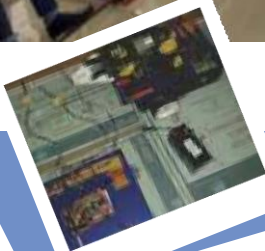**Technofist**

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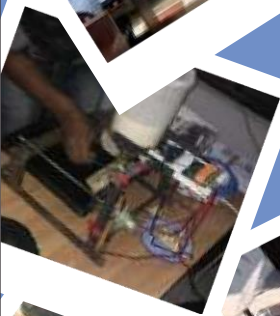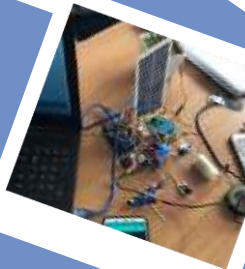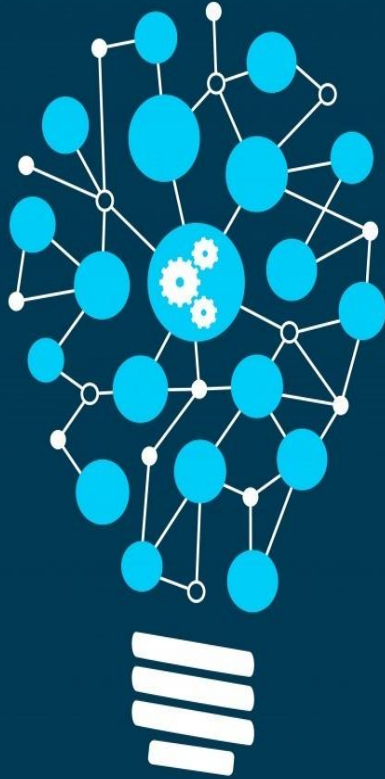
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IEEE TRANSCATIONS ON MACHINE LEARNING PROJECTS 2022-2023

AN INTERNET OF THINGS BASED SMART WASTE MANGEMENT SYSTEM USING LORA AND TENSOR FLOW LEARNING MODEL

ABSTRACT- Traditional waste management system operates based on daily schedule which is highly inefficient and costly. The existing recycle bin has also proved its ineffectiveness in the public as people do not recycle their waste properly. With the development of Internet of Things (IoT) and Artificial Intelligence (AI), the traditional waste management system can be replaced with smart sensors embedded into the system to perform real time monitoring and allow for better waste management. The aim of this research is to develop a smart waste management system using LoRa communication protocol and Tensor Flow based deep learning model. LoRa sends the sensor data and Tensor flow performs real time object detection and classification.

AUTOMATED EVALUTION OF COVID-19 RISK FACTORS COUPLED WITH REAL TIME,INDOOR,PERSONAL LOCALIZATION DATA FOR POTENTIAL DISEASE IDENTIFICATION,PREVENTION AND SMART QUARANTINING

ABSTRACT- Since the beginning of the current COVID-19 pandemic, more than five million people have been infected and the numbers are still on the rise. Early symptom detection and proper hygienic standards are thus of utmost importance, especially in venues where people are in random or opportunistic contact with each other. To this end, automated systems with medical-grade body temperature measurement, hygienic compliance evaluation and individualized, person-to-person tracking, are essential, not only for disease spread intervention and prevention, but also to assure economic stability.

AUTOMATIC TRAFFIC VIOLATION RECORDING AND REPORTING SYSTEM

ABSTRACT- The quantity of street mishaps increments and causes numerous issues. Numerous individuals bite the dust and harmed. Likewise, that causes numerous financial, social and mental issues that have negative effect on the improvement of the world. The primary reason for most of these mishaps is because of the infringement of the traffic rules: driving with high speeds, crossing a red-light signal, not keeping adequate separation with the front vehicle in the roadways, driving an inappropriate opposite way, and so forth. As the number of streets and avenues are huge and the all-out length of these streets is long, it is extremely unlikely to completely screen every one of them all the time by Traffic Patrol or camera frameworks. This paper proposes a framework to consequently and self-sufficiently identify and record the criminal traffic offenses without the help of the individual.

DEVELOPMENT OF NON-CONTACT BODY TEMPERATURE MONITORING AND PREDICTION SYSTEM FOR LIVESTOCK CATTLE

ABSTRACT- Annually, numerous cattle die of various diseases, necessitating the need for effective cattle health management. To ensure cattle disease detection at an early stage and identify the health status of cattle, we collected the environment temperature, humidity, illuminance, and infrared images of cattle in an actual-life environment as input parameters to develop an artificial intelligence characterization module for measuring deep body temperature in a contactless manner. By analyzing the correlation of estimating deep body temperature at the horn, eyeball, and nose of cattle, the most effective way of estimating this temperature was found to be at the horn. The estimation accuracy was particularly high in the sitting state.

RASPBERRY PI BASED VIDEO SURVEILLANCE SYSTEM FOR ADVANCE SECURITY

ABSTRACT- This paper proposes the Smart Surveillance System using Raspberry Pi and PIR sensor. This system will serve as smart security module for monitoring. Traditional surveillance systems only records the activities based on motion, but this system serves the purpose of facial recognition so as to reduce the error caused due to motion detection . Raspberry Pi camera module is used to capture images once the motion is detected by the PIR Sensor. This system will monitor when motion detected and checks for the faces in the image captured and with the help of face recognition alerts if the face detected is not stored in the database. Send through SMS to alert even if he/she has internet issues he will get to know about the intruder.

CONVOLUTION NEURAL NETWORK BASED WORKING MODEL OF SELF DRIVING CAR

ABSTRACT- A self-driving car is a vehicle that senses its environment and navigates without human intervention and is a high research topic in computer vision that involves various sub- topics and need to be deeply reviewed. To accomplish this, our paper discusses hardware and software components of a self driving car that includes usage of technologies such as Deep learning techniques namely Convolution Neural Networks, YOLO algorithm, Hough Transform Algorithms, Transfer Learning, Canny Edge Detection algorithm. Software components such as Arduino IDE, Raspberry Pi Cam Interface, Open CV, Tensor Flow, Carla simulators and hardware components such as Raspberry Pi 3, Arduino UNO, Pi Camera, sensors like radar, lidar are used to build a prototype of a self- driving car.

CROP YIELD PREDICTION USING MACHINE LEARNING ALGORITHM

ABSTRACT- Agriculture is the pillar of the Indian economy and more than 50% of India's population are dependent on agriculture for their survival. Variations in weather, climate, and other such environmental conditions have become a major risk for the healthy existence of agriculture. Machine learning (ML) plays a significant role as it has decision support tool for Crop Yield Prediction (CYP) including supporting decisions on what crops to grow and what to do during the growing season of the crops. The present research deals with a systematic review that extracts and synthesize the features used for CYP and furthermore, there are a variety of methods that were developed to analyze crop yield prediction using artificial intelligence techniques. The major limitations of the Neural Network are reduction in the relative error and decreased prediction efficiency of Crop Yield.

DRIVER ASSISTANCE SYSTEM USING RASPBERRY PI AND HAAE CASCADE CLASSIFIERS

ABSTRACT- Around 43% of road accidents are due to drowsiness of a driver, says a study by the Central Road Research Institute (CRRI). Another leading cause for road accidents is drunken driving. Any amount of alcohol can impact a person's driving ability and slows their response time. On an average 8 people die every day because of driving under the influence of alcohol. In case of an accident to reduce the fatalities and get quick emergency response a vehicle crash detection mechanism is necessary. Road accidents claim nearly three lives every minute, so it is of utmost importance to develop a cost efficient driver assistance system for automobiles. This will help us to monitor the driver's physiological behaviours which will affect the stability of the vehicle and avoid accidents. To implement this, a variety of software algorithms, input and output extraction hardware tools have been employed in a collaborative way.

DRIVER DROWINESS MONITORING USING CONVOLUTION NEURAL NETWORKS

ABSTRACT- The advancement in computer vision has assisted drivers in the form of automatic self-driving cars etc. The misadventure is caused by driver's fatigue and drowsiness about 20%. It poses a serious problem for which several approaches were proposed. However, they are not suitable for real-time processing. The major challenges faced by these methods are robustness to handle variation in human face and lightning conditions. We aim to implement an intelligent processing system that can reduce road accidents drastically. This approach enables us to identify driver's face characteristics like eye closure percentage, eye-mouth aspect ratios, blink rate, yawning, head movement, etc. In this system, the driver is continuously monitored by using a webcam.

ENHANCED SECURITY MECHANISM FOR ATM MACHINES

ABSTRACT- The project proposes the idea of an image base added security for ATM machines using Raspberry pi that will eliminate the unauthorized usage of ATM cards by person other than the owner. The basic idea of the system is that after insertion of the ATM card into the machine and after the card verification, his image is captured using the webcam in the ATM and then it is matched with the card owner's actual images already stored in the database. If the captured image matches with the stored images, it means he is the authorized user and moves to the next stage where he can enter the password to continue the transaction. When the stored image and the captured image don't match, it means that he is an unauthorized user and thus blocking his access. The system may also inform the actual owner of the card regarding the card misuse.

MACHINE LEARNING BASED ACOUSTIC REPELLENT SYSTEM FOR PROTECTING CROPS AGAINST WILD ANIMAL ATTACKS

ABSTRACT- We present some insights on the issue of crop destruction by wild animals. This is a serious concern for the affected farmers throughout the world and leads to significant social and financial distress among them. In order to understand the background of this problem, a survey of Katli village, Rupnagar, (India) was conducted. The main aim of the current work is to develop a device to protect crops from damage by wild animals by diverting them from the farms, without harming them physically. In this context, an Acoustic Repellent System has been designed which uses a convolutional neural network (CNN) based machine learning model and an IR camera to identify target animals, such as wild boar, nilgai, and deer. A Raspberry Pi (Rpi) module has been integrated with a camera and a frequency generator to recognise different animals and produce corresponding frequencies that keep them away from the farms of interest.

A SURVEY ON REDUCING TRAFFIC CONGESTION BY DISSEMINATING MESSAGES IN VECHICULAR AD HOC NETWORKS

ABSTRACT- Reducing the number of road accidents in the current scenario is a very challenging societal problem. If the information regarding the accidents is given to the vehicles approaching the area, the secondary accidents can be considerably reduced. Vehicular Ad Hoc Networks (VANETs), the network of vehicles that can communicate with each other play a vital role in the reduction of such accidents. Many survey and research papers published on this topic majorly emphasize on implementation of VANETs using simulators but this research work is focused on implementation using hardware components.

DESIGN AND IMPLEMENTATION OF SMART GLOVE TO AID THE VISUALLY IMPAIRED

ABSTRACT- Locating objects of daily use is a strenuous task for the visually impaired. The objective of this paper is to design a smart glove by using Deep Neural Networks (DNN) and object tracking algorithm which will guide the hand of the visually impaired to the desired object in an indoor environment. The smart glove has five micro-vibrating motors, each one used to guide the user's hand in five different directions namely, forward, upward, downward, rightward and leftward. The palm of the glove has a Universal Serial Bus (USB) camera which feeds the real-time video to the Raspberry Pi for processing. The camera also has an inbuilt microphone. The user vocally commands the system to identify the desired object. The camera then detects the object using DNN.

RASPBERRY PI BASED INTELLIGENT READER FOR VISUALLY IMPAIRED PERSONS

ABTRACT- The human communication is totally based on speech and text. So visually impaired people can gather information from voice. With the help of this project visually impaired people can read the text present in the captured image. In this Project we use Raspberry Pi Camera and this help to take pictures and that picture is converted into scan image for further process by using Image magick software. The output of Image magick software is in the form of scanned image this scan image is giving as an input to the Tesseract OCR (Optical Character Recognition) software to convert image into the text. For transformation of text into speech we use TTS (Text to Speech) engine. Experimental results shows that the analysis of different captured images and it will be more helpful to blind people.

DEEP LEARNING BASED SIGN LANGUAGE DIGITS RECONGNITION FROM THERMAL IMAGES WITH EDGE COMPUTING SYSTEM

ABSTRACT- The sign language digits based on hand gestures have been utilized in various applications such as human-computer interaction, robotics, health and medical systems, health assistive technologies, automotive user interfaces, crisis management and disaster relief, entertainment, and contactless communication in smart devices. The color and depth cameras are commonly deployed for hand gesture recognition, but the robust classification of hand gestures under varying illumination is still a challenging task. This work presents the design and deployment of a complete end-toend edge computing system that can accurately provide the classification of hand gestures captured from thermal images.

DESGIN AND IMPLEMENTATION OF REAL AUTONOMOUS CAR BY USING IMAGE PROCESSING AND IOT

ABSTRACT- Because of the inaccessibility of Vehicle-to- Infrastructure correspondence in the present delivering frameworks, (TLD), Traffic Sign Detection and path identification are as yet thought to be a significant task in self- governing vehicles and Driver Assistance Systems (DAS) or Self Driving Car. For progressively exact outcome , businesses are moving to profound Neural Network Models Like Convolutional Neural Network (CNN) as opposed to Traditional models like HOG and so forth. Profound neural Network can remove and take in increasingly unadulterated highlights from the Raw RGB picture got from nature. In any case, profound neural systems like CNN have a highly complex calculation.

DEEP LEARNING BASED SPEED BUMP DETECTION MODEL FOR INTELLIGENT VECHICLE SYSTEM USING RASPBERRY PI

ABSTRACT- Artificial intelligence in vision based approaches have proven to be effective in various phases of intelligent vehicle system (IVS). An IVS has to intelligently take many critical decisions in heterogeneous environment. Speed bump detection is one such issue in real world due to its varying appearance in dynamic scene. The major issue is the scaling appearance of such objects from far distance and often viewed as small entity. In the proposed article, deep learning and computer vision based speed bump detection model is proposed, which assist and control the driving behavior of an IVS before it reaches to speed bump.

SMART ROBOTIC PERSONAL ASSISTANT VECHICLE USING RASPBERRY PI AND ZERO UI TECHNOLOGY

ABSTRACT- This paper presents a prototype of a smart robotic personal assistant vehicle based on Raspberry Pi and Zero-UI technology. Zero UI uses sensory experiences such as gestures, voice and movement to control the devices. A voice controlled robot vehicle implemented in this paper performs three functions, viz. movement of the robot is controlled using voice commands; it has the ability to articulate the text from a captured image using optical character recognition and present the equivalent audio to the user by using a built-in speaker or headset; it accepts voice commands from the user and uses Google Assistant API for any query processing and presents information searched on the Internet to the user in audio form using the built-in speaker or headset**.**

MULTI FUNCTIONAL PERSONAL ASSISTANT ROBOT USING RASPBERRY PI AND CORAL ACCELERATOR

ABSTRACT- The concept of the Internet of Things (IoT) integrated with embedded system and new technologies in the healthcare sector has opened a new era. The natural decrease in physical condition of senior citizens with aging prompts an expansion in frequencies of different diseases and for that reason they need to take medicine on time to improve their health conditions. In this research work we are focusing on the circumstances of senior citizens, we have proposed an IoT enabled smart medicine box equipped with camera for scanning the prescription. After the system scans the prescription through camera, a number o f pre processing techniques are applied on theprescription for better extraction of information. Following that, we applied Maximally Stable Extremal Regions (MSER) which . Later, string manipulation is done on the extracted text and relevant information are uploaded in the database. Afterwards, our medicine box uses the information to notify the patient using buzzer and shows the medication information on the LCD display.

SMART CAP FOR VISUALLY IMPAIRED PERSON USING RASPBERRY PI

ABSTRACT- In our surrounding the Communication generally takes place through speech and text. The aim of this project is to provide an assistive technology to help the visually impaired person usage in disaster situations. The aim purpose of our paper is to develop a cap for blind which will guide them from their source to destination. The solution for smart Cap is to support visually Impaired person and it is cost effective wearable 'smart cap'. The Proposed system consists of web camera which is fitted into a cap, audio microphone, ultrasonic sensor, Raspberry pi, speaker for voice. The software's use in this project is Image processing. open cv, numpy, python.

IoT ENABLED PRESCRIPTION READING SMART MEDICINE DISPENSER IMPLEMENTING MAXIMALLY STABLE EXTERNAL REGIONS AND OCR

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GREEN LEAF DISEASE DETECTION USING RASPBERRY PI

ABSTRACT- This paper talked about a framework utilizing raspberry PI to detect and prevent plant disease from spreading. The k means clustering algorithm was used for image analysis. It has numerous focal points for use in vast harvest ranches and in this way distinguishes indications of sickness naturally at whatever point they show up on plant leaves. In pharmaceutical research, the recognition of leaf ailment is essential and a critical theme for research, becaus it has the advantages of monitoring crops in the field in the form and thus automatically detects symptoms of disease by image processing using an algorithm clustering. The term disease refers to the type of plant damage.

SMART DETECTION AND REPORTING OF POTHOLES VIA IMAGE-PROCESSING USING RASPBERRY-PI

ABSTRACT- One of the causes of local road accidents in developing countries, such as the Philippines, is due to road damages such as potholes. In addition, there is no proper road maintenance in the local roads, and so the checking of pothole is done manually. Hence, in this paper we propose a simple and robust design of a portable and affordable device that will be suitable for local jeep(cab) drivers here in the Philippines. A distinguishing feature of this proposal is that it does not need a sophisticated Smartphone to automatically send the reports, and was tested in an actual moving vehicle. Furthermore, the system can be installed in a moving vehicle to automatically detect and report potholes via image-processing of Raspberry-Pi.

SMART OBSTACLE RECOGNITION SYSTEM USING RASPBERRY PI

ABSTRACT- Blindness is a major problem in the society which made difficult for the person to lead his/her day-to-day life. The proposed system will detect, track and analyze the approaching objects and alert them to avoid collision. The PI camera and the Ultrasonic sensor sense the type and distance between the person and the object. The contactless temperature sensor senses the temperature of the object contactless manner using infrared rays. The GPS sensor tracks the route and location of the blind and the ESP8266 connects with the cloud for Realtime monitoring of the blind.

SECURED IOT BASED SMART GREENHOUSE SYSTEM WITH IMAGE INSPECTION

ABSTRACT- Automated Greenhouse System helps the farmers by controlling the environmental parameters through Internet of Things(IoT), including crop health inspection using image analysis. The Greenhouse is generally affected by two factors: plant disease and weather condition, which leads to the fall in production. The weather condition can be controlled through Microcontroller Unit(MCU) and the plant disease can be monitored using image inspection system. The research recommends a cheaper image evaluation framework for the plant disease analysis and fully automated Greenhouse with data security. The prototype of the proposed system consists of Raspberry pi, MSP432, Temperature sensor, Moisture sensor, Humidity sensor and Open CV Image Inspection System. The actuators and motors are controlled by MCU MSP432 through relays upon reaching predetermined threshold value.

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IEEE TRANSCATIONS ON IOT PROJECTS 2022-2023

LATEST EMBEDDED PROJECT LISTS INTERNET OF THINGS (IoT)

WIRELESS EMBEDDED ELECTRONICS FOR SOLIDER SERCUITY

ABSTRACT- One of the important and vital roles in a country's defense is played by the army soldiers. Every year Soldiers get strayed or injured and it is time consuming to do search and rescue operations. In this paper, we present a WSN-based environmental and health monitoring approach in which sensor data is processed using robust and stable algorithm implemented in controller. These processed data are then sent to the base station via low-cost, low- power and secure communication links provided by a LoRa network infrastructure instead of cellular networks, since, they are either absent or doesn't allow data transmission in warzone or remote areas. We focus on monitoring environmental factors such as temperature, humidity, air pressure, air quality; physical factors such as motion, position, geographic location and health parameters like ECG (electro cardiograph), blood oxygen level, body temperature. Moreover, camera and microphone are used to monitor any undesirable situation of soldier.

DESIGN AND REALIZATION OF INTELLIGENT SAFETY HELMET BASED ON IOT

ABSTRACT-Safety helmet has a long history, which can be traced back to ancient times. Primitive people used coconut shells to protect their heads when hunting wild animals. With the development of metallurgical technology, metal safety helmets have appeared gradually. China's economy was relatively backward. Most of the workers wore safety helmets woven by rattan, which was easy to cause accidents. The painful cost brought the progress of safety management. Safety helmets were improved to plastic ones. In 2000, the high impact plastic was selected for injection molding. It features excellent surface, good elasticity, firm and durable.

DESIGN AND DEVELOPMENT OF BRIDGE MONITORING SYSTEM USING IOT

ABSTRACT-The bridges get damaged due to aging or damage due to natural calamities, the people will remain unnoticed of it. Then the bridges will be a danger to travel as it can collapse anytime and leads to disaster. So, continuous bridge checking must be done for better bridge health. For solving this problem, a design for continuous bridge monitoring has been proposed using wireless IoT technology. This proposed design helps in monitoring bridges and can also be applied for flyovers. The design consists of monitoring devices as sensors like load sensor, water level sensor, vibration sensor and tilt sensor which are interfaced with communication devices.

DESIGN OF IOT BASED MUTIFUNCTIONAL CAMOUFLAGE MILITARY ROBOT

ABSTRACT- In this modern era, huge capital of the country has been spent for the defence field to deploy primitive and high security measures and safeguard the border security forces from the trespassers. Some defence organizations utilizes robotics in the defence field and the efficiency of robots are very high when compared to the human forces. Camouflage Robot plays a vital role in saving human loses as well as the damages that occur during disasters. Thus, it will gain more importance in the upcoming era. The robot basically consists of a vehicle mounted with one camera, which captures the images and detects colour accordingly as a part of the camouflaging feature. The robot can quietly enter into enemy area and send information via camera to the controller.

DEVELOPMENT OF TERRESTRIAL MOBILE ROBOT FOR EXPLORING AND MONITORING ENVIRONMENTAL PARAMETERS AT MINE ANALOGUE SITES USING IOT PLATFORM

ABSTRACT-Mining is one of the main activities in Andean Countries and occupational safety is one of the most important duties. Despite this, there has been an increase in the number of accidents, even the mortality rate is still high. Therefore, a Terrestrial Mobile Robot called "MineBot", integrated with Tele operation Open-Source technologies, has been proposed for exploring and detecting chemical and physical as well as biological agents within the underground mines for the purpose of keeping safe the place for workers. Endowed with both a strong Mechanical design and an intuitive Telerobotic system applying User Experience design principles as well as Navigation Control, and Environmental Monitoring systems along with an Internet of Things (IoT) Platform storage.

IOT BASED MULTIPURPOSE AGRIBOT WITH FIELD MONITORING SYSTEM

ABSTRACT- The objective of this paper is to design, development and the fabrication of the Agribot which is a multipurpose bot can perform all the farming operations including ploughing the soil of the field, sowing seeds in the ploughing area, making the field in plain by using leveler, watering the crops, fertilizing them and monitor the agribot by using camera. The traditional farming methods consume a lot of manual labour. Some of the operations are manual, while others are operated using manually operated machines. Therefore, there are no such robots, which can perform all these operations autonomously. In addition with this when the major fieldwork is done, the farmer has to keep a check on the field for various reasons**.**

IOT BASED AUTOMATED SHRIMP FARM AQUACULTURE SYSTEM

ABSTRACT- This project was conducted to identify the problems and rising issue that occurred in UMP neighbourhood especially in agriculture field. Upon researching, we found that the traditional way of monitoring the parameter of shrimp pond might be time consuming, extra labour, and less efficiency. Not only that, the maintenance of motor that keeps running 24 hours daily in order to keep the water at optimum level may have caused burden in cost. This study aimed to establish an IoT based monitoring system which employed an Embedded System and Smart Phone for shrimp farming management and problem solving using Raspberry Pi and Arduino Uno. The data collected and comparative analysis from the manufacturer was applied in this project.

IOT BASED BABY MONITORING SYSTEM SMART CRADLE .

ABSTRACT- This paper is centered around a plan to develop a IOT based Smart baby cradle that would assist the Parents with monitoring and keeping an eye on their infants regardless of whether they are at home or at work and can identify each activity of the infants from any inaccessible corner of the world. It is a brilliant, imaginative and defensive Cradle System to support a newborn child in a productive manner. This framework considers all the moment subtleties that are needed for the consideration and insurance of the Baby in the support. The plan of keenness and development accompanies the utilization of advancements which incorporate Internet of Things (IOT).

IOT BASED SMART SHOE FOR THE BLIND

ABSTRACT- IoT based Smart shoe system for the blind is a system made with the help of ultrasonic sensors paired to an Arduino UNO board. Internet of things is all about making physical objects communicate with other objects or even with humans. It is an enabling technology which has a rapid development and growth in the market. In our India there are almost 40 million blind people among which 1.6 million are children. Blind people face great difficulty to travel independently. They have to depend on others in many aspects of their life. The Major problem is when they walk on the road. With a stick in hand they cannot detect every obstacle that comes in their way. The Smart shoe design provides a long term solution for the blind to walk on roads independently.

IOT BASED SMART VEHICLE PARKING SYSTEM USING RFID

ABSTRACT- In the current decade, we are facing a parking problem with the advancement in technology. The population in urban cities is dense due to which lots of vehicles are running on the road leads to the parking problem, traffic problem. The world is facing the new challenge of Vehicle parking. It is observed that one million vehicles consume oil on daily basis. In this paper, an automatic real-time system for automated Vehicle parking is proposed. This system has been implemented with the help of the internet of things (IOTs). IOT generally exchanges information or data between the two physical devices. Arduino Uno is a microcontroller used in the proposed system.

SURVEY ON DEVELOPMENT OF SMART HEALTHCARE MONITORING SYSTEM IN IOT ENVIRONMENT

ABSTRACT- In recent days, people are easily affected by chronic diseases like heart attack, respiratory problems, mind stroke etc. Henceforth, it is very essential for common people to undergo health checkups to avoid any unanticipated health conditions. Since people are busy in their work, they tend to have all the services at the tip of their fingers. IoT healthcare monitoring system is one such smart and efficient technologies, which makes the human life more simple and easy. In this way, the smart healthcare monitoring technologies utilizes several sensors that can monitor the patient's daily health-related activities, collect the data from the sensors, store the data and further transmit the data to doctors, care takers or nurses through internet.

IOT ENABLED DATA ACQUISITION SYSTEM FOR ELECTRIC VEHICLE

ABSTRACT- Electrical Vehicles (EV) are being embraced in the automobile sector in wake of increasing awareness regarding the environmental hazards caused by the toxic emissions caused by petroleum fueled vehicles. The workhorse of the EV is a high-current rating BLDC motor, fed from a secondary battery. Battery parameters and other related EV electrical observables have to be continually monitored, for multiple purpose related to research, industrial concerns, etc. With a futuristic vision for automated EVs, the scope of data acquisition and curation becomes even more crucial for proper upkeep of EVs. The proposed platform utilizes Internet of Things (IoT) sensors' data acquisition and cloud platform Thing Speak. The IoT sensors collect data sends to Cloud Platform through ESP2866(Wi-Fi Module) connected to sensors monitored by Laptop/smart phone. Thing Speak - a MATLAB based cloud platform has been used for graphical data display, and simplified analysis. The proposed IoT based Cloud Platform Data Acquisition is meant to improve scalability, safety, reliability and optimal operation of complex EV System.

SMART BIN FOR CLEAN CITIES USING IOT

ABSTRACT- Different attempts have been made so far all over the world for a cleaner and greener environment. Waste management is the need of an hour. To make the country a better place to live in, it should be made smarter. To view the locality a litter free zone, the Smart bin for clean cities using Internet of Things (IOT) has to be implemented. The main purpose for adapting this technology is to conserve the environment without exhausting the time, energy, wealth, etc. In this work with the help of sensors the bin level, presence of gas and humidity in the bin are monitored. The status of the bin is updated in the cloud, and it is indicated to the authorities and to the garbage collectors using developed IoT based app. This will minimize the working hours and save money.

THE PRELIMINARY DESIGN OF WATER QUALITY MONITOR SYSTEM FOR THE ECOLOGICAL POND BASED ON LORA WAN

ABSTRACT- In the modern aquaculture, diverse environmental sensing in the application of intelligent monitoring system is receiving more and more attention. To monitor the water quality of aquaculture ponds, we design and develop a water quality monitoring system based on LoRaWAN. LPWAN (Low Power Wide Area Network) occupies an important place in IoT communication technology. LoRa (Low Range) is also one of the technologies, with the advantages of long distance and low power consumption which can extend the service life of power supply equipment.A system realizes remote collection and data storage of multi-sensor processor information (temperature, pH, conductivity and turbidity levels).

SMART CHARGING STATION FOR ELECTRIC CARS USING SOLAR POWER

ABSTRACT- This project is tied in with working up a device to charge Electrical vehicles on Solar based influence framework and support online cash instalments for versatility. The purpose behind the endeavor is to decide the issues glanced in charging issues of electric vehicles transportation divisions. Wrong anticipation utilizing remote payments is one of the points of the present investigation. There are a couple of watching structures, for instance, tesla charging stations, etc. We give the live IoT access to our charging stations. We in like manner give battery status notice to the client by giving vehicle charging notification which can continue refreshing the client of their vehicle condition. It moreover gives the live area of the vehicle careful charging station areas and every single other detail to the office, along this giving the security alternatives to the vehicle's proprietors and the ensuring the security of the proper installments.

WASTE CONTAMINATION IN WATER – A REAL TIME WATER QUALITY MONITORING SYSTEM USING IOT

ABSTRACT-Groundwater is one of the major sources of drinking water in most of the countries. Dumping of waste in landfill leads to the contamination of the underground water, which is termed as Leachate, which contains harmful organic and inorganic matters which makes the underground water unusable for consumption. This project proposes an IoT based water quality monitoring system and alerts the concerned authorities if the consumed groundwater is polluted. The proposed system uses various sensors. Node MCU and is integrated with cloud infrastructure for database storage and for real-time dashboard maintenance of the measured parameters.

AUTOMOBILE BLACK BOX SYSTEM FOR ACCIDENT ANALYSIS

ABSTRACT- Automobiles and computing technologies are creating a new level of data services in vehicles. The Automobile Black Box has functions similar to an airplane black box. It is used to analyze the cause of vehicular accidents and prevent the loss of life and property arising from vehicle accidents. This paper proposes a prototype of an Automobile Black Box System that can be installed into vehicles. The system aims to ac hieve accident analysis by objectively tracking what occurs in vehicles. The system also involves enhancement of security by preventing tampering of the Black Box data. In addition, the Black Box sends an alert message to a pre-stored mobile number via Short Message Service (SMS) in the case of occurrence of an accident

SMART WIRELESS POWER TRANSMISSION SYSTEM FOR AUTONOMOUS EV CHARGING

ABSTRACT: This paper presents a novel localisation method for electric vehicles (EVs) charging through wireless power transmission (WPT). With the proposed technique, the wireless charging system can self-determine the most efficient coil to transmit power at the EV's position based on the sensors activated by its wheels. To ensure optimal charging, our approach involves measurement of the transfer efficiency of individual transmission coil to determine the most efficient one to be used. This not only improves the charging performance, but also minimises energy losses by autonomously activating only the coils with the highest transfer efficiencies. The results show that with the proposed system it is possible to detect the coil with maximum transmitting efficiency without the use of actual power transmission and comparison of the measured efficiency.

AIRPORT BIOCRYPTIC EMBARKATION SYSTEM

ABSTRACT- Airport security system is mandatory in all developing and developed countries. The major threat to any country's economy, health and development is targeted and transported via airports which are evident from the past historical examples. The main objective of this paper is to develop a smart IOT based surveillance systems that is implemented in airport in smart screening without causing any unpleasant disturbances to the passengers. This paper makes use of the recently developed smart sensors, controller and Wi-Fi is connected via IOT and cloud and a remote station to effectively secure the airport area and overcoming all the real time challenges. Biometric systems are increasingly replacing traditional password and boarding passes authentication systems .

ALIVE SOLDIERS DETECTION IN WAR FIELDS AND SOLDIER HEALTH MONITORING SYSTEM USING IOT

ABSTRACT- In this project, a new approach for detecting alive humans in destructed environments using a mobile robot is proposed. Human detection in an unmanned area can be done only by an automated system. Alive human body detection system proposed a monitoring system using PIR sensor to analyze the conditions of human body. In order to detect a human body, a robot must be equipped with a specific set of sensors that provide information about the presence of a person in the environment around. This work describes a robot for rescue operations. The proposed system uses an PIR sensor in order to detect the existence of living humans. Additional, other sensors include temperature and gas detector to analyse the surrounding condition. This approach requires a relatively small number of data to be acquired and processed during the rescue operation. This way, the real-time cost of processing and data transmission is considerably reduced. This system has the potential to achieve high performance in detecting alive humans in devastated environments relatively quickly and cost effectively.

DEVELOPMENT OF AUTOMATED GRID MONITORING AND CONTROL SYSTEM USING IOT

ABSTRACT- The failure in power grids due to fluctuating voltages or improper maintenance in one system leads to breakdown in the adjacent systems which would lead to a great economic loss. The process of fixing this would require manual repairing or switching operation from the main system to an alternative system. This would require an automated process to avoid casualities and health issues since the workers deal with high voltages and radiations while fixing the issues. The proposed system is designed to perform multiple operations such as monitoring voltage, current, temperature and humidity using various sensors which is recorded in a computerised device. Also, it includes unmanned switching of load between two different sources when one system fails.

ELECTRIC VEHICLE DATA ACQUISITION SYSTEM

ABSTRACT- A data acquisition system for electric vehicles is presented. The system connects to the On-board Diagnostic port of newer vehicles, and utilizes the in-vehicle sensor network, as well as auxiliary sensors, to gather data. Data is transmitted continuously to a central database for academic and industrial applications, e.g. research in electric vehicle driving patterns, vehicle substitutability analysis and fleet management. The platform is based on a embedded computer running Linux, and features a high level of modularity and flexibility. The system operates independently of the make of the car, by using the On-board Diagnostic port to identify car model and adapt its software accordingly.

LOW-COST MECHANICAL VENTILATOR FOR PATIENT MONITORING FOR COVID-19 PATIENTS

ABSTRACT: This paper shows the construction of a low-cost, open-source mechanical ventilator. The motivation for constructing this kind of ventilator comes from the worldwide shortage of mechanical ventilators for treating COVID-19 patients—the COVID-19 pandemic has been striking hard in some regions, especially the deprived ones. Constructing a low-cost, open-source mechanical ventilator aims to mitigate the effects of this shortage on those regions. The equipment documented here employs commercial spare parts only. This paper also shows a numerical method for monitoring the patients' pulmonary condition. The method considers pressure measurements from the inspiratory limb and alerts clinicians in real-time whether the patient is under a healthy or unhealthy situation. Experiments carried out in the laboratory that had emulated healthy and unhealthy patients illustrate the potential benefits of the derived mechanical ventilator.

AN EYE ON HYDROPONICS: THE IOT INITIATIVE

ABSTRACT-The need for the soil in agriculture is crucial and its role is prominent. But the process o f urbanization takes away the land in larger areas. So continuous cropping on the rest of the land makes the soil to lose it's fertility as all the nutrients are consumed. In quest of an alternative solution, we have gone through the Hydroponics. In this paper, we integrate IoT into our solution and also reduce power consumption by utilizing Solar Energy. Hydroponics is a special type of farming where the growth of plants takes place in a soil-free medium, provided with a blend of water along with nutrients. As an alternative for soil, we are here using Rockwool as support for plants to withstand.

WOMEN SAFTEY USING IOT

ABSTRACT- The crimes against women have been rising significantly and often hear about molestation, eve-teasing and rape cases in the public places of the society. The security of women is the most important concern these days and to build a safety device to act as a rescue and to prevent from harm at the time of hazard is highly necessary especially for women. In this paper, a smart device for women's safety which automates the emergency alert system by using pressure sensor, pulse-rate sensor and temperature sensor to detect a possible atrocity automatically using outlier detection is proposed. This system detects and sends the alerts for the dear ones with the location coordinates of the women without the requirement of her interaction in critical times. It sends an emergency message automatically to the relatives and nearby police station.

TRANSMISSION LINE FAULT MONITORING AND IDENTIFICATION SYSTEM BY USING INTERNET OF THINGS

ABSTRACT- The fault location detection has been a goal of power system engineers, since the creation of distribution and transmission systems. Quick fault detection can help protect the equipment by allowing the disconnection of faulted lines before any significant damage of the equipment. The accurate fault location can help utility personnel remove persistent of the faults and locate the areas where the faults regularly occur, thus reducing the occurrence of fault and minimize the time of power outages. As a result, while the fault location detection schemes have been developed in the past, a variety of algorithms continue to be developed to perform this task more accurately and more effectively. The detection and location of faults on power transmission lines is essential to the protection and maintenance of a power system.

I
IoT BASED ANTI-POACHING ALARM SYSTEM FOR TREES IN FORESTS

ABSTRACT- Now-a-days, there are many incidents happening about smuggling of trees like Sandalwood which are very expensive and rare in nature.Smuggling of sandalwood has created many law and order problems in India. Also, India's economy has been greatly effected through these incidents. The main objective of our project is to deploy a system which can be used to restrict these kind of incidents like smuggling of sandalwood trees.This project designuses three different sensors namely, temperature sensor(to detect forest fires),Mems accelerometer(to detect the inclination of tree which is being cut),sound sensor(for effective detection of illegal logging of trees i.e.the sounds generated while axing the tree is sensed).Data generated from these three sensors is continuously monitored by the forest officials with the help of BLYNK IOTserver and app.

DESIGN OF AN IOT-BASED MOUNTAINEERING TEAM MANAGEMENT DEVICE USING KALMAN FILTER ALGORITHM

ABSTRACT- The heart rate and body temperature for the mountaineering user is very import to detect their life risk factor. Amidst the emergence of wearable and Internet of Things (IoT) devices, exerciseand leisure-related wearable devices have exhibited the most growth in popularity. While many exerciserelated wearable devices are available, few have been designed for group interactions. This paper proposes an IoT-based mountaineering team management device to effectively assist mountaineering guides in leading mountaineering teams. The device can monitor the real-time physiological status and coordinate of each team member, and uploads the information to the cloud service platform via the fourthgeneration (4G) mobile Internet.
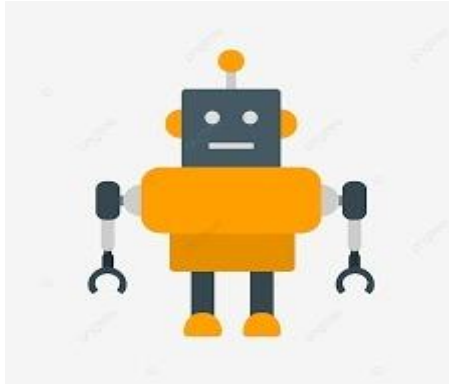
IEEE TRANSCATIONS ON ROBTICS PROJECTS 2022-2023

3-SURVIVOR: A ROUGH TERRAIN NEGOTIABLE SEARCH AND SURVEILLANCE MOBILE ROBOT WITH REAL-TIME OBJECT DETECTION

ABSTRACT-This paper presents the design and integration of 3-Survivor: a rough terrain negotiable search and surveillance robot. In 3-Survivor, a modified double-tracked chained wheel with a caterpillar mechanism incorporates the body design. A passive adjustment is established in the body balance that enables the front and rear body to operate in excellent synchronization. The robot is remotely operated using the web portal, and the entire operation is telecast with a Raspberry Pi Sony IMX477R camera. An object detection module (ODM) is incorporated with live streaming to integrate the surveillance system. A learning-based EfficientDet-D7 network is optimized for precise and versatile target recognition and interaction. The D7 includes a computationally efficient bi-directional feature pyramid network (BiFPN) as the backbone network that allows multi-scale feature fusion. A custom dataset containing 5000 images of indoor-outdoor objects is developed to train and validate the performance of the SAR tasks. A very impressive 56.7 mAP is acquired from this proposed D7 model.

IOT AND WIRELESS SENSOR NETWORK BASED AUTONOMOUS FARMING ROBOT

ABSTRACT- Internet of things (IoT) is an emerging technology that shows the future of computing and networking. Agricultural monitoring from a remote location is one of the essential applications of IoT based wireless sensor networks. The IoT based wireless sensor network faces problems due to the dynamic changes in the environment. The number of required sensor nodes increases for monitoring of the vast area. By introducing mobility of all nodes in the IoT based wireless sensor network, we can decrease the number of nodes and thus reducing the cost of the overall system. In this research project, an IoT based mobile robotics network is proposed for farming applications. Master and slave robots incorporate the wireless sensor network and are connected via the NRF protocol for reliable sharing of sensor data.

DESIGN AND ANALYSIS OF IOT-BASED INTELLIGENT ROBOT FOR REAL-TIME MONITORING AND CONTROL

ABSTRACT- Nowadays development of IoT applications with robotics is an ongoing revaluation. This paper mainly focuses on the security, remote surveillance, and monitoring of our homes done by the surveillance robots. Remote surveillance has become the most important research topic over the past decade. Through this paper we put forward a surveillance robot that can be used in domestic areas and many other places. Robots are becoming important in our day to day life activities as they reduce the human labor and probability of error. We can control robots manually or they can be automatic based on the need of people. This paper focuses on design and implementation of mobile robot for obstacle detection and avoidance in a real-time basis.

# AN ULTRA-VIOLET STERILIZATION ROBOT FOR DISINFECTION

ABSTRACT-Ultraviolet (UV) sterilization technology is used to aid in reduction of microorganisms that may remain on the surfaces after a standard cleaning to the minimum number. Our research team developed a UV robot or UV bot for sterilization in an operating or a patient room. Our UV both has three 19.3- watt of UV lamps mounted on top of the UV bot platform covering 360 direction. Our UV bot employed an embedded system based on a Raspberry Pi to aid in navigation to avoid obstacles. In addition, we tested the effectiveness of eliminating Staphylococcus Aureus bacteria sample plates located 35 cm away from our UV bot to be within 8 seconds after UV light exposure.

DESIGN OF IOT BASED MULTIFUNCTIONAL CAMOUFLAGE MILITARY ROBOT

ABSTRACT- In this modern era, huge capital of the country has been spent for the defence field to deploy primitive and high security measures and safeguard the border security forces from the trespassers. Some defence organizations utilizes robotics in the defence field and the efficiency of robots are very high when compared to the human forces. Camouflage Robot plays a vital role in saving human loses as well as the damages that occur during disasters. Thus, it will gain more importance in the upcoming era. The robot basically consists of a vehicle mounted with one camera, which captures the images and detects colour accordingly as a part of the camouflaging feature. The robot can quietly enter into enemy area and send information via camera to the controller.

MULTI-FUNCTIONAL PERSONAL ASSISTANT ROBOT USING RASPBERRY PI AND CORAL ACCELERATOR

ABSTRACT-In the present day scenario, a human-like personal assistant robot would ease man's life with his day-today activities and aid him to make up for the lost time spent in inefficient means of calculations and other dependencies. This research work stirs plans to develop a personal assistant robot that has following features. The robot can perceive normal objects that are seen in day-to-day lives and can pass on the information as voice messages which can significantly help old and outwardly impeded individuals. It can read out text messages from an image which again can significantly help old and outwardly impeded individuals. It acts as an empathy robot by perceiving facial feelings and is programmed to play some music according to the detected emotion of the user.
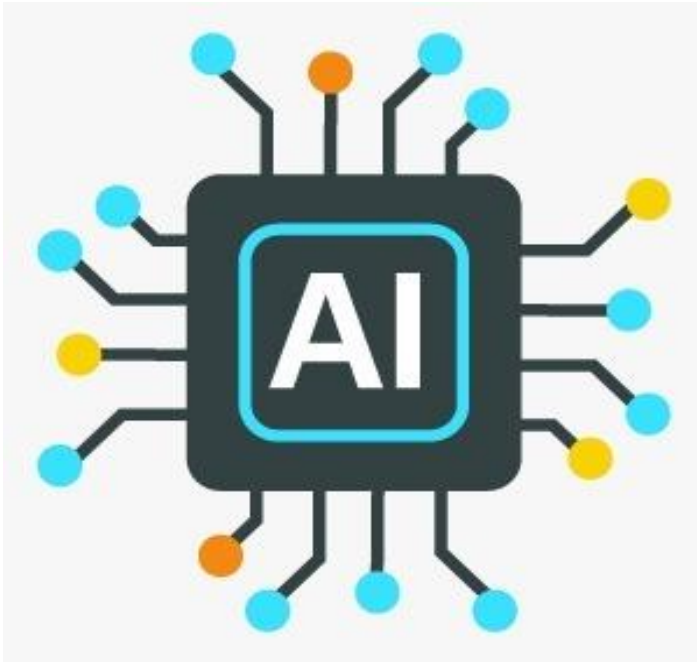
IEEE TRANSCATIONS ON ARTIFICAL INTELLEGENCE PROJECTS 2022-2023

HAWK-EYE: AN AI-POWERED THREAT DETECTOR FOR INTELLIGENT SURVEILLANCE CAMERAS

ABSTRACT- With recent advances in both AI and IoT capabilities, it is possible than ever to implement surveillance systems that can automatically identify people who might represent a potential security threat to the public in real-time. Imagine a surveillance camera system that can detect various on-body weapons, masked faces, suspicious object. This system could transform surveillance cameras from passive sentries into active observers which would help in preventing a possible mass shooting in a school, stadium or mall. In this paper, we present a prototype implementation of such systems, Hawk-Eye, an AI-powered threat detector for smart surveillance cameras. Hawk-Eye can be deployed on centralized servers hosted in the cloud, as well as locally on the surveillance cameras at the network edge.

SMART BORE WELL CHILD RESCUE SYSTEM THROUGH WIRELESS MONITORING USING ARTIFICIAL INTELLIGENCE

ABSTRACT- India is horticulture-based nation, farmers or ranchers essentially depend by and large upon groundwater for their fundamental water system necessities. Ensuing to the essential prerequisite yielding of the water, the drag wells would have commonly left uncovered. So that, most by a wide margin of children adventitiously pushes toward the well and falls into it, which is the principal reason for these misery debacles eventually. Lately, numerous cases have been accounted for of kids getting caught in bore wells which take life of the kids and are a bad dream for guardians. There is a clear requirement for building up a security and salvage framework for kids to safeguard from bore well. numerous odds of human mistake.

REVAMPING SUPERMARKETS WITH AI AND RSSI

ABSTRACT- Super markets are mushrooming in every city as shopping has became a daily activity. An average person goes to shopping 1.6 times in a week and spends approximately 40 minutes there per visit. This sum up to around 60 hours every year. Around 15 of the time spent in the supermarkets is wasted due long billing queues and weighting for the turn. On public holidays and special discount days, there will be a significant upsurge in the number of customers. With the present system it sometimes becomes difficult to manage the rush. The traditional way of shopping in which people put the articles in the shopping cart and wait in the long queues at the billing counter is being followed pretty much since the opening of first supermarket.

SMART SERICULTURE SYSTEM BASED ON IOT AND IMAGE PROCESSING TECHNIQUE

ABSTRACT- The following paper gives a Sharp view of technological innovation in underperforming agricultural branches such as sericulture, and it explains the system and techniques to be employed to increase the quality and productivity in the sericulture. In this brief communication, thepaper will present how the complicated process such as monitoring the environmental parameters such as humidity, temperature and rain also with the health of the silkworm. Simultaneously improving quality of silk by controlling environmental parameters and proper aggregation of cocoons are done. All these operations are achieved by using Arduino aided internet of things (IoT), image processing technique and smart sensors.

ARTIFICIAL INTELLIGENCE BASED SMART DOOR WITH FACE MASK DETECTION

ABSTRACT- In this pandemic situation, health plays an important role in everyone's life. Most of the people are not aware of preventing themselves and their surroundings from this pandemic. Face mask is essential to prevent ourselves and others. So, people are in need to wear face mask regularly. People who visit home won't wear mask due to their unawareness which may affect people. People may not know if someone visits their home when they are not there. AI based smart device (Raspberry pi with AI model with camera) is proposed in this project which identifies whether a person is wearing face mask and gives us an alert message (via mobile app). This device is integrated with a mobile app. Mobile app identifies if someone enters home when people are not physically present in their home.

IEEE TRANSCATIONS ON EEE PROJECTS 2022-2023

LATEST ELECTRICAL AND ELECTRONICS PROJECT LISTS(EEE)

ARTIFICIAL INTELLIGENCE AND AUGMENTED REALITY DRIVEN HOME AUTOMATION

ABSTRACT- Living in an age of rapid digitization where technology has infiltrated every field there is, and our homes are no different. Internet of Things, Artificial Intelligence and Augmented Reality are in the boom, now more so than ever, highly popular among both giant corporations and aspiring young engineers, especially because of the continuous experimentations that are being done and the success it has been garnering. In this project, Raspberry Pi is the heart of the setup, to which various electronic components are connected. By giving voice-activated commands, you can remotely operate them with just the use of your smart phone, this setup also includes a Gas sensor which will effectively detect any leakage of cooking gas and promptly inform the residents of the house with a voice alert and turns on the exhaust automatically; Doors that can open or shut as and when you wish. Taking this to a whole another level is the use of Augmented Reality by Image Processing—through which we are able to simply point our smart phone at an object, which will be processed, recognized, matched to the database and correspondingly be able to perform either of the toggle operations. Our major goal was aimed at making this project accessible to everybody despite any physical shortcomings or impediments.

LORAWAN INTERNET OF THINGS NETWORK PLANNING FOR SMART METERING SERVICES IN DENSE URBAN SCENARIO

ABSTRACT- Optimization of energy usage is essential to minimize the waste of energy usage. Smart Metering is a solution to resolve this problem. It can measure, collect, analyze energy distribution and its consumption, and communicate with metering devices on schedule and on-demand, i.e., for electricity, water, and gas services. However, selecting the right Internet of Things (IoT) network connectivity to deploy Smart Metering services is still the main challenge, especially for the dense urban setting. LoRaWAN is one of the most popular Low Power Wide Area technologies consider as a suitable IoT network connectivity for Smart Metering because LoRaWAN has a long battery life, using unlicensed frequency and low cost of deployment. In this research, the LoRaWAN IoT network planning to deliver Smart Metering services was conducted in Jakarta City, as representative of the dense urban setting. The network planning methods are using capacity and coverage analysis as well as radio network planning simulation.

SMART GRID ROBOT EXCLUSIVELY DESIGNED FOR HIGH POWER TRANSMISSION LINES

ABSTRACT- India relies heavily on electric power systems for industrial as well as home utilization. Unfortunately, the electrical power distribution systems are inefficient causing wastage of about 30% during transmission from power plants to the end point. Our project revolves around the creation of a mobile device designed to move along the high power transmission lines continuously analyzing varying parameters including rate of power loss during transmission of energy from the power plants to the homes of the consumers. In case of any malfunctioning or abnormality, the device intimates the people responsible through IoT. Parameters like GPS, temperature and distance are measured and solar panel is used by coupling with battery making the device environment-friendly.

A SMART MOBILITY PLATFORM FOR ELECTRIC VEHICLES WITH EVENT PROCESSING

ABSTRACT- Electric Vehicles (EV) are increasingly becoming the mainstream for the automotive industry. EV drives research in many diverse areas such as charging, battery performance, and autonomous driving. The volume, velocity and variety of data and events generated by a typical EV is very large. In this paper, we describe a hybrid architecture that consists of embedded and cloud-based modules to monitor and process EV event in near real-time, which is developed as a part of ITEA2 Smart M2M Grids Project.The platform has a custom designed event processing hardware with network connectivity and module adapters to receive/transmit real time data such as those coming from the automotive Control Area Network (CAN) Bus. The platform includes software to apply rules and policies on real-time events. In this paper, we demonstrate its use with a simulation that includes a risk assessment scenario to check the reachabilities of nearest charging stations based on the current state of EV and observe the performance results.

MONITORING OF HIGHWAY WIND POWER PARAMETER THROUGH IOT AND AUTOMATIC CONTROLLING HIGHWAY LIGHT

ABSTRACT- The objective of the project is to design a wind turbine to recapture wind energy from vehicles on the highway. Wind energy is considered the fastest growing clean energy source however; it is limited by variable natural wind. Highways can provide a considerable amount of wind to drive a turbine due to high vehicle traffic. This energy is unused. Extensive research on wind patterns is required to determine the average velocity of the wind created by oncoming vehicles. The wind turbines will be placed on the medians therefore fluid flow from both sides of the highway will be considered in the design. Using all of the collected data, existing streetlights automatically control and monitoring the parameter through the IOT from the base station on the medians can be fitted with these wind turbines. Additionally, since the wind source will fluctuate, a storage system for the power generated will be designed to distribute and maintain a constant source of power. Ideally, the turbine can be used globally as an unlimited power source for streetlights and other public amenities.

IOT BASED ENERGY OPTIMIZATION IN BUILDING MANAGEMENT SYSTEMS

ABSTRACT- In recent years, due to the unnecessary wastage of electrical energy in residential buildings, the requirement of energy optimization and user comfort has gained vital importance. In the literature, various techniques have been proposed addressing the energy optimization problem. The goal of each technique is to maintain a balance between user comfort and energy requirements, such that the user can achieve the desired comfort level with the minimum amount of energy consumption. Researchers have addressed the issue with the help of different optimization algorithms and variations in the parameters to reduce energy consumption. To the best of our knowledge, this problem is not solved yet due to its challenging nature. This paper presents an advanced Internet of Things (IoT) based system for intelligent energy management in buildings. A semantic framework is introduced aiming at the unified and standardized modeling of the entities that constitute the building environment. Suitable rules are formed, aiming at the intelligent energy management and the general modus operandi of Smart Building. In this context, an IoT-based system was implemented, which enhances the interactivity of the buildings' energy management systems. Using wifi and ESP 32 .

SMART WIRELESS POWER TRANSMISSION SYSTEM FOR AUTONOMOUS EV CHARGING

ABSTRACT- This paper presents a novel localisation method for electric vehicles (EVs) charging through wireless power transmission (WPT). With the proposed technique, the wireless charging system can self-determine the most efficient coil to transmit power at the EV's position based on the sensors activated by its wheels. To ensure optimal charging, our approach involves measurement of the transfer efficiency of individual transmission coil to determine the most efficient one to be used. This not only improves the charging performance, but also minimises energy losses by autonomously activating only the coils with the highest transfer efficiencies. The results show that with the proposed system it is possible to detect the coil with maximum transmitting efficiency without the use of actual power transmission and comparison of the measured efficiency.

IOT BASED SMART COLD STORAGE SYSTEM FOR EFFICIENT STOCK MANAGEMENT

ABSTRACT- In the era of smart technology Internet of things interconnect real world sensors to the internet. Today's cold storages are far more than just a facility to store inventory. In this paper we propose a "smart cold storage" by leveraging the latest supply chain technology and the IOT, which will serve as a hub to improve the efficiency and speedup the process throughout the entire supply chain. This proto type incorporates an IOT based smart cold storage that interacts with the items stored within, collects the information about them and process this information into relevant data. The objects placed inside the smart cold storage will be detected and identified using a web camera. Load cell with HX711 IC driver is used to calculate the Weight of the objects. Raspberry Pi-3 B+ collects data from the ARDUINO and analyze the data using python programming and transmit the stock information to the users through mobile application. It gives an alert to the users to place an order if the weight falls below the threshold value, i.e If there is any shortage or out of stock of the objects. LM35 IC Temperature sensor is used to monitor the Temperature of the storage system.

IMPLEMENTATION OF 6LoWPAN AND CONTROLLER AREA NETWORK FOR A SMART HYDROPONICS SYSTEM

ABSTRACT- Hydroponics is the practice of growing plants and crops in soilless culture. It is becoming more prevalent nowadays because of decreasing available land due to urbanization, and the various advantages it has as compared to soil-based farming. To study and optimize the various factors that affect plant growth in hydroponics set-ups (such as ambient temperature, light intensity, humidity, etc.), a hybrid sensor network system, with both wireless (6LoWPAN) and wired (CAN Bus) components, was proposed. The proposed system was then implemented using off the- shelf devices such as the CC2650 MCU, MSP432 launch pad, Digilent PMOD CAN, and the Raspberry Pi 2. The total number of 6LoWPAN nodes in the intended application setup was shown to be reduced by 87.26% compared to fully-wireless setup. The system was shown to be functional and the packet drop rate when time interval between messages is 800ms drops to almost 0%. An initial design for the visualization of the web application was also presented.

FABRICATION OF VOICE OPERATED MOTORISED EXO SKELETON ARM

ABSTRACT- Exoskeleton are as of now being investigated for help of those with weak limbs. A great deal of paralyzed individuals with motor disabilities are confronting challenges. This paper is to develop a model undertaking of voice worked exoskeleton arm utilizing solar power going about as a help gadget for paralyzed individuals. It audits the upper exoskeleton arm with expanded degrees of freedom (DOF), voice commands and solar power. The exoskeleton arm makes no falsification of supplanting the lost arm, however attempts to supplant a few capacities that were lost. The gadget can be worn according to will and can be evacuated when not needed. A non attractive material is utilized for the manufacture and will attempt to overcome the confinements in decreased expense and weight.

CONVOLUTIONAL NEURAL NETWORK BASED WORKING
MODEL OF SELF DRIVING CAR - A STUDY

ABSTRACT- A self-driving car is a vehicle that senses its environment and navigates without human intervention and is a high research topic in computer vision that involves various subtopics and need to be deeply reviewed. To accomplish this, our paper discusses hardware and software components of a self driving car that includes usage of technologies such as Deep learning techniques namely Convolution Neural Networks, YOLO algorithm, Hough Transform Algorithms, Transfer Learning, Canny Edge Detection algorithm. Software components such as Arduino IDE, Raspberry Pi Cam Interface, Open CV, Tensor Flow, Carla simulators and hardware components such as Raspberry Pi 3, Arduino UNO, Pi Camera, sensors like radar, lidar are used to build a prototype of a self driving car.

THE PRELIMINARY DESIGN OF WATER QUALITY MONITOR SYSTEM FOR THE
ECOLOGICAL POND BASED ON LORAWAN

ABSTRACT- In the modern aquaculture, diverse environmental sensing in the application of intelligent monitoring system is receiving more and more attention. to monitor the water quality of aquaculture ponds, we design and develop a water quality monitoring system based on lorawan. lowan (low power wide area network) occupies an important place in iot communication technology. lora (low range) is also one of the technologies, with the advantages of long distance and low power consumption which can extend the service life of power supply equipment. in this paper, a system realizes remote collection and data storage of multi-sensor processor information (temperature, ph, conductivity and turbidity levels). the lora gateway and raspberry pi are implemented to transfer the aquaculture field parameters into the database and presented on the website.

DESIGN AND IMPLEMENTATION OF REAL TIME
MONITORING OF BRIDGE USING WIRELESS TECHNOLOGY

ABSTRACT- The bridges get damaged due to aging or damage due to natural calamities, the people will remain unnoticed of it. Then the bridges will be a danger to travel as it can collapse anytime and leads to disaster. So, continuous bridge checking must be done for better bridge health. For solving this problem, a design for continuous bridge monitoring has been proposed using wireless IoT technology. This proposed design helps in monitoring bridges and can also be applied for flyovers. The design consists of monitoring devices as sensors like load sensor, water level sensor, vibration sensor and tilt sensor which are interfaced with communication devices. For storing the status of a bridge, a database is used. The processor is being used for calculation and analyzing the data which is received by the monitoring devices.

IOT BASED ANTI-POACHING FIRE ALARM SYSTEM FOR TREES IN FOREST

ABSTRACT- All around the world there are numerous occurrence about stealing of trees like sandal, sag wan, timber etc. These trees are expensive and pitiful. They are utilized in medicine, beautifying agent, furniture etc. To limit their sneaking and to spare woodland around the world some preventive estimates should be conveyed and sometimes in forest, fire broke out which cause destruction to wildlife animal and also tree so it is necessary to control fire as soon as possible. For this we have built up a framework which can be utilized to limit sneaking. The structure framework utilizes three sensor i.e. tilt sensor, vibration sensor, flame sensor to recognize the tendency of tree when its being cut, to detect unlawful logging and to detect fire in forest respectively. And with the help of IOT model information being sent to Forest authorities.

IOT ENABLED DATA ACQUISITION SYSTEM FOR ELECTRIC VEHICLE

ABSTRACT- Electrical Vehicles (EV) are being embraced in the automobile sector in wake of increasing awareness regarding the environmental hazards caused by the toxic emissions caused by petroleum fueled vehicles. The workhorse of the EV is a high-current rating BLDC motor, fed from a secondary battery. Battery parameters and other related EV electrical observables have to be continually monitored, for multiple purpose related to research, industrial concerns, etc. With a futuristic vision for automated EVs, the scope of data acquisition and curation becomes even more crucial for proper upkeep of EVs. The proposed platform utilizes Internet of Things (IoT) sensors' data acquisition and cloud platform ThingSpeak. The IoT sensors collect data sends to Cloud Platform through ESP2866(Wi-Fi Module) connected to sensors monitored by Laptop/smart phone. Thing Speak - a MATLAB based cloud platform has been used for graphical data display, and simplified analysis. The proposed IoT based Cloud Platform Data Acquisition is meant to improve scalability, safety, reliability and optimal operation of complex EV System.

AN ULTRA VIOLENT STERILIZATION ROBOT FOR DISINFECTION

ABSTRACT- Ultraviolet (UV) sterilization technology is used to aid in reduction of microorganisms that may remain on the surfaces after a standard cleaning to the minimum number. Our research team developed a UV robot or UV bot for sterilization in an operating or a patient room. Our UV bot has three 19.3- watt of UV lamps mounted on top of the UV bot platform covering 360 direction. Our UV bot employed an embedded system based on a Raspberry Pi to aid in navigation to avoid obstacles. In addition, we tested the effectiveness of eliminating Staphylococcus Aureus bacteria sample plates located 35 cm away from our UV bot to be within 8 seconds after UV light exposure.

AN INTERNET OF THINGS BASED SMART WASTE MANAGEMENT SYSTEM USING LORA AND TENSORFLOW DEEP LEARNING MODEL

ABSTRACT- Traditional waste management system operates based on daily schedule which is highly inefficient and costly. The existing recycle bin has also proved its ineffectiveness in the public as people do not recycle their waste properly. With the development of Internet of Things (IoT) and Artificial Intelligence (AI), the traditional waste management system can be replaced with smart sensors embedded into the system to perform real time monitoring and allow for better waste management. The aim of this research is to develop a smart waste management system using LoRa communication protocol and TensorFlow based deep learning model. LoRa sends the sensor data and Tensorflow performs real time object detection and classification. The bin consists of several compartments to segregate the waste including metal, plastic, paper, and general waste compartment which are controlled by the servo motors. Object detection and waste classification is done in TensorFlow framework with pre-trained object detection model. This object detection model is trained with images of waste to generate a frozen inference graph used for object detection which is done through a camera connected to the Raspberry Pi 3 Model B+ as the main processing unit.

SMART WATER QUALITY AND MONITORING OF MOTOR IN BORE WELL BY IOT

ABSTRACT- On account of augmentation in urbanization, brisk budgetary improvement, an ever-expanding number of troublesome issues rise. Water defilement and groundwater destroying are the critical concern for all people. The water quality boundaries that are routinely checked are pH, turbidity, shading, conductivity, broke down oxygen, chloride, sulfate, smelling salts, nitrogen, nitrate, nitrite, regular carbon, phosphate, distinctive metal particles, and so forth. The customary methodology for water quality testing squanders an inordinate measure of solidarity and material resources and durable separating, the developing of preliminary equipment and various issues. Sensors are a device which can deal with all of these issues. It can without much of stretch, exchanges and controls the signs. In light of straightforwardness utilization of the sensors, observing of water quality turns out to be more basic.The structure executes mechanization, knowledge and arrangement of water and engine. The most conventional strategy for water quality testing is to accumulate tests from the wellspring of water and a short time later sending the example to the exploration office for testing and dissecting the idea of water.

MITIGATING AND MONITORING SMART CITY USING INTERNET OF THINGS

ABSTRACT- The present trends in smart world reflects the extensive use of limited resources through information and communication technology. The limited resources like space, mobility, energy, etc., have been consumed rigorously towards creating optimized but smart instances. Thus, a new concept of IoT integrated smart city vision is yet to be proposed which includes a combination of systems like noise and air loss monitoring, web monitoring and fire detection systems, smart waste bin systems, etc., that have not been clearly addressed in the previous researches. This paper focuses on developing an effective system for possible monitoring of losses, traffic management, thus innovating smart city at large with digitalized and integrated systems and software for fast and effective implementations. In our proposed system, a real time data analysis is performed. These data are collected by various sensors to analyze different factors that are responsible for such losses. The proposed work is validated on a real case study.

SMART CHARGING STATION FOR ELECTRIC CARS USING SOLAR POWER

ABSTRACT-This project is tied in with working up a device to charge Electrical vehicles on Solar based influence framework and support online cash instalments for versatility. The purpose behind the endeavor is to decide the issues glanced in charging issues of electric vehicles transportation divisions. Wrong anticipation utilizing remote payments is one of the points of the present investigation. There are a couple of watching structures, for instance, tesla charging stations, etc. We give the live IoT access to our charging stations. We in like manner give battery status notice to the client by giving vehicle charging notification which can continue refreshing the client of their vehicle condition. It moreover gives the live area of the vehicle careful charging station areas and every single other detail to the office, along this giving the security alternatives to the vehicle's proprietors and the ensuring the security of the proper instalments. This handles issues like cheating in the accusing stations of the proprietors and moreover records the clients charging log and past instalments. This system can in like manner be used in IT associations or work environments in their parking lot places.

ARDUINO BASED SMART ENERGY METER USING GSM

ABSTRACT- India faces the issue of energy theft at a very large scale. This paper introduces a system that removes human intervention in meter readings and bill generation thereby reducing the error that usually causes chaos and energy related corruption. The proposed system is implemented using a GSM shield module on microcontroller (Arduino) together with LDR sensor and relay. Existing metering system can be minutely modified to implement the proposed meter. The proposed scheme is to connect an LDR sensor with the blinking LED and send the data to microcontroller via GSM shield. RTC provides delay and acts an interrupt. The system includes a provision of sending an SMS to user for update on energy consumption along with final bill generation along with the freedom of load re-configuration via SMS.

ARDUINO BASED SOLAR POWERED BATTERY CHARGING SYSTEM FOR RURAL SHS

ABSTRACT- Solar Energy is a clean and renewable power resource and is on its way to high level penetration in the world electricity energy basket. However, there are several challenges associated with Solar Energy, like intermittency, limited dispatch ability and non-storability. Non-storability in a standalone PV system can be mitigated by incorporating energy storage devices like battery to store the electrical energy produced by solar panel when the sun is shining and to supply power when the sun is not shining. Batteries are, therefore, one of the critical component in the standalone PV system. And often the weakest link in PV systems as it influences the maintenance cost and reliability of the system. This paper involves designing and development of a low cost, microcontroller based, solar powered battery charging system. The developed system incorporates (i) MPPT (ii) Arduino Uno interface for battery management functions Arduino Uno interface , (iii) LCD display for information to the user about the system regarding the systems overall capacity to charge at any given time, (iv) data storage and incorporates Wi-Fi module for remote surveillance and uploading live data which can further be used for studying the health of the battery and help in maintenance of battery.

ELECTRIC FIELD AND ULTRASONIC SENSOR BASED SECURITY SYSTEM

ABSTRACT- This paper proposes an inexpensive solution towards the safe-keeping of the precious artifacts in museums, art galleries and private collections by employing an innovative non-contact based sensing mechanism clubbed with some of the previously used, well tested and efficient sensor-networks based on physical parameters. Such security standards are met by covertly deploying a low level electric field, with intent to perceive any intrusion by the trespasser for a visual or audio alert. Further, it explains how this system incorporates with other sensing devices such as ultrasonic sensors and the control units like microcontrollers and processors to deliver a fail-safe security system.

IMPLEMENTATION OF AUTOMATIC SOLAR TRACKING AND CLEANING SYSTEM

ABSTRACT- With the growing requirement of electricity and concern for the environmental impact of fossil fuels, implementation of eco-friendly energy sources like solar power is rising. The solar PV modules are generally employed in dust environments which is the case in tropical countries like India. The dust gets accumulated on the front surface of the module and blocks incident light from the sun. The power output reduces as much as by 30% if the module is not cleaned for a month. Accumulation of dust on even one panel in an array reduces their efficiency in energy generation considerably and need to keep the panel surface as clean as possible. In this paper, we designed a system which not only tracks sun but also clean module automatically. This mechanism required an LDR for tracking the sun. While cleaning the solar panels, a mechanism consists of sliding brushes has been developed.

INTELLIGENT STREET LIGHT SYSTEM FOR SMART CITIES

ABSTRACT-Energy consumption in metropolitan cities is increasing day by day. In every city, considerable amount of electricity is being used for the purpose of street lighting system. The conventional street lighting system has many disadvantages which can be due to the type of lights used or the way they are maintained and also this system requires manpower to control it. Automatic street lights refer to the public street lighting which works depending on the intensity of light obtained from the natural sources. In this we use some sensors that senses the light and sensor to sense the density of human in that location. This type of lighting is different from the conventional type of street lighting. In this we use a controller to control the street lights and sensors used. The sensor used here is the Light Dependent Resistor sensor (LDR). In this we also reduce the power consumption involved in the operation of light source. The key features of the system are easy to maintain, reliable, durable.

IOT BASED FIRE FIGHTING ROBOT

ABSTRACT-With the advancement in the field of mechanical technology, human interruption has become less and robots are being utilized for various works and for welfare of beings. Nowadays, fire mischances keep happenings frequently, cause danger to human life and property, also cause difficulties to fire fighters to save lives. In such cases, a firefighting robot is utilized to protect human lives, wealth, and surroundings from the fire mis happenings. This model is an IOT based firefighting robot that detects fire. After being informed the authorities can start visualizing the fire location and can communicate with people stuck with a help of an automatic receiver installed. Instructions can be given to the robot regarding its movement, turning on its water pump or carbon-dioxide pump depending on fire type through long distances. The fire type and carbon-monoxide level is known using the sensors installed that provide a graph to make the analysis.

WEATHER STATION FOR SOLAR PV POWER PLANT USING ARDUINO MEGA

ABSTRACT- The weather station is a major instrument installed at Solar Pv Power Plant. The real time performance of solar Pv Power Plants can be easily monitored with the help of the weather station. We can use weather data to get insights about palnt operations and possible ways to increase plant output. Weather station using Arduino mega which measured weather parameters like ambient air temperature ,relative humidity, air pressure, wind speed, wind direction solar radiation and rain. this weather station specifically developed for solar pv power plants where measurement of solar radiation, ambient air temperature and other weather parameters like air pressure, wind speed, wind direction and rain. The weather station has an onboard display facility to check all parameters and the same weather data are transmitted to the database server via a Wi-Fi network also stored the data in a memory card.

IOT BASED SOLAR POWERED AGRIBOT FOR IRRIGATION AND FARM MONITORING

ABSTRACT- Agriculture contributes to a major portion of India's GDP. Two major issues in modern agriculture are water scarcity and high labor costs. These issues can be resolved using agriculture task automation, which encourages precision agriculture. Considering abundance of sunlight in India, this paper discusses the design and development of an IoT based solar powered Agribot that automates irrigation task and enables remote farm monitoring. The Agribot is developed using an Arduino microcontroller. It harvests solar power when not performing irrigation. While executing the task of irrigation, it moves along a pre-determined path of a given farm, and senses soil moisture content and temperature at regular points. At each sensing point, data acquired from multiple sensors is processed locally to decide the necessity of irrigation and accordingly farm is watered. Further, Agribot acts as an IoT device and transmits the data collected from multiple sensors to a remote server using Wi-Fi link.

IEEE TRANSCATIONS ON BIO MEDICAL PROJECTS 2022-2023

LATEST BIO-MEDICAL PROJECT LIST

A CHILD-LEFT-BEHIND WARNING SYSTEM IN VEHICLES

ABSTRACT- The Technology is increasingly extended as the demand from various of usage is growing. Although many inventions has taken place, there are still the incidents that involve to death of children which has been left in vehicle. In this project, a child left behind in the vehicle when parents in a hurry forget to take their children alert system is provided. Also, a temperature monitoring is provided since thermoregulatory system of the child is weak when the doors are closed and there is no ventilation. For this, sensors are used along with GSM technology to alert the parents with message and call. A buzzer alert is produced to indicate that the child has been found. A USB camera is placed inside the system, so that parent can see/monitor the behaviour of the child, with the help of video through mobile phone. When someone (e.g. driver) is wantedly sitting inside car the entire system is switched off using a remote .this operation is done only when the vehicle is in off condition.

AI BASED PILOT SYSTEM FOR VISUALLY IMPAIRED PEOPLE

ABSTRACT- In today's world we live with visually impaired people struggling to do things at their full potential as they lack sight of the environment they live in. Affected individuals are often seen with slips, trips and fall over light obstacles on their walkway. To some extent, these blind people cannot relate to any objects they come across such as cars and people around. As technology evolves, there has been numerous attempts in solving this problems for the affected group of people and the proposed solutions need further improvement on how to effectively assist the affected individuals to navigate from one place to the other using real -time updates of their whereabouts. This paper presents the design of an intelligent walking stick for the blind using Raspberry Pi 3 b+ as a central micro controller, Ultrasonic sensors and Global Positioning System (GPS). The ultrasonic sensors are used for scanning the environment on walkway and sideways using sound waves at certain defined distances, and GPS module is used for real time directions and navigation. It also contains Bluetooth headset that is used for the audio navigation through the aid of interpretation from the real time feed of ultrasonic sensors and coordinates from the GPS, thereby giving the user the actual route and possible turns until the destination point.

DESIGN OF AN INTELLIGENT WHEELCHAIR FOR HANDICAPPEOPLE CONDUCTING BY BODY MOVEMENT

ABSTRACT— The increasing development of the biomedical system and smart technology has a major impact on smart devices. A smart wheelchair is one of them to be improved withthe blessings of this modern technology. In this paper, a smart wheelchair topology is proposed which is operated by a hand movement device and a smartphone. It comes with a lot of advanced features for people with disabilities who cannot walk or travel without the help of others. It is a hand-held wheelchairin which the gyro sensor and accelerometer are used and the Bluetooth phone control module is used to make it automatic. Users will wear a gesture system in their hands, and by moving the hand, the wheelchair will move forward, backward, left, andright. Arduino Mega and Arduino Nano are used as controllers.

AN IOT BASED PATIENT HEALTH MONITORING SYSTEM

ABSTRACT – Nowadays Health-care Environment has developed science and knowledge based on Wireless-Sensing node Technolgy oriented. Patients are facing a problematic situation of unforeseen demise due to the specific reason of heart problems and attack which is because of nonexistence of good medical maintenance to patients at the needed time. This is for specially monitoring the old age patients and informing doctors and loved ones. So we are proposing a innovative project to dodge such sudden death rates by using Patient Health Monitoring that uses sensor technology and uses internet to communicate to the loved ones in case of problems . This system uses Temperature and heartbeat sensor for tracking patients health. Both the sensors are connected to the Arduino-uno . To track the patient health micro-controller is in turn interfaced to a LcD display and wi-fi connection to send the data to the web-server(wireless sensing node).

AN IOT-CLOUD BASED HEALTH MONITORING WEARABLE DEVICE FOR COVID PATIENTS

ABSTRACT— The biggest crisis facing the world today is the corona virus or covid 19. Most of the people in the Indian nation are ordinary people. Many tests for Covid19 are expensive and beyond the reach of the average person. With the advent of the novel Corona Virus, every country now places great importance on health care. So this year, the best solution for such infectious diseases is the IoT-cloud based health monitoring system. The Internet is a newcomer to the field of research, especially in the field of healthcare. With the proliferation of usable sensors and therefore smartphones, this remote health care monitoring has developed at such a pace. IoT health monitoring helps to prevent the spread of the disease and to make an accurate diagnosis of the patient's health condition even if the doctor is far away. In this paper, the portable physiological checking framework will be displayed, which will be able to constantly check the patient's heart rate, temperature, blood oxygen level and blood pressure, as the main symptoms of corona virus are high fever, fatigue, and difficulty breathing.

DESIGN AND IMPLEMENTATION OF AUTOMATIC MEDICINE DISPENSING MACHINE

ABSTRACT—Medicine distribution for the people in the remote tribal areas is finding tedious task for the Government's, the Automatic medicine dispensing machine can aid to resolve the above mentioned requirement. This machine is equipped with some basic and emergency medication and can be refilled. It is a kind of computerized medicine storage system which can be easily accessed by the people in emergency without approaching any pharmacy, this machine can be easy installed in the remote areas like long highways, desert areas, remote tribal areas and rural areas. It is a microcontroller and motor based system to dispense the medicines when accessed by the user through an input event, the data pertaining to the medicine storage can be ascertained from the remote area and based on that information refilling the machine can be easily done.

FABRICATION OF VOICE OPERATED MOTORISED EXO SKELETON ARM

ABSTRACT- The exoskeleton is getting important to humans in many aspects such as power assist, muscle training, pneumatic functioning and rehabilitation. The research and development towards these functions are expected to be combined and integrated with the human intelligent and machine power, eventually becoming another generation of robot which will enhance the machine intelligence and human power. This paper reviews the upper extremity exoskeleton with different functions, actuators and degree of freedom (DOF). Among the functions, rehabilitation and power assist have been highlighted   In addition, the structure of exoskeleton is separated by its DOF in terms of shoulder, elbow, wrist and hand.

HEAD OPERATED ELECTRIC WHEELCHAIR

ABSTRACT- Currently, the most common way to control an electric wheelchair is to use joystick. However, there are some individuals unable to operate joystick-driven electric wheelchairs due to sever physical disabilities, like quadriplegia patients. This paper proposes a novel head pose estimation method to assist such patients. Head motion parameters are employed to control and drive an electric wheelchair. We introduce a direct method for estimating user head motion, based on a sequence of range images captured by Kinect. In this work, we derive new version of the optical flow constraint equation for range images. We show how the new equation can be used to estimate head motion directly. Experimental results reveal that the proposed system works with high accuracy in real-time. We also show simulation results for navigating the electric wheelchair by recovering user head motion.

HEALTH MONITORING AND PREDICTING SYSTEM USING INTERNET OF THINGS & MACHINE LEARNING

ABSTRACT- The Internet of Things (IoT) is one of the extraordinary advances for the not so distant future. Medical care and prosperity will get extraordinary advantages with the advancement of this innovation. This paper Donates Health Monitoring and predicting framework utilizing IOT portrays the assortment and interoperation of Patient information gathered from the sensors, The collected sensor data will incorporated through micro controller Arduino board for processing and the processed data is sent to remote server Thing Speak using ESP8266 Wi-Fi module. Thing Speak server is an IoT analytics platform that empowers us to imagine, and investigate live data streams in the cloud.

IOT BASED WEARABLE MONITORING STRUCTURE FOR DETECTING ABNORMAL HEART

ABSTRACT-Continuous monitoring of the Heart of high-risk patients may have a major role in preventing coronary heart disease in recent decades. If any change of the health condition from their normal is observed, then it will be transmitted it to a health center for early and further analysis and preventative actions. This saves the life of the patients from Heart attacks. Keeping this in view we intend to develop a wireless wearable (coat) ECG (to be implemented in IOT) for detecting abnormal heart conditions. It uses a three wireless electrodes, a specialist framework focused on Java and a web-enabled surveillance network. The first move is to set up a portable ECG system utilizing the electrodes of the product click into the body region of the patient.

INFANT CARE ASSISTANT USING MACHINE LEARNING, AUDIO PROCESSING, IMAGE PROCESSING AND IOT SENSOR NETWORK

ABSTRACT—With evolving times, working parents have become the norm in the emerging contemporary society. This has led to an increased demand in products that assist parents in taking care of their infants. This paper aims to showcase an Infant Care Assistant which employs IoT sensor network and Raspberry Pi to collect data on the current state of the infant and its surrounding and automation techniques for soothing a troubled infant. The assistant also includes cry detection unit based on support vector classifier, cry analysis unit based on random forest classifier and emotion recognition unit based on mini- Xception convolution neural network model.

IOT BASED BABY MONITORING SYSTEM
SMART CRADLE

ABSTRACT— This paper is centered around a plan to develop a IOT based Smart baby cradle that would assist the Parents with monitoring and keeping an eye on their infants regardless o f whether they are at home or at work and can identify each activity o f the infants from any inaccessible corner o f the world. It is a brilliant, imaginative and defensive Cradle System to support a newborn child in a productive manner. This framework considers all the moment subtleties that are needed for the consideration and insurance o f the Baby in the support. The plan o f keenness and development accompanies the utilization o f advancements which incorporate Internet o f Things (IOT), Modules like Raspberry Pi, Gas sensor, sound sensor and Temperature sensor, Cry Detecting Mechanism, camera surveillance, and much more. To recognize each and every movement o f Baby, various Sensors are connected to the Cradle: Gas & Temperature Sensing Module fo r discovery o f wetness o f the cradle.

IOT BASED HEALTH TRACKING SHOE FOR ELDERLY
PEOPLE USING GAIT MONITORING SYSTEM

ABSTRACT - Modern Technology increases the economic needs of each person in their machine life. This Machine life reduces the time to take care o f their elderly parents in the real world. This paper proposed techniques to monitor and track their elderly parents from their shoe embedded with sensors. Proposed Techniques that track their gait structure and blood pressure, heart rate, and information passed to the responsible person o f the elderly parents through SMS. This Paper consists o f strategies to implement the gait monitoring system through the wireless sensor with a mobile application using the GSM Sim module.

IOT BASED SMART COLD STORAGE SYSTEM FOR EFFICIENT STOCK MANAGEMENT

ABSTRACT- In the era of smart technology Internet of things interconnect real world sensors to the internet. Today's cold storages are far more than just a facility to store inventory. In this paper we propose a "smart cold storage" by leveraging the latest supply chain technology and the IOT, which will serve as a hub to improve the efficiency and speedup the process throughout the entire supply chain. This proto type incorporates an IOT based smart cold storage that interacts with the items stored within, collects the information about them and process this information into relevant data. The objects placed inside the smart cold storage will be detected and identified using a web camera. Load cell with HX711 IC driver is used to calculate the Weight of the objects. Raspberry Pi-3 B+ collects data from the ARDUINO and analyze the data using python programming and transmit the stock information to the users through mobile application. It gives an alert to the users to place an order if the weight falls below the threshold value, i.e If there is any shortage or out of stock of the objects. LM35 IC Temperature sensor is used to monitor the Temperature of the storage system.

IOT BASED SMART SHOE FOR THE BLIND

ABSTRACT— IoT based Smart shoe system for the blind is a system made with the help of ultrasonic sensors paired to an Arduino UNO board. Internet of things is all about making physical objects communicate with other objects or even with humans. It is an enabling technology which has a rapid development and growth in the market. In our India there are almost 40 million blind people among which 1.6 million are children. Blind people face great difficulty to travel independently. They have to depend on others in many aspects of their life. The Major problem is when they walk on the road. With a stick in hand they cannot detect every obstacle that comes in their way. The Smart shoe design provides a longterm solution for the blind to walk on roads independently. The smart shoe will help the Blind person to reach his destination independently. It is built using IoT Technology in which the shoe will be embedded with various sensors, Microcontroller and buzzers.

IOT BASED WEARABLE BIOMEDICAL MONITORING SYSTEM

ABSTRACT- Wearable healthcare system has been interesting topic among all the fields like Biomedical, electronics, IT field etc. Hence there are numerous application in this field where as patient's can see their own physiological measurements and doctors as well. Wearable monitoring system is advantageous to the patients and community where it reduces billing amount, waiting time also reduces the rush in the hospital. The aim of this paper is to maintain the patient's physiological parameters and activity in the hospital. There is alert system notification for emergency cases. Doctors can see the graphical view of patient's parameter. The system consists of computer, Wi-Fi network and display which are worn by patients. The abnormal conditions of patients' data are sent to the doctors twitter account, and/or the relative via twitter messaging, to alert them about the situation. The system is very helpful in big hospitals where the count numbers of patients are more than number of hospital staff or attendants.

LIO-A PERSONAL ROBOT ASSISTANT FOR HUMAN-ROBOT INTERACTION AND CARE APPLICATIONS

ABSTRACT—Lio is a mobile robot platform with a multi-functional arm explicitly designed for human-robot interaction and personal care assistant tasks. The robot has already been deployed in several health care facilities, where it is functioning autonomously, assisting staff and patients on an everyday basis. Lio is intrinsically safe by having full coverage in soft artificial-leather material as well as collision detection, limited speed and forces. Furthermore, the robot has a compliant motion controller. A combination of visual, audio, laser, ultrasound and mechanical sensors are used for safe navigation and environment understanding. The ROS-enabled setup allows researchers to access raw sensor data as well as have direct control of the robot. The friendly appearance of Lio has resulted in the robot being well accepted by health care staff and patients. Fully autonomous operation is made possible by a flexible decision engine, autonomous navigation and automatic recharging. Combined with time-scheduled task triggers, this allows Lio to operate throughout the day, with a battery life of up to 8 hours and recharging during idle times.

LOW-COST MECHANICAL VENTILATOR WITH PATIENT MONITORING FOR COVID-19 PATIENTS

ABSTRACT- This paper shows the construction of a low-cost, open-source mechanical ventilator. The motivation for constructing this kind of ventilator comes from the worldwide shortage of mechanical ventilators for treating COVID-19 patients—the COVID-19 pandemic has been striking hard in some regions, especially the deprived ones. Constructing a low-cost, open-source mechanical ventilator aims to mitigate the effects of this shortage on those regions. The equipment documented here employs commercial spare parts only. This paper also shows a numerical method for monitoring the patients' pulmonary condition. The method considers pressure measurements from the inspiratory limb and alerts clinicians in real-time whether the patient is under a healthy or unhealthy situation. Experiments carried out in the laboratory that had emulated healthy and unhealthy patients illustrate the potential benefits of the derived mechanical ventilator.

WHEELCHAIR CONTROL THROUGH EYE BLINKING AND IOT PLATFORM

ABSTRACT—Decision-making considering commands coming from eye blinking, to give mobility to a wheelchair, is not a simple task, bad decisions can end up in moving a person in a wrong direction, which will give more difficulties instead of solutions. In the actual study a microcontroller with embedded software and hardware for IoT is used, this device can manage multiple sensors as inputs and multiple actuators as outputs. The raspberry Pi 3 was selected because it is single-board computer with wireless LAN and Bluetooth Low Energy (BLE) on board. The developed system discriminates an involuntary blinking from a low motion voluntary blinking and take a decision to move forward a model wheelchair. The position and given commands are sent to an IoT platform to save the wheelchair movement data.

IEEE TRANSCTIONS ON MATLAB PROJECTS 2022-2023

LATEST MATLAB PROJECT LISTS

HAND GESTURE RECOGNITION WITH CONVOLUTION NEURAL NETWORKS

ABSTRACT- Hand gestures are the most common forms of communication and have great importance in our world. They can help in building safe and comfortable user interfaces for a multitude of applications. Various computer vision algorithms have employed color and depth camera for hand gesture recognition, but robust classification of gestures from different subjects is still challenging. I propose an algorithm for real-time hand gesture recognition using convolutional neural networks (CNNs). The proposed CNN achieves an average accuracy of 98.76% on the dataset comprising of 9 hand gestures and 500 images for each gesture.

HIGH CAPACITY IMAGE STEGANOGRAPHY USING WAVELET-BASED FUSION

ABSTRACT- Digital Steganography exploits the use of a host data to hide a piece of information in such a way that it is imperceptible to a human observer. This paper presents a cover-screw algorithm based on what is called the wavelet based fusion. In this method the wavelet decomposition of both the cover image and the secret message are merged into a single fused result using an embedding strength factor.The algorithm also applies a preprocessing step on the cover image to shrink the range of the pixels components in order to guarantee that the embedded message will be recovered with acceptable accuracy. Experimental results showed the high invisibility of the proposed model as well as the large hiding capacity it provides.

FACIAL EMOTION RECOGNITION OF STUDENTS USING CONVOLUTIONAL NEURAL NETWORK

ABSTRACT— Nowadays, deep learning techniques know a big success in various fields including computer vision. indeed, a convolutional neural networks (cnn) model can be trained to analyze images and identify face emotion. in this paper, we create a system that recognizes students' emotions from their faces. our system consists of three phases: face detection using haar cascades, normalization and emotion recognition using cnn on fer 2013 database with seven types of expressions. obtained results show that face emotion recognition is feasible in education, consequently, it can help teachers to modify their presentation according to the students' emotions.

AN ANALYSIS OF IMAGE SEGMENTATION METHODS FOR BRAIN TUMOUR DETECTION ON MRI IMAGES

ABSTRACT— MRI scans have been very helpful in the study of the diagnosis or segmentation of brain tumors in recent years. The brain tumor may be detected due to MRI scans. The MRI image is shown in the nervous system to create abnormal tissue growth or blood blocks. The first step in diagnosing the brain tumor is to control the brain structure, which symmetrically and asymmetrically identifies abnormalities. The next step is segmentation based on morphological operations (Fuzzy transformation). In this post, we explored different methods for MRI image identification and brain tumor segmentation. Precise tumor removal is important for brain tumors because of the complex brain structure. Some parameters for extracting features such as configuration, form, dimensions and image position are considered. With respect to the results retrieved from extract features the process of tumor classification is performed. This paper offers a number of techniques for the prediction of brain tumors.

IEEE TRANSCTIONS ON VLSI PROJECTS 2022-2023

LATEST VLSI PROJECT LISTS

A DESIGN IMPLEMENTATION AND COMPARATIVE ANALYSIS OF ADVANCED ENCRYPTION STANDARD (AES) ALGORITHM ON FPGA

ABSTRACT—As the technology is getting advanced continuously the problem for the security of data is also increasing. The hackers are equipped with new advanced tools and techniques to break any security system. Therefore people are getting more concern about data security. The data security is achieved by either software or hardware implementations. In this work Field Programmable Gate Arrays (FPGA) device is used for hardware implementation since these devices are less complex, more flexible and provide more efficiency. This work focuses on the hardware execution of one of the security algorithms that is the Advanced Encryption Standard (AES) algorithm. The AES algorithm is executed on Vivado 2014.2 ISE Design Suite and the results are observed on 28 nanometers (nm) Artix-7 FPGA. This work discusses the design implementation of the AES algorithm and the resources consumed in implementing the AES design on Artix-7 FPGA. The resources which are consumed are as follows- Slice Register (SR), Look-Up Tables (LUTs), Input/Output (I/O) and Global Buffer (BUFG).

FPGA IMPLEMENTATION OF DIGITAL PROCESSING BLOCKS USING OPTIMAL RESOLUTION MULTIPLIERS

ABSTRACT— The paper proposes an architecture of lossy multiplier for FPGA implementation. The proposed multiplier requires less logic resources but produces some error. This multiplier is being studied as a part of digital processing blocks: FIR-filters and FFT-processor. The results are verified using mathematical modeling tools and FPGA synthesis tools.

DELAY AND AREA ANALYSIS OF HARDWARE IMPLEMENTATION OF FFT USING FPGA

ABSTRACT—The hardware realization of fast fourier transform (FFT) consists of complex arithmetic operations such as multiply and accumulate. The key idea of this paper is to implement the 8-point Radix-2 DIT (Decimation In Time) FFT. In the FFT algroithm the twiddle factor generation by traditional method of generating sine and cos is replaced by the CORDIC algorithm for trigonometric functions. For the multiply and accumulate unit, different multipliers were used namely CORDIC multiplier, Single precision floating point multiplier. The adder blocks used in the implementation are linear adders such as Ripple Carry Adder (RCA) and parallel prefix adders such as Kogge-Stone Adder (KSA). Different combinations of multipliers and adders are used in the implementation of FFT, using VHDL in VIVADO 2016.2 version and programmed it in Xilinx ZYNQ FPGA board.

IMAGE ENCRYPTION BASED ON AES AND RSA ALGORITHMS

ABSTRACT-Cryptography is the science that concern of protecting data by transforming its comprehensible form into incomprehensible one. This study aims to compare between Advanced Encryption Standard (AES) and Rivest-Shamir-Adleman (RSA) encryption algorithms in image encryption using MATLAB. The comparison is done in the terms of testing image encryption quality for each algorithm. In addition, analyzing the histogram and correlation results. The results showed that AES algorithm has a better image encryption quality with a more convergent columns in the histogram. Moreover, AES algorithm correlation coefficient tends to be closer to the zero, thus a stronger correlation. Generally, the outcomes of this study showed that the AES algorithm is better than RSA algorithm in image encryption.

OPTICAL CHARACTER RECOGNITION IN BANKING SECTORS USING CONVOLUTIONAL NEURAL NETWORK

ABSTRACT—Optical Character Recognition is to changing computerized pictures or content into machine editable content and also recognizes the text within a digital image. It is very useful in banking sectors. Till now, Bank deposit slips are processed manually every day in all the banks, it takes a long time. The proposed approach is to recognize the handwritten digits and characters from the bank deposit slip using deep learning techniques. It makes all the banking processes and transactions faster. The handwritten digits and characters such as account holder name, account number and date are Segmented by image processing techniques. The segmented character and digits are fed to the CNN model. The model recognizes the digit and character from the deposit slip. The Proposed model delivers better recognition accuracy.

UNIFIED HARDWARE FOR HIGH-THROUGHPUT AES-BASED AUTHENTICATED ENCRYPTIONS

ABSTRACT—This brief presents an efficient unified hardware for up-to-date authenticated encryptions with associated data (AEADs). Although some major AEADs share several fundamental components (e.g., advanced encryption standard (AES), block chaining, and XOR-Encryption-XOR (XEX) scheme), each AEAD is equipped with a unique mode of operation and/or subfunctions, which makes it difficult to integrate various AEADs in a hardware efficiently. The proposed hardware in this brief efficiently unifies the fundamental components to perform a set of AEADs with minimal area and power overheads. The proposed configurable datapath is adapted to a set of peripheral operations (e.g., block chaining and XEX), dictated by the given AEAD algorithm. In this brief, we also demonstrate the validity of the proposed hardware through an experimental design adapted to four AES-based AEADs.

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