and the normal blood pressure of the patient. The mobile phone is connected in the wearable device through Bluetooth. The user or patient will have to wait 5 minutes before the blood pressure will start measuring. This is to let the patient rest for a while. A beep sound indicates that the device starts measuring. After 10 seconds, the cuff will inflate and another 30 seconds time is intended for the blood pressure measurement. The measured valued is displayed in the mobile app, and then sends SMS only if the patient's BP is higher than normal. Its design is a microcontroller-based project, equipped with a Global Positioning System (GPS) module to be able to locate the user, a Bluetooth module to be able to connect to a smart phone installed with the Blood Pressure Monitoring App. The device was carefully programmed and tested to

ensure its workability. Key words: Blood pressure, microcontroller, Bluetooth, Global Positioning System, SMS, mobile app

A Real Time Iot Based Cardaic Monitoring Using Sensor Network

Ranjitha R, Nivedhitha S V, Nivetha C M, Dr.Benisha

Abstract The healthcare industry is currently dependent a lot on the decisions made by humans. Sometimes these decisions are not accurate and are sometimes biased. In the pursuit to remove this deviation in rational and unbiased decision making, we decided to implement IoT in the healthcare system. By using a number of tiny and lightweight, wireless sensor nodes which are based onbody sensor network (BSN) technology, which is one of the core technologies of IoT developments in healthcare system, the various health parameters of a patient can be monitored.The usage of IoT eliminates a lot of human error. One of the most underdeveloped areas in the field of IoT with respect to healthcare is the implementation of the same for coronary heart disease and strokes. IoT can prove its mettle in the field of healthcare by tackling these two major areas. A dedicated device to monitor the pulse and its variations continuously would be able to read and notify any panic situation with ease. We believe that if such a system is implemented the number of lives which are lost to circumstances will reduce. Keywords: IOT, Healthcare, Heart Diseases, BSN, Wireless sensors.

Automatic Energy Meter Using Gsm Module

Nandhini K, Varshini T, Santhiya M, Lisha C M, Mr.Prem Kumar

Abstract:
The technology of e-metering (Electronic Metering) has gone through rapid technological advancements and there is increased demand for a reliable and efficient Automatic Meter Reading (AMR) system. This paper presents the design of a simple low cost wireless GSM energy meter and its associated web interface, for automating billing and managing the collected data globally. The proposed system replaces traditional meter reading methods and enables remote access of existing energy meter by the energy provider. Also they can monitor the meter readings regularly without the person visiting each house. A GSM based wireless communication module is integrated with electronic energy meter of each entity to have remote access over the usage of electricity. A PC with a GSM receiver at the other end, which contains the database acts as the billing point. Live meter reading from the GSM enabled energy meter is sent back to this billing point periodically and these details are updated in a central database. A new interactive, user friendly graphical user interface is developed using Microsoft visual studio .NET framework and C#. With proper authentication, users can access the developed

web page details from anywhere in the world. The complete monthly usage and due bill is messaged back to the customer after processing these data.

Smart Iot Based Greenhouse Monitoring Using Cloud Gsm Topology

Ramya R, Seetha M, Vaishnavi R, Punitha A, Mr.Prem Kumar

Abstract— Greenhouses are climate controlled structures with walls and roof specially designed for offseason growing of plants. Most greenhouse systems use manual systems for monitoring the temperature and humidity which can cause discomfort to the worker as they are bound to visit the greenhouse every day and manually control them. Also, a lot of problems can occur as it affects the production rate because the temperature and humidity must be constantly monitored to ensure the good yield of the plants. Internet of Things is one of the latest advances in Information and Communication Technologies, providing global connectivity and management of sensors, devices, users with information. So the combination of IoT and embedded technology has helped in bringing solutions to many of the existing practical problems over the years. The sensors used here are YL69 moisture sensor and DHT11 (Temperature & Humidity sensor). From the data's received, Raspberry PI3 automatically controls Moisture, Temperature, Humidity efficiently inside the greenhouse by actuating an irrigating pipe, cooling fan, and sliding windows respectively according to the required conditions of the crops to achieve maximum growth and yield. The recorded temperature and humidity are stored in a cloud database (ThingSpeak), and the results are displayed in a webpage, from where the user can view them directly.

Keywords-IoT, Raspberry PI3, Greenhouse, ThingSpeak

Rf Controlled Spy Robot With Night Vision Camera

Theres Rishiba V, Renjana K, Suvitha D, Mr.R.V.Nagarajan

ABSTRACT: The intension of this paper is to reduce human victims in terrorist attack.The unique feature of this surveillance robot is that it can travel both on land and water. In this paper we are using the raspberry pi to control the entire robotic module and we are using the ultrasonic sensor to sense the obstacles in the path.Survelliance area critical features include the ability to follow a search instruction plan, rigorous terrain mobility, and the capacity to classify and map underwater mines and other potential threats, communication, obstacleavoidance, and sensor payloads remain critical issues to be resolved for successful operation. Robot have been widely used to perform variety of tasks which reduce the manual work specifically in remote areas where human accessibility is unimaginable. The main applications where the robots have exhibited their excellence include surveillances, tracking

targets for objective behind developing this robot is for the surveillance of human activities in the war field or border regions in order to reduce infiltrations from the enemy side.

A Self-Powered, Real-Time, Lorawan Iot-Based Soil Health Monitoring System

Kasthoori K, Sona Leeta T, Safrin S, Neela K, Dr.M.Reji

Abstract:
Typical soil health assessment requires intensive field sampling and laboratory analysis. Although this approach yields accurate results, it can be costly and labor intensive and not suitable for continuous tracking of soil properties. Advances in soil sensor and wireless technologies are poised to replace physical sampling and offline measurement with in-field monitoring. This article reports the development, deployment, and validation of an Internet-of-Things (IoT) system for continuous monitoring of soil health. The end nodes of the proposed system, called soil health monitoring units (SHMUs), are solar powered and can be installed on a field for extended periods of time. Each SHMU transmits soil temperature, moisture, electrical conductivity, carbon dioxide (CO_2), and geolocation data wirelessly using long-range wide-area network (LoRaWAN) radio technology. Data are received by a LoRaWAN gateway, which uploads it to a server for long-term storage and analysis. Users can view acquired data through a Web-based dashboard. The following significant experiments were carried out to validate the developed system: 1) a network consisting of eight SHMUs was deployed at an agricultural field site for several weeks and soil health metrics were analyzed using the soil health dashboard; 2) the flexibility of the system was demonstrated by the addition of an extra CO_2 sensor allowing an additional variable directly linked to soil health to be recorded; 3) a wireless communication range of 3422 m was estimated at a transmission power of 10 dBm by deploying the developed system on a large field; 4) the average current consumption of a SHMU (including its associated sensors) was estimated to be 13 mA, at this rate, the onboard Li-ion battery is able to sustain a SHMU for several days; and 5) a 7 cm ×6.5 cm solar panel was able to fully charge the onboard battery in 14 days while supplying power to the SHMU.

Rfid Based Toll Tax

Rijas K, Paulwin J, Sethu Ram T K, Muthu Sudalai E, Mr.Denvar Pravin Joy

Abstract: The Internet of Things (IoT) is a novel concept and is aimed at enabling the interconnection and integration of the physical world and the IT space. The main concept of project is to design a toll collection model using RFID based on Internet of things (IOT) concept and to implement our project, we are developing a model to show how the TOLL collection system works. Project is mainly based on sensors and RFID which are connected to Arduino.

Therefore, the amount deducted from the RFID tag can be found through IOT server using node MCU. The use of RFID modules that mechanically collects the toll from shifting automobiles once they cross the toll plaza. Proposed system of project addresses the problems comes at toll plaza. Therefore we can recognize the speed of the vehicle entering at toll plaza.

Zigbee Based Small-World Home Area Networking For Decentralized Monitoring And Control Of Smart Applainces

Jino D, Mahendren R, Mani Kandan S, Dr.Benisha

Abstract:
This paper deals with the unique development of decentralized monitoring and control of smart electric appliances using ZigBee mesh topology for home area networking (HAN). All the communication nodes within the entire user's home are tied with ZigBee communication while the running status of individual smart equipment is displayed in a portable in-home-display (IHD) and/or in a smartphone through Wi-Fi Internet connectivity. In order to reduce the number of ZigBee nodes, a group of smart appliances is interfaced with one ZigBee module through a smart controller board while that controller unit will be housed inside the local switchboard. Few of such controller units are required for all the smart appliances for their monitoring and control. The maximum number of such controller units is thus equal to the number of maximum switch board in that house. Small World Mesh topology for ZigBee-based HAN with node degree greater than unity is used to provide the communication redundancy so that if any one of the ZigBee fails, the other portions can work uninterruptedly. The ZigBee Controller boards, IHD, and ZigBee to Wi-Fi gateway based small world HAN network is established in our laboratory which resulted in reduced transmission delay and robust network connectivity.

Faulty Product Rejection In Coveyor Belt Using Raspberry Pi

Arumugakrishnan V R, Aswi Faisal S, Ayyappan N, Bala Krishnan K R, Dr. M.Reji

Abstract: In any industry, quality control is an essential and inevitable part of the process. Defect detection in paper is one of the most important quality control measures in the paper manufacturing process. This work aims at identifying the spots and tracking down the holes in the paper. The use of Image processing and Laser sensor is a dominant technology to recognize defect in the paper. The existing methodology is based on the scanning slide concept. This uses a scanning slide and detects the black spots as it moves from one end to another. The main drawback in this technique is that the spots on one end of the paper are missed when the scanner is on the other end. The proposed methodology aims at a fast and precise solution for detection

of defects. In this method, laser sensors and high definition camera are introduced to sense micron sized spots and minute holes in the paper. The results show a considerable improvement in terms of precision and speed when compared to the existing methodology. This work is successful in detecting the defects and hence improving the quality of paper. Keywords: Paper, Scanning slide concept, Camera, Black spots, Raspberrypi.

Linear Mmse Precoder Combiner Designs For Decentralized Estimation In Wireless Sensor Networks

C.Bavithra ,R.V.Nagarajan

Abstract:
This work considers the design of linear minimum mean square error (MMSE) precoders and combiners for the estimation of an unknown vector parameter in a coherent multiple access channel (MAC)-based multiple-input multiple-output (MIMO) wireless sensor network. The proposed designs that minimize the mean squared error (MSE) of the parameter estimate at the fusion center are based on majorization theory, which leads to non-iterative closed-form solutions for the precoders and combiners. Various scenarios are considered for parameter estimation such as networks with ideal high precision sensors as well as noisy non-ideal sensors. Moreover, inter parameter correlation is also incorporated, which makes the analysis comprehensive. The Bayesian Cramer-Rao bound (BCRB) and centralized MMSE bound are determined to characterize the estimation performance. Simulation results demonstrate the improved performance and also corroborate our analytical formulations.

Integrated Machine Learning And Fuzzy Logic Algorithms Based Clustering And Decision Making For Vanets

Isha.C, Morarji.C.K

Abstract — Due to vehicles high mobility, there have been many clustering-based MAC protocols proposed to control Vehicular Ad hoc Network topology more effectively. Cluster head (CH) selection and cluster formation is of paramount importance in a highly dynamic environment such as VANETs. In this paper, we propose a novel cluster head selection criteria where cluster heads are selected based on their relative speed and distance from vehicles within their neighborhood. The maintenance phase in the proposed algorithm is adaptable to drivers' behavior on the road and has a learning mechanism for predicting the future speed and position of all cluster members using fuzzy logic inference system. The simulation results show that the proposed algorithm has a high average cluster head lifetime and more stable cluster topology

with less communication and coordination between cluster members compared to other schemes.

Keywords: VANET, MAC, Clustering, Mobility, Fuzzy Logic.

An Efficient Automatic Accident Detection System Using Inertialmeasurement Throughmachine Learning Techniques For Powered Two Wheelers

S.Abarna, S.Soban

Abstract

The two-wheeler accidents in most populated and developing countries have become vulnerable and six accidents happen every hour on average. This paper proposes an efficient automatic accident detection system that attempts to detect the occurrences of the accidents in powered two-wheelers (PTW) automatically using vehicle-dependent parameters and the physiological parameters of the rider in real-time. The proposed system builds an accident detection system in PTW using three steps namely, critical event detection system, accident detection system, and severity assessment system. The critical event detection system reads the accelerometer sensor values from the On-Board Diagnostic (OBD) unit mounted on the PTW and classifies the state of the vehicle as normal, fall-like, and fall through the enhanced decision tree algorithm. The enhanced decision tree algorithm uses a tanh function to calculate entropy values. The rules are extracted to fix the threshold by pruning the decision tree to identify the fall of the vehicle and the rider. Due to the unstable nature of PTW and the rider, a novel Adaptive Sequence Window algorithm (ASW) is proposed to substantiate and validate the occurrence of accidents based on the sequence of states identified. Once the accident is detected, the Decision Support System (DSS) running on the OBD mounted on the PTW decides the severity of the accident by combining the three parameters namely fall of the vehicle, fall of the rider, and pulse rate of the rider using the first-order predicate logic rules. The enhanced decision tree algorithm outperforms the other classifiers such as naïve Bayes, artificial neural network, and recurrent neural network with an accuracy of 99.8%. The OBD unit mounted on the PTW and the rider's helmet is used to detect the occurrence of accidents automatically along with its severity with less time. The ASW algorithm enables the system to detect the fall of the vehicle and rider within five minutes and prevents false positives. Further, the information can be communicated based on the severity of the accident to the emergency medical service for quick response.

Analysis Of D2d Communication With Rf Energy Harvesting And Interference Management In Cellular Networks

P.Roselinsouthri, R.Venkatesh

Abstract and Figures

Device-to-device (D2D) underlaid cellular network, enabled with radio frequency energy harvesting (RFEH), and enhanced interference management schemes is a promising candidate to improve spectral and energy efficiency of next generation wireless networks. In this paper, we propose a time division duplexing (TDD)-based protocol, in which allows the devices to harvest energy from the downlink transmissions of the base station, while controlling the interference among D2D and cellular communication in the uplink. We propose two schemes for transmission coordination, based on fixed transmission probability (FTP) and adaptive transmission probability (ATP), respectively. In FTP, the D2D transmitters that have harvested enough energy can initiate data transmission with a fixed probability. Differently from this, in ATP a device utilizes its sensing capability to get improved coordination and interference control among the transmitting devices. We evaluate the network performance by presenting an accurate energy model and leveraging tools from stochastic geometry. The results on outage probability and D2D sum-rate reveal the importance of transmission coordination on network performance. These observations led to a solution for choosing the parameters of the ATP scheme that achieves an optimal tradeoff between the D2D outage probability and number of transmitting users.

Joint Transceiver Designs For Mse Minimization In Mimo Wireless Powered Sensor Networks

Ashtami Suresh, R.Venkatesh

Abstract:

In this paper, we study vector parameter estimation in multiple-input multiple-output wireless-powered sensor networks (WPSNs) where sensor nodes operate by harvesting the radio frequency signals transmitted from energy access points (E-APs). We investigate a joint design of sensor data precoders, a fusion rule, and energy covariance matrices to minimize the mean square error (MSE) of the parameter estimate based on a non-linear energy harvesting model. First, we propose a centralized algorithm to solve the MSE minimization problem. Next, to reduce the computational complexity at the fusion center (FC) and feedback overhead from the sensors to the FC, we present a distributed algorithm to locally compute the precoders and the energy covariance matrices. We employ the alternating direction method of multipliers technique to minimize the MSE in a distributed manner without any coordination from the FC. In the proposed distributed algorithm, each sensor node calculates its own precoders and determines the local information of the fusion rule, and then messages are broadcast to other sensor nodes and E-APs. Simulation results demonstrate that the distributed algorithm

performs close to the centralized algorithm with reduced complexity. Moreover, the proposed methods exhibit superior estimation performance over conventional techniques in WPSNs.

Real Time Multiple Bit Upset Mitigation Using Symbolic Hamming Matrix Code For Fpgas

S.V.Nivedhitha, C.M.Nivetha, R.Ranjitha, N.K.Priyankaa, Dr.T.Sudarson Rama Perumal

ABSTRACT This paper presents a high level technique to protect SRAM memories against multiple upsets based on correcting codes. The proposed technique combines Reed Solomon code and Hamming code to assure reliability in presence of multiple bit flips with reduced area and performance penalties. Multiple upsets were randomly injected in various combinations of memory cells to evaluate the robustness of the method. The experiment was emulated in a Virtex FPGA platform. Results show that 100% of the injected double faults and a large amount of multiple faults were corrected by the method.

The Lte-Advanced Wireless Network For Heterogeneous Services In Ofdma

Vasuki S, Lekaviya T, Muthu Selvi S, Shyni S, Mrs. Subha Sharmini Devi

Abstract and Figures
1G in late 80s to 5G in 2019, revolutionary changes have been emerged in the telecom sector. Higher data rate, spectral efficiency and performance are the focusing areas. Radio spectrum is vital to cellular network and one of the most expensive and scared resource. It needs to be utilized efficiently and requires high level of manageability. An effective Frequency Reuse or Frequency Planning scheme ensures an efficient utilization of radio spectrum provides higher data rate increases coverage area expands network capacity and thus overall performance. Any increase by applying Frequency Reuse scheme may also lead to interference which significantly decreases the network performance. The paper overviews the requirements, standards and different kinds of interference and their management in LTE-Advance cellular network which more or less are the fundamental of 5G technology.

Iot Based Automatic Electricity Monitoring And Control System

Malarvizhi.N , Sangeetha.P, Sahaya Abisha.J ,Manju.P Dr.M.Reji

Abstract:

With the development in modern communication technology, every physical device is now connecting with the internet. IoT is getting emerging technology for connecting physical devices with the user. In this paper we combined existing energy meter with the IoT technology. By implementation of IoT in the case of meter reading for electricity can give customer relief in using electrical energy. In this work a digital energy meter is connected with cloud server via IoT device. It sends the amount of consumed energy of connected customer to webserver. There is a feature for disconnection in the case of unauthorized and unpaid consumption and also have option for renew the connection by paying bill online. We tried to build up a consumer and business friendly system.

Design And Simulation Of 5.7ghz Wi-Fi Microstrip Patch Antenna Using Cst

B.Nivetha ,M.Seetha Lekshmi ,J.Saranya ,A.Raja Goldina, Dr.S. Mohanalekshmi

Abstract

Wireless and mobile communication have come a long way since its inception. So for efficient communication, we require miniature-sized antennas such as Microstrip antenna. In this paper, it proposes an efficient wideband circular Microstrip antenna. In this design, a rectangular patch is mounted on the FR-4 substrate material (εr =4.4). A rectangular slot is etched on the rectangular patch to provide wideband operation. Antenna design and simulation were carried out in the Finite Element Method (FEM) based High-Frequency Structural Simulation (HFSS™) tool. The antenna was designed to operate in 5.2GHz and the result obtained is the return loss of-40dB

Semi-Reference Sonar Image Quality Assessment Based On Task And Virtual Perception

Maben Ernest Raj C, Mani T,Joe Arosh J, Ms. Sushmitha.J

Abstract:

In submarine and underwater detection tasks, conventional optical imaging and analysis methods are not universally applicable due to the limited penetration depth of visible light. Instead, sonar imaging has become a preferred alternative. However, the capture and transmission conditions in complicated and dynamic underwater environments inevitably lead

to visual quality degradation of sonar images, which might also impede further recognition, analysis and understanding. To measure this quality decrease and provide a solid quality indicator for sonar image enhancement, we propose a task- and perception-oriented sonar image quality assessment (TPSIQA) method, in which a semi-reference (SR) approach is applied to adapt to the limited bandwidth of underwater communication channels. In particular, we exploit reduced visual features that are critical for both human perception of and object recognition in sonar images. The final quality indicator is obtained through ensemble learning, which aggregates an optimal subset of multiple base learners to achieve both high accuracy and a high generalization ability. In this way, we are able to develop a compact but generalized quality metric using a small database of sonar images. Experimental results demonstrate competitive performance, high efficiency, and strong robustness of our method compared to the latest available image quality metrics.