



IFODPSO-based multi-level image segmentation scheme aided with Masi entropy

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Abstract

This article presents an improved version of Fractional Order Darwinian PSO (IFODPSO) for segmenting 3D histogram-based color images at multiple levels of Berkley Segmentation Dataset (BSDS500). The success of convergence and accuracy rate of FODPSO algorithm depends on the value of fractional coefficient. This concept may provide drawback to the algorithm specially for multilevel problems of large dataset. So, to overcome the full dependency on fractional coefficient, delta potential model of quantum mechanics has been incorporated with FODPSO for updating the particle's present as well as global position by destroying the worst particles (solutions), formulated using the introduction of the context parameter. Multi-level Massi Entropy (MME), of current interest, has been chosen here as the objective function for finding the threshold values in combination with IFODPSO. Further, the small segmented regions have been removed or merged into bigger regions for showing the better discrimination between different segmented objects. The effectiveness of the proposed MME-IFODPSO algorithm has been extensively investigated in terms of statistically and qualitatively in terms of the fidelity parameters with



FAST: Fast Accessing Scheme for data Transmission in cloud computing

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Abstract

With the rapid advancement of emerging technologies, a huge amount of data is created and processed in daily life. Nowadays, Cloud Computing (CC) technology is one of the frequently adopted technologies to access and store data over the internet. CC mainly provides on-demand and pay-per-use services to users. However, access control and security are two major issues that users face in a cloud environment. During data access from a cloud server, the searching time of a Data Owner (DO) and the data accessing time are high. Therefore, users utilize more cloud services and pay more. High system overhead is another issue of a cloud environment. In this paper, a novel access control model has been proposed to overcome all these concerns. Here, the Cloud Service Provider (CSP) maintains a temporary table based on the data type and popularity value of the DO for fast and efficient data accessing. The cloud service provider can easily search the data owner by using the table and the data accessing time is remarkably reduced. Experimental results and theoretical analysis of the proposed scheme prove its efficiency over the existing schemes.

Securing Multimedia by Using DNA-Based Encryption in the Cloud Computing Environment

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Today, the size of a multimedia file is increasing day by day from gigabytes to terabytes or even petabytes, mainly because of the evolution of a large amount of real-time data. As most of the multimedia files are transmitted through the internet, hackers and attackers try to access the users' personal and confidential data without any authorization. Thus, maintaining a strong security technique has become a significant concern to protect the personal information. Deoxyribonucleic Acid (DNA) computing is an advanced field for improving security, which is based on the biological concept of DNA. A novel DNA-based encryption scheme is proposed in this article for protecting multimedia files in the cloud computing environment. Here, a 1024-bit secret key is generated based on DNA computing and the user's attributes and password to encrypt any multimedia file. To generate the secret key, the decimal encoding rule, American Standard Code for Information Interchange value, DNA reference key, and complementary rule are used, which enable the system to protect the multimedia file against many security attacks. Experimental results, as well as theoretical analyses, show the efficiency of the proposed scheme over some well-known existing schemes.

CCS Concepts: • **Security and privacy** → **Key management**;

Additional Key Words and Phrases: Cloud computing, DNA computing, complementary rule, American Standard Code for Information Interchange, decimal encoding rule, CloudSim

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- **An integrated approach for prediction of radial overcut in electro-discharge machining using fuzzy graph recurrent neural network** 

by Amrut Ranjan Jena, Raja Das, Debi Prasanna Acharjya

Abstract: The manufacturing of goods relies on its design methodology and the process parameters. The parameters used in the manufacturing process play an important role to build a quality product. Initially, heuristic techniques are used for parameter selection. Much research has been conducted to predict the radial overcut using neural networks. Besides, the fuzzy neural network gains more popularity owing to the presence of fuzziness in the machining process. In this paper, fuzzy graph recurrent neural network architecture is used for modelling and predicting the radial overcut in electro-discharge machining. The proposed model is analysed over the information system obtained from VIT, Vellore, India. Moreover, it is also compared with the fuzzy graph neural network and traditional neural network, and found to be better in terms of accuracy.

Keywords: *recurrent neural network; fuzzy graph; mean square error; radial overcut; electro-discharge machining.*

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A Fuzzy Graph Recurrent Neural Network Approach for the Prediction of Radial Overcut in Electro Discharge Machining



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Abstract Manufacturing of goods rely on its design methodology and the process parameters. The parameters used in manufacturing process play an important role to build a quality product. Initially heuristic techniques are used for parameter selection. Many researchers conducted research to predict the radial overcut using neural networks. Besides, fuzzy neural network gains more popularity due to presence of fuzzy system and neural network. In this paper fuzzy graph recurrent neural network architecture is used for modelling and predicting the radial over cut for an electro discharge machining information system.

Keywords Recurrent neural network · Fuzzy graph · Mean square error · Radial overcut · Electro discharge machining

1 Introduction

Manufacturing plays a major role to develop the economy of a country. Different manufacturing industries like automobiles, aeronautics, electronics, food and beverages, chemicals, textiles, and others have important role in growth of economy for a country. The production of different goods come through manufacturing processes. The manufacturing process faces numerous challenges due to randomness in the system for which the performance of the system is affected, and it is difficult to predict the performance of the manufacturing system [1]. The performance evaluation is the process of enumerating the efficiency and usefulness of the action [2]. The performance evaluation of a manufacturing system is also depending on

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Smart Meter using Big Data in IoT

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ABSTRACT: Nowadays Green energy or energy efficiency has become one of the key concerns of the people. In this era Smart Grid with Internet of Things has took a vital role. Here distributed system with Smart Grid principle is being discussed. Unlike traditional Grid, Smart Grid are bidirectional in nature. One of the important component of Smart Grid is Smart Meter. In this paper we will focus on the vast data handled by Smart Meter using Big Data. The paper will focus on efficient energy management and how tactical decision making is done by Big Data to improve the overall Smart Grid performance. Data is collected through sensors especially wireless sensors are used. A vast amount of data is collected, analyzed, and processed to retrieve information. This will increase the business prospects and will be cost effective in future. Issues like instability, blackouts, etc will be under controlled. In traditional process of meter reading collecting usage and generating bill is the vital issue done by manually visiting the individual location which is now automated. Smart Meter works with real time data. It will be shown how Big Data will improve customer relation as well as improves social welfare. Thus proper techniques of data mining is used to retrieve data but with high data security. Memorising of various current technology is done here to get ultimate information about energy consumption and also to maintain a balance among customers and utilities.

KEYWORDS: Smart Grid, Smart Meter, Internet of Things (IoT), Big Data, Green Energy, Energy consumption, Wireless Sensor Network (WSN), Wireless Sensor, Business Intelligence

I. INTRODUCTION

In traditional system every house in each apartment are having meter which can be digital or analogue, connected with individual appliances. An electricity board official, physically visit individual houses to check the meter reading each month and generates a manual bill for each month. But Smart meter smarten the entire system. IoT is one of the new technologies that make a Smart Meter as well as Smart grid smarter. IoT is a connection between internet and actual things. Here IoT connected to Smart grid in infrastructure thus collecting a huge volume of data from simple home appliances of individual houses in a locality or city or may be across the border. As large data needed to handle, so Big data is introduced [1]. Big data has seven v's namely Volume, Velocity, Variety, Variability, Veracity, Visualization, and Value. As a large real time data is collected each time from customer using Smart meter, are need to process efficiently. Unless proper processing done, exact informations cannot be extracted from them. The demands of electricity supply energy balanced using Smart grid and renewable energy. Renewable energy are like energy produced from wind, solar, biomass, water can also called green energy, meaning they're naturally replenished.

A massive positive change is thus observed. A large centralised electricity generator is distributed to various small generators which are self-independent. These small generators can be made of renewables energies. Here the concept of distributed system is actually refer to the various utilities and power generation stations used to distribute power. This is a complex process done Big Data. And distributed generations refers to different power manufacturing source. The motive behind is to create enough power storage in the grid to make it more efficient. In traditional Grid electricity flow in one track from utility to customer. But in smart Grid energy flows in two ways or bidirectional track. Generally data are collected from Smart Meter with the help of sensors which are in general nowadays wireless in nature. Only collection of data is not enough, also data analysis is a vital part which is done by Big Data. Proper classification of Big Data is discussed here. Data analytics normally finds some meaningful informations from raw data. Big Data helps in structuring the vast amount of raw data in the system. Thus most of the utility inclined to the big data analytics as it improving their business and also provides security. Customers also shown interested in this new Smarter module of Smart meter with Big Data and IoT support, as their bill get reduced and can track their consumption at regular intervals in a secured manner. It has been seen instability and blackout gets reduce by this process.

II. RELATED WORK

Today consumption of energy is one of the basic concern and it gets complimented with IoT and Big Data. This is being designed, implemented and tested using an embedded system with Arduino and it takes renewable energy as source. Day by day increase in energy demands also increases energy cost and energy management becomes very important. A smart meter can serve this purposes with the help of Internet of Things (IoT) and Big Data in the commercial, industrial and as well as residential sector. Business intelligence is also can be blended with Smart Meter and utility company applications [2]. Smart Grid has many Big Data applications in different fields like Smart building, electric vehicles, data hub of utilities, etc., among which we will discuss about Smart Meter in this paper. Micro grid is also used to increase productivity and electricity consumption for enhancement of the overall efficiency. Smart Grids are one of the most prominent future technologies. Its Advanced Metering Infrastructure (AMI) creates a hub for Smart Grid components, and contains smart meters and sensors, among which most of them are Wireless Sensors, to collect data. These data are collected and analysed through Big Data.

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IOT Based Finger-Print-Scanning-Biometric-Panel With Advanced Infra-Thermal-Scanning Strategy Comprising Of Automated Sanitizer-Spraying-Disinfectant-Gateway-Tunnel

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Abstract:-COVID-19 is a newly discovered infectious disease which is generally spreads through droplets of saliva or discharge from the nose when an infected person coughs, sneezes or talks. Following the footsteps of other countries, Indian government has also taken decision of lockdown to protect against spreading the virus but it is not a solution. Moreover there are some necessary places like ATMs, banks, corporate zones, Hospitals etc where people have to go for different purposes. Now each and everyone need to go through a thermal scanning and sanitization before entering to all those places. Now if we ask someone to do thermal scanning to check on everyone, then the person who is checking can get the COVID-19 disease. Also it is a timely procedure to completely disinfect those human beings. To overcome this problem we introduce an "IOT Based Finger-Print-Scanning-Biometric-Panel with Advanced Infra-Thermal-Scanning Strategy comprising of Automated Sanitizer-Spraying-Disinfectant-Gateway-Tunnel" where we put emphasize on three different circumstances into three different sections.

In first section we can propose the strategy that how to sanitize human hand and then collect the Biometric information of that person and then match the data with Hospital's Covid19 Test Result Data Base. To do this we can incorporate three different subsections in system. In the first subsection we introduce an Automated-Hand-Sanitizing-System (AHS2) through which human's hand will be sanitized within a while. After that in the second subsection, an IOT based Fingerprint Scanning Biometric panel can be used to collect the fingerprint of that person. Then in the third subsection the biometric information of the person is matched with the Hospital's database and check whether the person has any Covid-19 related previous record or status in the hospital. Now if our system finds any suspected result then the person can't enter to the place otherwise the process of second section will begin.

In the second section we can introduce an Automated Infra-Thermal-Scanning (AITS) system through which the temperature of a normal human can be monitored. Here the person will place his forehead in front of our system and then it will measure temperature of that person by infrared based temperature sensor. If it is higher than the threshold temperature value (98.6⁰ F) then may be the person is infected with COVID-19 and then there will be a centralized auto announcement to alert that person and the information of that person will be stored in our server and the person will be asked for Covid-19 Test and sent to Hospital by the Health Authority. As a result, the person would not be allowed to enter to that place. If the temperature is lower than the threshold value (98.6⁰ F) then the person will be able to go to the third section i.e. Sanitizer-Spraying-Disinfectant-Gateway-Tunnel (S2DGT).

In the third section, Sanitizer-Spraying-Disinfectant-Gateway-Tunnel (S2DGT) will check whether the person has entered or not after verified thermal scanning. If not entered it will wait a while and then it will announce "Person has not yet entered" & then first section will start again for the next person. Now if the person has entered to that Gateway-tunnel then the sanitizer will be sprayed in the form of fog from top, left and right side of that person. After that microcontroller operated automatic door will be opened for the completely sanitized person and the person would be allowed to enter. Through this system we can control COVID19 and prevent anyone from coming in contact.

Keyterms: AHS2(Automated-Hand-Sanitizing-System), AITS(Automated-Infra-Thermal-Scanning), S2DGT(Sanitizer-Spraying-Disinfectant-Gateway-Tunnel)

IoT based Thermal Signature Detector with Alarm & E-mail Notification with Integrated Social Gathering Screening using Computer Vision

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Abstract--- This paper is focused on making hardware and software integrated system to Figure against spreading of corona virus using Internet of Things(IoT) device. This project has two parts. First part is the description of the device Thermal Signature Detector (TSD) with the ability of contactless temperature screening of a person. The detail monitoring of TSD can be sent to the concerned authority through email. The device can analyze the emergency and do the needful steps automatically. As example it can book the nearest available ambulance and hospital for providing the fastest service and treatment. It takes the help from the google map to decide the availability of these services. The second part of the project is the smart social gathering screening technology. Here Computer Vision technology is used to detect crowd. We propose to convert normal CCTV cameras which are already installed in the cities into Artificial Intelligent camera just by installing some Deep Learning algorithm on the server side. We have proposed a network for Congested Scene Recognition called CSRNet. It can provide the data analysed deep learning method that can understand and identify congested scenes and perform accurate counting result. It outputs the high quality density maps by which gathering can be easily identified.

Keywords--- IOT, Computer Vision, CSRNet, Deep Learning, Social gathering screening technology, Thermal Signature Detector (TSD).

I. INTRODUCTION

The main reason of spreading of corona virus in India is people living outside this country were coming back to India. People from different states or district were also going here and there. To check their primary body temperature is the only way to examine them. In that case we use thermal gun. We all know that all matters emit energy in the form of Infrared (heat). If the object is at the same temperature with its surroundings, the net radiation energy exchange becomes zero. If the temperature varies between objects, including the surrounding environment, then this gradient can be measured and used. In either cases, the characteristic spectrum of the radiation depends on the object and the surrounding's absolute temperature.

Handheld IR thermometers take advantage of the radiation dependency of temperature to produce the result of the object. IR light works like visible lights It can be focused, reflected or absorbed. Handheld IR thermometers typically use thermopile- a lens to focus light from one object onto the detector. The thermopile absorbs the IR radiation and turns it into heat. The more IR energy, the hotter the thermopile gets. This heat is turned into electricity. The electricity is sent to a detector, which uses it to determine the temperature of whatever the thermometer is pointed at. The more electricity, the hotter the object. The higher the temperature, the more electricity sent to the detector, the reading thus increases[1]. But the cost of the thermal gun is very high and involves human intervention Figure. 1.



Figure 1. Manual thermal screening using thermal gun

Most of the cases after detecting high temperature the patient deny visiting hospital for further checkups. As well as they hide travel details. Most of the cases police have to investigate for finding the details. Moreover to send them to hospital needs to call ambulance and book appointment for them. It's a huge time taking process.

Social gathering is happening everywhere. With almost 1.3 billion people in India it is impossible to track them all for cops. Every time Cops don't gets instant information about social gathering. This paper aimed to detect each and every potential career of COVID-19, and automatic social gathering tracker. And, our implementation proposes to bring this complete solution in two stages:

Implementation of Voice Controlled Robot using Arduino: A Novel Approach

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Abstract:-- Assistance of Robot optimizes the manual efforts being put by humans in their daily activity. the most aim of the robot is to scan the voice input and process it for required operation and to evacuate the human presence over specified area by controlling the robot via voice command. In this paper, we develop a voice-controlled personal assistant robot where human voice commands are taken by the robot by a microphone. This robot not only takes the commands and executes them, but also gives an respond through speech output. The communication between the robot and therefore the android application is carried over by the Bluetooth link between the phone's Bluetooth and therefore the Bluetooth device(HC-05) within the Robot. The ASCII commands are sent from the phone to the Robot which successively checked by the Arduino for the control of the robot in line with the commands to manoeuvre the robot within the desired direction. This paper has several parts like voice input and recognizing, computer to microprocessor communication, microprocessor to microprocessor wireless data transmission, controlling multiple motor using by microprocessors. HC-05 Bluetooth module helps Arduino to require input from phone.

Keywords:-- Arduino, Bluetooth, Robot, Speech, voice

I. INTRODUCTION

Speech signals are the most important means of communication in human beings. Almost every conversation to interact is completed by means of voice signals. Sounds and various speech signals can be transformed into electrical form using a microphone. Voice recognition is one of the technology which is used to convert the speech signals into a computer text format. This voice recognition technology is used to control and generate speech acknowledgement using some external server. Robot voice can understand thousands of voice commands and perform required action. The voice recognition is a bit difficult task because every person has his own accent. These robotic assistants can be used for shaping, manufacturing and tooling purposes in various sectors such as manufacturing, defenses, etc. In hospitals, this robotic assistant can be used for performing surgeries and operations with high precision. In this paper, we develop an assistant robot that can be operated using voice commands.

The remainder of this paper is organized as follows. Section II presents a survey of "state-of-the-art" frameworks and their limitations. Section III describes our proposed technique. Finally, Section IV discusses limitations and further work.

II. STATE OF THE ART

Our project is about voice control car that is controlling a car with the help a bluetooth module HC-05 which accept data and a smart phone which is used to send data. The app is a third-party app which is developed in such a way that it converts the voice command to text and transfer the text to the connected Bluetooth device. The bluetooth connected on the Arduino board receives the text from the Android app as sequence of characters and stored them as string to the assigned String. There are many words pre-programmed to the arduino, whenever the received text compared with the pre-programmed words, the arduino executes the command that assigned to the words. Arduino can be connected to Laptop to monitor serial communication and check the working process and the words received by the Bluetooth. As per the input arduino send the commands to the L298N motor driver in the form of digital signal. Then executing those commands motor driver rotates the motors or the wheels of the car. Thus the car can be controlled by voice command.

III. OUR PROPOSED TECHNIQUE

The robot is designed to be controlled by the voice commands. Various types of hardware is being used here. They are

- Arduino Uno
- Bluetooth Module HC-05
- Motor Driver L298N Module
- 12V dc motors (4)

1. Arduino Uno :-

The Arduino UNO is an open-source microcontroller board based on the Microchip ATmega328P microcontroller which is developed by Arduino.cc.

IOT Based Human Orthospinal Roundback Curvature-Kyphosis Disease Recovery-Monitoring Technique Using Flex-Jacket

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Abstract:- ORC-Kyphosis is an excessive outward spinal curve in the upper back which can result hunch back, poor posture, upper back pain, spine stiffness, tight hamstrings, muscle fatigue and it can occur mainly in adolescence. Normally in the thoracic spine, kyphotic angle is ranging between 20 to 45 degrees. But when the curvature is greater than threshold range i.e. more than 45-50 degree then it's called Kyphosis. To overcome this problem doctors usually prescribe PCPRB(Posture-Correction-Pain-Relieving-Brace). But a kyphosis patient can't know how much bend of the thoracic spine is recovered and how long he/she have to wear this belt. So we introduce a IOT based mobile controlled KRMOS (Kyphosis-Recovery-Measurement-Outercover-Strip) through which a patient can get the analytical and graphical report of the recovery from our proposed KRMA(Kyphosis-Recovery-Monitoring-Analyzer) android application. KRMOS should be attached perpendicularly along the thoracic spine on the doctor's prescribed PCPRB. KRMOS is incorporated into two sections. In the first section we can use two flex sensors in the outer-cover strip. First flex sensor is used for measuring the bend of the upper thoracic spine and second is for lower thoracic spine. Both of them are used to measure kyphotic angle. In the second section after wearing the belt the patient should manually turn on the MCDTB (Mobile-Controlled-Data-Transferring-Box) which includes IoT devices. Now the patient will turn on the hotspot of the smart-phone and then open the KRMA. The data of the natural kyphotic angle and the curvature of the thoracic spine is already predefined in our application. So after wearing the belt when patient first turn on the MCDTB then flex sensors will measure pathological curving of the upper & lower thoracic spine and transfer the data to KRMA and it will calculate the kyphotic angle of the thoracic spine. Then the patient will get the damage report of his/her kyphosis and curvature of thoracic spine from the KRMA in graphical and analytical form. After wearing the belt several weeks the curvature will decrease and patient can monitor the recovery of kyphotic angle in a graphical form.

Keyterms: ORC (Orthospinal-roundback-Curvature), PCPRB(Posture-Correction-Pain-Relieving-Brace), KRMA (Kyphosis-Recovery-Monitoring-Analyzer), MCDTB(Mobile-Controlled-Data-Transferring-Box)

I. INTRODUCTION

The objective of this paper is related to a very unique and advanced method for improving the utilization of PCPRB (Posture Correction Pain-Relieving Brace). The PCPRB is a medically prescribed belt that is given to the patients suffering with Kyphosis. Kyphosis is a spinal disorder in which an excessive outward curve of the spine results in an abnormal rounding of the upper back. This disease primarily affects the thoracic spine and results in a bend of it which changes the posture of a person. This is usually caused due to poor posture, developmental issues, older age and abnormal vertebrae. As Kyphosis angle exceeds 45, the physical performance of a person decreases which causes muscle fatigue and back pain. So, PCPRB has a steel plate in it which is placed perpendicular to the thoracic spine of the patient and pushes the spine inward and the shoulders outward in order to straighten the posture of the patient. The general issue of PCPRB is that it doesn't notify the patients about their recovery and thus, the patients are ill-informed. So, the purpose of this paper is to modify the belt by introducing an IOT based mobile operated KRMOS (Kyphosis-Recovery-Measurement-Outer-Cover-Strip) which would help the patient to track the recovery through our proposed android application, KRMA (Kyphosis-Recovery-Monitoring-Analyzer). The strip is connected to an MCDTB (Mobile-Controlled-Data-Transferring-Box) and after wearing the brace when patient turn on the MCDTB then Flex sensors will measure the kyphotic angle of the thoracic spine and send the data to the Arduino. Arduino forwards the data to the web server using a Node MCU esp8266. Then the information is fetched by our proposed algorithm that we have written and configured in the KRMA applications. The natural kyphotic angle and the information about the curvature of upper and lower thoracic spine is already predefined in our application. After that the fetched information is compared with the pre-defined data of the application. Through this process, the damage report is collected and shown to the patient in graphical and analytical form which would help the patient to track the recovery after several weeks of usage of the belt. This updated version of the belt would enhance the medical treatment of kyphotic patients and would give a relief to the patients more earlier than it does now. In today's world of technical advancement, our project would stand-out in its technology that would be economical and helpful for the benefit of the user.

II. OUR PROPOSED WORK

II.A. Hardware Components required

(a) Microcontroller Board (ATmega328P- Arduino UNO-R3): Arduino is an open-source hardware and software company. The Arduino Uno is a microcontroller board which is based on the ATmega328. It has 20 digital input/output pins of which 6 can be used as PWM outputs and 6 can be used as analog inputs, a 16 MHz resonator, a power jack, a USB connection, an in-circuit system programming (ICSP) header, and a reset button. It contains everything which is needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with a AC-to-DC adapter or battery to get started.

IOT Based Quad-Copter with Seed Sowing- Fertilizer Sprinkling- Suitable Crop identification Strategy by predicting weather and analyzing Soil: A Combo Solution of Farming Land

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Abstract : In the agricultural field, great problem is faced by farmers after farming unsuitable crops on a particular land because they have not enough information regarding the soil of that land and also the lack of knowledge to predict the local weather of that zone. On other hand manual fertilizers or pesticides sprinkling and seed sowing is very tedious task because it is time consuming and manual human effort oriented. In our proposed work, we are focusing on this two challenging area and developed an IOT Based multi-purpose quad-copter/drone to identify suitable crop after performing farming soil analyzing and zonal weather prediction technique, that could be controlled by smart phone. By using the communication between smart phone and IOT device ESP8266-NodeMCU incorporated in quad-copter/drone we can able to sow seeds as well as sprinkle fertilizers in the farming land during it's time of flight. The system can analyse the soil details (PH-factor, Soil temperature, moisture level etc.) and weather forecast of the farming land and listed out best suited crops for that land. The whole process has been designed and developed as per the user's convenience and is user-friendly. Our proposed work is to provide a multi-purpose tool which is quite easy to use, affordable and efficient that can reduce human efforts with maximum output to bring an extensive change in the field of agriculture and farming.

IndexTerms - ESP8266-NodeMCU, quad-copter/drone, PH-factor, IOT, sprinkle, moisture etc.

I. INTRODUCTION

Agriculture is the lifeline of a nation. The very existence of mankind is dependent on agriculture and farmers, the crop providers. Yet, owing to different technological as well as economic barriers, the seasonal as well as the yearly prediction of the productivity is not confirming despite of tremendous labour and effort. The present technologies in this sector are not much user-friendly and not economically affordable for the farmers of a developing country. To counter these challenges, we have proposed to develop an IOT based multi-functional crop identifier that can analyse the soil of the farming land and using the zonal weather prediction technique can recommend the best suited crops which are best for cultivation on that soil. The whole system has been fabricated inside a quad-copter/drone and can be controlled by smart phone. The quad-copter can sow seed as well as sprinkle fertilizers during its flight, hence reduce human effort. Hence, in our project, using IOT and sensors, coupled with a few software components, we have tried to reduce human efforts with maximum output.

II. OUR PROPOSED WORK

In our project work, we have utilized IOT coupled with a few hardware and software components to acquire the best results. We have proceeded with pH, and soil Moisture sensors to collect and analyze the soil pH value, and moisture content. The collected data and through an API call, the weather details are then fed to a web portal which are analyzed to recommend the list of best suited crops for that region. The best time of sowing seeds is also known as the portal also provides the weather forecast details. The whole system is fabricated inside a quad-copter/drone which is operated using a smartphone. To achieve the communication between the quad-copter and a mobile device /smartphone, we have used ESP8266-NodeMCU (Wi-Fi-module attached with the Arduino board fabricated inside the drone/quad-copter). The user can operate to fly, sow seeds and sprinkle fertilizer using the smartphone. The project has been designed keeping in mind the user's ease of use.

A Microcontroller Operated LASER based Railway Gate and Signal Controlling System with Efficient Accident Prevention Strategy via IP-Webcam related Video-Surveillancing

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Abstract: The objective of our proposed work is to provide an automatic railway gate at a level crossing replacing the gates operated by the gatekeeper. It deals with two things. Firstly, it deals with the reduction of time for which the gate is being kept closed and secondly, to provide safety to the road users by reducing the accidents. By the presently existing system once the train leaves the station, the stationmaster informs the gatekeeper about the arrival of the train manually. Once the gatekeeper receives the information, he closes the gate depending on the timing at which the train arrives. Hence, if the train is late due to certain reasons, then gate remain closed for a long time causing traffic near the gates. By employing the automatic railway gate control at the level crossing the arrival of the train is detected by the laser light module placed near to the gate and people can aware the position of the train by cctv feature using Arducam mini camera. Hence, the time for which it is closed is less compared to the manually operated gates and also reduces the human labour. Since, the operation is automatic; error due to manual operation is prevented. In our project if a person suddenly comes in front of a running train, train detects the presence of the person by using passive infrared sensor (PIR sensor) sensor operated by Arduino-UNO (R3) microcontroller and it reduces its motion and finally stops. Thus we can prevent accidents.

Keywords: Laser light module, Arduino-UNO (R3) microcontroller, Passive infrared sensor (PIR sensor), Arducam mini camera.

I. INTRODUCTION

This paper deals with a topic which is more unique and economical method for improving the safety of railway gate crossing. Road accidents at railway gate is a leading cause of death and injury worldwide. There is a Survey which is conducted by Indian Railway and they found that about 17% of total railway accidents in India is occurred for passive railway crossings and unawareness of railway gate keeper. Now a days the operation of railway gates at level crossings is not so reliable and not so effective. Primarily the road users have to wait a very long time before the arrival of train and even after the train is left and even they don't know that is there two train comming at the both side or not. And secondly most of accidents that usually made by the carelessness driving of the road users or the time errors which is not maintain by the gatekeepers and the gatekeeper know the message via telephonic system so if the telephone is disconnected or busy anyreason then chances of the accident is more. Now here comes the importance of automatic railway gate control system. In this project we detect the arrival of train and warn the road users about the arrival of train by timer in the LCD screen. In this system, at the level crossing the arrival of the train is detected by the laser light module placed near to the gate. Hence, the time for which it is closed is less compared to the manually operated gates and also reduces the human labour and chances of accidents is also reduced. Each and everyday accident occurs in various ways in various places. This project is mainly done to save life and prevent accident. Prevention of an accident can be solved in such a way that when the train detects the presence of people the speed of the train gradually decreases and ultimately stops. Recently Two Indian Railways passenger trains crashed to a crowd of people in the eastern outskirts of Amritsar, Punjab, on 19 October, 2018 and they gathered there to watch celebration of the Hindu festival of Dussehra and they were standing on the tracks and they couldn't listen the sound of the train because of fire crackers. The accident occurred in the early evening and 59 people were died on the spot and approximately 100 people were injured. Normally a train driver can not see if any human try to attempt suicide at the midnight or fell down or come across on the railway track but PIR sensor can detect the motion of a human being. So if any human being come infront of the running train then PIR sensor will detect it and the speed of the train will decrease gradually and finally the train will stop. So this project is only for accident prevention purpose and improve the safety at level crossing.

Bluetooth Controlled Farming Machine using Arduino

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Abstract: After years of observation it was seen that, Farmer faces a lot of critical conditions during the time of spraying pesticides & cultivation. In earlier days, the cultivation and fertilization process was done manually. As technology reaches to the farming industry, individual different machines were made for digging soil and spraying pesticides. In our proposed system, we tried to build a voice controlled Bluetooth operated vehicle which will spray liquid pesticides to the farming land as well as it will dig the farm land. Within a single system, we can propose a combo facility which is totally based on effortless speech command provided by the user. The entire system is controlled by the voice message send by the user. This project will add a major revolution to the farming industry and thus it will help farmers to overcome losses. By reducing cost for different machines and manpower, yield will increase in time and it will effectively help farmers financially. This system can be made in a bigger scale for real time prospects.

Keywords: Arduino, Bluetooth module, L298N motor driver, Microcontroller, Servo Motor.

I. INTRODUCTION

Arduino was designed to be used as an easy tool for fast prototyping, aimed at students without a background in electronics and programming. Over the years Arduino has been the brain of thousands of projects from everyday objects to complex scientific gadgets. As soon as it becomes successful to reach wider to wider communities, it started changing to form new characters, to adapt to new needs and challenges, differ from simple 8 bit boards to products for wearable, IOT applications and other embedded environments.

A worldwide society of makers- students, programmers, developers and professionals- came together around this open source platform, their contribution results an incredible amount of accessible knowledge that can be backbone to novices and experts. All Arduino boards are completely open source, empowers users to build them independently and eventually adapt them to their particular needs.

The software is too an open source and its growing through the contributions of users all around the world.

The L298N is a dual H-Bridge motor driver which allows direction and speed at a same time to control two DC motors. This module can drive DC motors that have voltages between 5 and 35V, with a peak current up to 2A. A Bluetooth is a high speed lower power wireless technology standard which is used for exchanging data over minimum distances it is a specification for the use of lower power radio communication to link computers, phones and other network devices over short distance wirelessly. Wireless signals transmitted with Bluetooth cover short distance, typically up to 10 meters.

A servo motor is actually an assembly of four things: a normal DC motor, a gear reduction unit, a position sensing device, and a control circuit. The DC motor is connected to a position sensor which is mostly a potentiometer. From the gear box, the output of the motor is delivered via servo spline to the servo arm. For standard servo motors, the gear is normally made up of plastic whereas for high power servos, the gear is made up of metal.

II. OUR WORK

Our project is based on controlling car using Bluetooth technology. Bluetooth is a method of connecting two devices at a time. We have used Bluetooth module in our project to give commands to move the car through android device by using an application. An Arduino board plays an important role in the project only by using a Bluetooth module will not help us to move a car. So by using an Arduino "L298" we burned a code in Arduino which will help the car to move across according to the command. We have used Bluetooth technology in our project because it gives a wider range and is much more efficient and can be control through any medium like mobile, laptop etc. Our main target is to provide our farmers a smooth and simple way of cultivation and fertilization. And for these we have used a Spray bottle and a pinned cap as our prototyping equipment's. Here we used a multi output board as all the 5 volts of Arduino has been used for generating power for chassis kit. So the board will help us to generate power from its 5

Microcontroller based Fire Extinguisher with Bluetooth Operated LPG Gas Leakage Detection and Prevention System

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Abstract: *Everything is getting automatic and smarter with the passing of days. It is time to make our homes smarter and automated. This system includes Arduino based fire extinguisher and Bluetooth based gas detection to make the daily life easier. Here we used two Arduino, one flame and gas sensor, three servo motors and one Bluetooth module. Gas sensor detects all type of gas and fire sensor detects flame spectrum.*

Bluetooth module is used to send message to consumer about the gas exceeded gas concentration and motors to serve our desired purposes like switch off the gas not, switch off the MCB and sprinkle water from fire extinguisher. With the help of all of these we made an automated system to detect any danger and to prevent it safely. The system detects the LPG leakage using a gas sensor and flames by a flame sensor.

When the LPG concentration in the air exceeds the certain level, the Gas sensor detects the leakage and then it immediately alert the consumer by showing a message to specified mobile and turn off the gas regulator automatically. When fire catches inside a room, flame sensor detects it and automatically MCB will turn off and fire extinguisher automatically gets activated. In addition to this user can install IP webcam in their smart phones.

It has unique IP address. Whenever he/she is outside from their places, they can easily monitor their places by just googling that unique IP address. For this purpose, user has to attach Arducam with the microcontroller.

Keywords: *Arduino Uno, Bluetooth Module, Flame sensor, Gas sensor, Jumper wire, Servo motor.*

I. INTRODUCTION

Gas leakages and fire outbursts in industries as well as households have led to extensive damage and harms in the past. Gas leakages and fire outbursts both spread broadly and lead to even countless loss of life and belongings if suitable action is not taken on time. So here we suggest a system that senses gas as well as fire outbursts and alert us accordingly so that user can take appropriate action to control it without even being present at that place.

Fire and Gas Sensing Systems (FGS) are important tools for protecting our home and other amenities that handle flammable and toxic materials.

All such amenities have inherent fire threat that cannot be fully diminished with instrumented defensive function, in some cases these amenities require the fixing of fire and gas sensing systems to diminish these threats. Suitable design of fire and gas sensing systems starts with the selection of a performance target for tasks employed by the fire and gas sensing system. Performance of a fire and gas sensing system is mainly characterized by the system's capability to sense threats (detector coverage) and the system's capability to diminish threats.

Determination of the essential coverage, mitigation effectiveness necessities for a FGS is an exercise in threat analysis. A well designed fire and gas sensing system is intended to identify and in some cases automatically diminish fire, flammable gas and deadly gas hazards. Proper placement of detectors is critical in the design of a fire and gas sensing system to certify that coverage is sufficient to identify threats at their developing stage, in order to prevent increase. The gas detection system can identify a leakage of combustible or poisonous gas and take action to diminish or prevent it from increasing into a fire or outburst. If a fire results in, systems can be attached to extinguish the fire and protect other areas from the actions of the fire. The same system, usually with different detectors and principles, can be used to identify poisonous gases, give warning to people and deliver the probability of taking involuntary actions. Fires in process plants may be either like any other industrial fires, for example electrical fires in utility or an ignited leak of a product from the process.



A Wireless Framework for Emergency Health Care System

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Abstract: With the advancement of mobile application and technology for wireless network, the wireless infrastructures are used further for the progress of health care application. This technological progresses bring the emergency medical care system anyplace at any time. In this paper, we propose a GPS based framework for tracking and providing the ambulance services with minimal delay. Based on different real time constraint such as local traffic, shortest path and user defined parameters etc., our system ensure that the patient will be able to get the ambulance as early as possible. This application also provides information about the nearby hospital and doctors facilities which in turn helps the patient to get the treatment as early as possible.

Keywords: GPS, Optimal Path, delay, WSN etc.

I. INTRODUCTION

HEALTHCARE means maintainance and improvement of health and components of healthcare are prevention, diagnosis, treatment of disease and other physical and mental impairments in human beings and these steps can be fulfilled by good hospitals and experienced doctors only and we have to take patient to those hospitals to treat them but what will happen to them who stays alone at home or to those people who are aged and suddenly they are feeling uneasy? The crucial part of this phenomenon is taking them to hospitals by ambulances.

In order to keep up with the needs of current times, many ambulances throughout the world are making use of GPS tracking systems to offer better services. Functional upgrades such as these allow optimum dispatching of ambulances which in turn helps to ensure prompt execution of emergency medical services that allow timely patient transport.

II. PROPOSED SYSTEM

As the basis of our project "HEALTH CARE MONITORING SYSTEM"

We proposed an automated version of manual system, named as "QUICK CARE"

It is basically an ambulance tracking app. Side by side it will also provide-

- A. Storing all necessary information about patient,
- B. Gives details of nearby health center,
- C. Disease details to the patient
- D. Book ambulances.
- E. Emergency call service if ambulance is not available nearby the location
- F. Calculating shortest path to reach destination.

It will also help to ensure primary treatment even when a patient is in an ambulance. So that by following the advice of the hospital, ambulance crew can deliver primary care or even reroute the ambulance vehicle to the nearest healthcare center with the available specialists. By having access to all necessary patient data, the experts at the hospital can deliver proper treatment as the ambulance brings in the patient.

III. WORKING PRINCIPLE

We use android studio to develop the application. Firstly, the app has two parts. one for user and the other one is for ambulance driver. For user this app has an optional registration & login page. So that user can directly search for nearby ambulances & book them in case of emergency skipping login registration. Registering themselves or creating a login ID allows them to save their medical records to make them handy whenever needed. User can check for the nearby available hospitals also. And a driver can login using their login ID password provided by admin to manage bookings and track the booking address.

Bluetooth based Microcontroller Operated Baby Bed Security System with IP Webcam Video Monitoring

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Abstract: *The objective of our proposed work is to provide a system that will replace the usual baby cribs with smart baby which will with the problems of a mother's/parents' constant taking care of a baby. It will be dealing with a number of things. Like, firstly there is a mechanism in this device that will prevent a baby from falling from the crib/a bed. Secondly, it has a mechanism that'll send a 'notification' to the mother's/parents' smart phone by making him/her aware if the baby is crying or whether the bed sheet is wet and needs replacing. It'll also have a feature of live video feed of the baby if the baby is okay and needs care, which will also act as an addition safety feature of the device. In our proposed system, Arduino UNO operated PIR Sensor is used to detect the baby's movement which further leads to the 180 degree rotation of the Servo Motor/ Shaft and keep the baby safe from free-falling. In other side, by using FC 04 Sound Sensor we can detect whether the baby is crying or not and also using the Rain Sensor we can detect the notification regarding the baby's toilet via HC 05 Bluetooth Module. Whole system can be recorded through Live Video Monitoring using IP Webcam.*

Keywords: *PIR, Crib, Servo-Motor, IP Webcam, Arduino-UNO etc.*

I. INTRODUCTION

This paper deals with a topic which is a very common problem of a family where a mother or a father has to take care of their baby who needs constant attention. In our busy daily life one faces many difficulties in such cases where a baby's safety is the primary concern of every parent but they also have to take care of other things. Here comes the importance of a smart baby crib, where with the help of it parents can easily concentrate on their daily work while also keeping an eye on their baby with much effort, as it has features like sending an alert to their mobile devices if the baby is crying or not, and also if the bed sheet has become wet somehow and needs immediate attention or not. These actions are done by using a Rain Sensor and a Sound module.

This project also focuses on the matter of preventing any kind of unfortunate accidents that can happen due to the baby falling from the crib. Here a PIR sensor is used which helps to detect any living object in its line of sight and sends a signal to the microcontroller which further helps a Servo Motor to lift a shaft with protects the baby from rolling down and falling from the bed.

II. OUR PROPOSED WORK

In our proposed work we used Rain Sensor which will be placed under the bed sheet, which will help it to detect if the bed is wet and the bed sheet needs replacing or not. Then we used a FC 04 Sound Sensor to detect if the baby is crying or not. A Bluetooth module is also used which will help the device to connect it with a mobile device where the notifications will be sent to let the parents know about the current situation. A Servo Motor which will be attach to a shaft to the side of the bed/crib which will rotate and prevent the baby from falling by detecting it's presence near the edge of the bed/crib. Also a mobile device can be used to send a live video feed to the mother's/father's mobile device or computer/laptop to let them know if the baby is safe.

A. Components Required For Proposed Work

1) *Servo Motor:* A servo motor is an electrical device which can push or rotate an object with great precision. If you want to rotate and object at some specific angles or distance, then you use servo motor. It is just made up of simple motor which run through servo mechanism. If motor is used is DC powered then it is called DC servo motor, and if it is AC powered motor then it is called AC servo motor. We can get a very high torque servo motor in a small and light weight packages. Doe to these features they are being used in many applications like toy car, RC helicopters and planes, Robotics, Machine etc. The position of a servo motor is decided by electrical pulse and its circuitry is placed beside the motor.

Colour based Product Organization Tool using Arduino

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Abstract: *Sorting of products is a very challenging engineering procedure. Constant physical sorting and ordering creates uniformity problems. Nowadays the main struggle that is faced after the production is of sorting. Arranging of stuffs in an industry is a boring current procedure, which is done physically. So the necessity of a kind of machine in the industries has come up which will help in sorting the items according to their weight, size, color, shape, etc. This paper describes a working prototype intended for spontaneous sorting of objects based on the color using TCS3200 color sensor, Arduino Nano and Servo Motors. TCS230 sensor was used to detect the color of the product and microcontroller was used to control the overall process. The identification of the color is based on the frequency analysis of the outcome of the TCS230 sensor. Two servo motors are used here. The experimental results promise that the prototype will fulfill the requirements for greater production and precise quality in the field of automation.*

Keywords: *Arduino Nano, Jumper wires, Servo Motor, TCS230 color sensor.*

I. INTRODUCTION

Machineries can accomplish highly repetitive jobs better than human beings. Employee tiredness on assembly lines can end in reduced performance, and cause challenges in upholding product quality. An employee who has been performing an review task over and over again may in the long run fail to identify the color of the product. Automating many of the tasks in the industries may aid to increase the productivity of the manufacturing system. The purpose of this paper is to develop and implement a system which automatically separates products based on their color. To lessen human struggles on mechanical maneuvering, different types of sorting machines are being developed.

II. LITERATURE REVIEW

This isn't a special idea, for the implementation of object sorting machine based on colour, size, weight, etc. The idea has existed for quite a while, after there has been improvement in technology. Industrial automation and robotics play a significant role in development of industry. Design and Development of Colour Sorting Robot by Lim Jie Shen, Irda Hassan – This gave us the information of how a robot is used for the sorting procedure and no manual help or labor was needed [1].

Automated Object Sorting Using Raspberry Pi N. Aarthi, P. Sahithi, P.V. Sitaramaih, M. Indu Vardhani, N. Ranjith Kumar, D. Suneel Varma – This published work gave different ideas on which of the sorting mechanisms can be taken into consideration [6].

Sorting of Objects Based on Colour, Weight and Type on A Conveyor Line Using PLCs, S.V. Rautu, A.P. Shinde, N.R. Darda, A.V. Vaghule, C.B. Meshram, S.S. Sarawade – their work gave us the knowledge of how different sensors are responsible and helpful for the sorting based on weight, colour and metal [7].

III. COMPONENT DESCRIPTION

A. Colour Sensor (TCS230)

The TCS230 senses color light with the help of an 8 x 8 array of photodiodes. Then using a Current-to-Frequency Converter the readings from the photodiodes are converted into a square wave with a frequency directly proportional to the light intensity. Finally, using the Arduino Board we can read the square wave output and get the results for the color.



Fig. 1 Colour Sensor

Implementing Extended Producer Responsibility into the ERP model

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Abstract— Advancement in technology has affected every domain including communication, transportation and even fashion. Products are becoming obsolete at faster rates which account for increasing waste generation posing a major environmental concern due to the hazardous nature of the materials. It needs proper treatment prior to being disposed. According to the regulations by Ministry of Environment and Forests (MOEF), the producer, distributor and consumer have their respective roles in the proper disposal and recycling process. The available practices consist of either formal or informal methods. The former being the Extended Producer Responsibility (EPR) strategy, using financial incentives to encourage manufacturers to design environmentally friendly products by holding producers responsible for the costs of managing their products at end of life. EPR takes the form of a reuse, buy-back, or recycling program. The producer may also choose to delegate this responsibility to a third party, a so-called

waste management is relatively unchanged. The methods of waste management in use can be distinguished as formal and informal ones. The informal sector collects products after the termination of products life cycle from the consumers. These include the rag pickers and junk dealers. They have a key role in obtaining value from waste with approximately 90% of waste being dumped rather than landfilled [2]. The formal practice hands over the responsibility to producer which in turn entitles a third party organisation for waste collection and its proper disposal having a better environmental impact.[3] With a few enhancements it accounts for Extended Producer Responsibility (EPR). The concept of Extended Producer Responsibility was originally defined by Lindhqvist[4] in a report to the Swedish Ministry of Environment and Natural Resources in 1990 as: “Extended producer responsibility is an environmental protection strategy to reach an environmental objective of a decreased total

A Light Weight Distributed Algorithmic Approach for Optimal Deployment of Sensor Nodes over 3D Wireless Network System

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Abstract: In recent trends of Wireless Sensor Networks the deployment of the sensor-nodes over the region to be monitored is an important and challenging problem. However, many studies already been done on the coverage problem in 2-D environment. But, in real life scenario when the height of monitored area is not negligible along with the length and breadth, then 3-D deployment of sensor nodes are highly solicited. In this paper we proposed a light weight distributed algorithm for the optimal deployment of sensor nodes over the 3-D region, maintaining full coverage of monitored volume and connectivity of the networks.

Keywords: Sensor-nodes, coverage, 3-D deployment, lightweight, distributed algorithm, optimal deployment, monitored volume etc.

I. INTRODUCTION

Designing of networks in two-dimensional is a bit different where it is assumed that all nodes are place on a plane. But this basic assumption is invalid in few case where nodes are distributed in a 3D space such as ocean, atmosphere etc and applications of 3D sensor networks are increasing day by day and in future the demand will be high. For example, recently underwater acoustic ad hoc and sensor networks have generated a lot of interest among the researchers [1], [2], [3], [4]. In real world placing nodes in a 3D space is much complicated. As an example we can say that to create 3D network under deep sea needs to be placed sensor nodes in different depths of water. 3D network coverage can be helpful in climate monitoring purpose also.

In this paper, we mainly focuses on the coverage and connectivity issues of 3D wireless networks, where all the nodes have the same sensing range and the same transmission range. In particular, we want to answer the following questions:

- A. How can we achieve the 100% coverage with minimum number of nodes when nodes distribution is uniform?
- B. How can we achieve the 100% coverage with minimum number of nodes when nodes distribution is random?

II. RELATED WORKS

In two dimensional networks the most significant thing is provide sensing coverage and maximum sensing coverage is the fundamental aspect for any application of a sensor networks e.g., monitoring, tracking and classification [5], detection [6]. In 2D plane cellular systems the cells are considered as regular hexagons, in such a way so that the maximum range of a base station is equal to each hexagon. The problem of finding exact locations in base stations on a 2D plane in such way so that the number of base stations required is minimized and get the 100% coverage has been solved for cellular networks [7]. In geographic region every point within the sensing range of at least one must be covered network. Several algorithms [8], [9], [10], [11] have been proposed to achieve the 100% sensing coverage in 2D network Using random network topology a sensor network is deployed. To get the maximize lifetime of a sensor network, energy conservation protocols [12], [13], [14], [15]. To maintain the sensing coverage dynamically has been done by keeping the nodes active at a particular time. In two-dimensional wireless sensor networks performance of greedy geographic routing has been studied in [16]. There are few references on a 3D network and the works presented in [17] and [18] studied 3D cellular networks However, all these approaches covers the maximum area but in this paper, we show that how we can achieve 100% coverage on a 3D wireless network.

III. PROBLEM DEFINITION

3D Area Coverage Using Wireless Sensor Network With less Computation And less Communication.

ARDUINO BASED BLUETOOTH OPERATED CAR WIPING TECHNIQUE USING ANDROID MOBILE PHONE

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Abstract - Today's car wipers are manually operated on the principle of manual switching in every car or other vehicles. Here we propose an automatic Bluetooth based car wiper system which can automatically switches ON when detecting wireless Bluetooth signal through any android mobile phone. This proposed work can automate the wiper system having no need for manual intervention. For this purpose we use Bluetooth-HC05 slave along with microcontroller Arduino-UNO and servo-MG995 motor. Our system uses Bluetooth signal in low range from driver seat and by using Bluetooth terminal from our android mobile we can control the movement of servo motor with adjustable delay and smooth movement.

Key Words: Bluetooth-HC05, Arduino-UNO, servo-MG995, Android, wiper

1. INTRODUCTION

Arduino Uno is a microcontroller which based on the Atmel's ATmega328 chip fabricated in VLSI technique. It has fourteen digital input/output pins along with six Pulses with modulation outputs and analog inputs from Pin A0 to A5; the Arduino Uno can be powered via USB connection or with a 12 Volt external power supply. A servomotor is a rotary actuator or linear actuator that allows for precise control of angular or linear position. This kind of motor can rotate up to 180 degree starting from 0 degree with variant velocity and acceleration. It consists of a suitable motor coupled to a sensor for position feedback. HC-05 Bluetooth module is an easy to use Bluetooth Serial Port Protocol module, designed for transparent wireless serial connection setup. Serial port Bluetooth module is fully qualified Bluetooth V2.0 Enhanced Data Rate 3Mbps Modulation with complete 2.4GHz radio transceiver and baseband. In our proposed work from any android phone a Bluetooth signal is processed by microcontroller to take the desired action. The Servo works on the principle of using that Bluetooth signal for completing its circuit, so when button pressed from our android mobile phone a signal transmitted to the microcontroller. The microcontroller now processes this data and drives the servo motor to perform required action. A car wiper can attach with servomotor and controlled by android Bluetooth.

2. OUR PROPOSED WORK

In our proposed work we design a Bluetooth based android mobile operated car wiper where we can use Arduino UNO microcontroller along with HC05 slave based Bluetooth module. Hardware components and its circuit connection and operations are describe below.

2.1 Hardware Components along with Working Principle:

In our proposed work we need some hardware components to develop an efficient Arduino based Bluetooth operated car wiping technique with smooth tuning and speed controlling feature. Hardware requirements are listed below.

2.1.1 Arduino UNO R3 microcontroller board

We have used Arduino UNO R3 microcontroller development board with AtMega328P processor with +5V USB port and external +12V barrel jack port. In input/output peripheral section there are 14 pins dedicated for Digital Serial Input and output purpose (Starting from 0 upto 13, Tx and Rx are also involved in pin 0 and 1 for Serial communication). Among them pin 3, 5, 6, 9, 10 and 11 are PWM pin (Pulse width Modulation) which supports analog & digital output and Digital input. Pin A0 to pin A5 total six pins are used for analog input. Arduino can read analog data from any sensor or actuators through these pinset.

2.1.2 HC05 slave based Bluetooth Module

There are two types of module available in the market. HC05 represents both master and slave communication whereas HC06 has used as a slave only. In case of HC05 if you want to change communication mode from Master to slave or from Slave to master you must have to enter in AT command mode. For this you must connect ENABLE/KEY pin with 3.3 volt internal power of microcontroller. For this case Hc05 GND connected with GND of microcontroller and TX(Transmitter) and RX(Receiver) are connected with TX(Transmitter) and RX(Receiver) of same microcontroller. Finally VCC of HC05 module connected with 5V internal supply of microcontroller. When you switch on the module a STATE light indicator

Modified Implementation of Different Architectural Designing Issues in WSN Protocol

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Abstract: In real life wireless sensor network has much variety of applications in Microelectronics as well as embedded systems. Life time and overall performance of the network is affected by issue power consumption so it becomes major issue in the wireless sensor network. Efficient data Collection techniques and efficient routing protocol can be designed in order to minimize the energy consumption. The differences between sensor networks and ad-hoc networks are as follows a) Sensor nodes mainly use broadcast communication whereas ad-hoc network uses point to point communication. b) The physical arrangements of sensor nodes within a network can be changed due to mobility. c) Sensor nodes may not have global identification because of the large amount of overhead and large number of sensors. d) The total number of mobile nodes within a adhoc network can have different orders of magnitude much lesser than the ordering magnitude of sensor nodes in a sensor network. In this paper, we can propose a survey result and analysis of different designing issues of WSN protocols. In first part of this proposed work we can highlight different activities of mobile Sensor nodes within a wireless Sensor Networks w.r.t Second part of our work basically explains different designing issues of sensor networks and there implications on data routing.

Keywords: WSN, Sensor, adhoc, protocols, global identification.

I. INTRODUCTION

When a transmitted node can be able to transmit information with the help of wireless medium to the receiving sink node and that receiving node can be able to sense that information within that sensor network called wireless sensor network. Each node in that aforesaid network is responsible for information sensing, after sensing information processing can takes place and finally sensed data are transmitted from transmitting end to receiving end. Data transmission takes place over the wireless sensor network in two way first, the information from transmitter can be directly sent to the receiver sink node, whereas secondly the information can be transmitted with the help of router. There are different Types of sensor networks exists in real life like Mobile Wireless sensor network ,Terrestrial Wireless sensor network, Wireless sensor network which can be able to work under the ground as well as water, Multimedia Wireless sensor network etc. During the analysis of different issues like efficiency and reliability of the wireless sensor network we have to consider different issues based on the design, architecture and applications. Sensor nodes are usually distributed in a sensor field as shown in figure1.

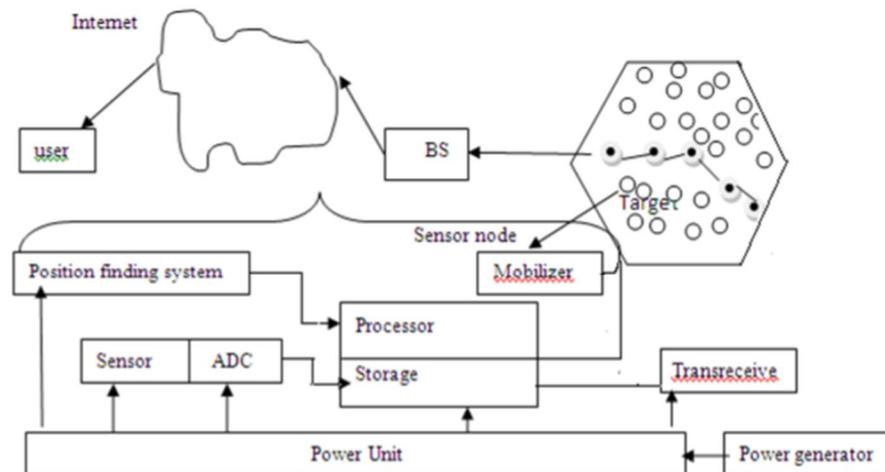


Figure1. Sensor nodes scattered in a sensor field and components of a sensor node

All individual distributed nodes can receive data and transmit that data back to the receiver as well as the end users. Data can be

Arduino-UNO Operated Hall-effect Sensor Based Magnetic Field Strength Measurement System

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Abstract: Magnetic field strength is one of two ways that the intensity of a magnetic field can be expressed. Technically, a distinction is made between magnetic field strength H , measured in amperes per meter (A/m), and magnetic flux density B , measured in Newton-meters per ampere (Nm/A), also called teslas (T). In our proposed work we are using the concept of ADC (Analog to Digital Conversion) in ARDUINO UNO. By using a Hall Effect sensor and Arduino UNO we are going to measure the field strength of a magnet by using UGN3503U sensor. This is a hall sensor which senses the magnetic field strength and provides a varying voltage at output proportional to the field strength. This sensor picks up field strength in the units of 'GAUSS'. So with this sensor we will have field strength as varying voltage. By using ADC feature we will convert this voltage to a number. This number represents the field strength and is shown on LCD.

Keywords: Tesla, Newton-meters, ADC, Arduino Uno, Hall Effect, Gauss.

I. INTRODUCTION

The magnetic field can be visualized as magnetic field lines. The field strength corresponds to the density of the field lines. The total number of magnetic field lines penetrating an area is called the magnetic flux. The unit of the magnetic flux is the tesla meter squared ($T \cdot m^2$, also called the weber and symbolized Wb). The older units for the magnetic flux, the Maxwell (equivalent to 10^{-8} Wb), and for magnetic flux density, the gauss (equivalent to 10^{-4} T), are obsolete and seldom seen today. Magnetic flux density diminishes with increasing distance from a straight current-carrying wire or a straight line connecting a pair of magnetic poles around which the magnetic field is stable. At a given location in the vicinity of a current-carrying wire, the magnetic flux density is directly proportional to the current in amperes. If a ferromagnetic object such as a piece of iron is brought into a magnetic field, the "magnetic force" exerted on that object is directly proportional to the gradient of the magnetic field strength where the object is located. In our proposed project we can be able to measure magnetic field strength by using microcontroller specially arduino microcontroller. Arduino has six ADC channels. Any one channel or all of them can be used as inputs for analog voltage. The UNO ADC is of 10 bit resolution. This means that it will map input voltages between 0 and 5 volts into integer values between 0 and 1023. So for every ($5/1024= 4.9mV$) per unit. In all of this we are going to connect a potentiometer or pot to the 'A0' channel, and we are going to show the ADC result in a simple display. The simple displays are 16x1 and 16x2 display units. The 16x1 display unit will have 16 characters and are in one line. The 16x2 will have 32 characters in total 16 in 1st line and another 16 in 2nd line. Here one must understand that in each character there are $5 \times 10 = 50$ pixels so to display one character all 50 pixels must work together, but we need not have to worry about that because there a another controller (HD44780) in the display unit which does the job of controlling the pixels (you can see it in LCD unit, it is the black eye at the back).

II. PROPOSED CIRCUIT DIAGRAM AND EXPLANATION

An analog-to-digital converter (ADC, A/D, A-D, A2D, or A-to-D) is a device that converts a continuous physical quantity (usually voltage) to a digital number that represents the quantity's amplitude.

A. Components Required

1) Hardware:

- a) ARDUINO UNO,

Spontaneous Fan Speed Control System using Arduino

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Abstract: As we all know that we are slowly moving toward automation and Automation is one of the trending topics. So basically in this project we will be basically controlling fan speed with respect to the temperature. The system will get the temperature from the temperature Sensor and it will control the speed according to the temperature, set by the user. In this project, microcontroller forms the processing part, which firstly senses the temperature and the controller then compares the data with the set temperature. If the current temperature is greater than the set temperature, the controller turns ON the fan and the set speed will be proportional to the difference between between the set temperature & the current temperature. If the current temperature is less than the set temperature, the fan will be turned OFF .The fan's speed will change according to the temperature.

Keywords: Microcontroller, speed, temperature, Liquid Crystal Display(LCD), sensor he set temperature & the current temperature. If the current temperature is less than the set temperature, the fan will be turned OFF .The fan's speed will change according to the temperature.

I. INTRODUCTION

Electric fan is one of the most popular electrical devices due to its cost effectiveness and low power consumption advantages. It is a common circuit and widely used in many applications. It is also one of the most sensible solutions to offer a comfortable and energy efficient. In fact, the fan has been long used and still available in the market.

Fan can be controlled manually by pressing on the switch button. Where in this method, any change in the temperature will not give any change in the fan speed. Except the usage change the speed of the fan which is manually. So, an automatic temperature control system technology is needed for the controlling purpose in the fan speed according to the temperature changes.

II. FAN SPEED CONTROL SYSTEM COMPONENTS

The arduino is the heart of the system. It accepts inputs from the temperature sensor, LM35 which allows for the measurement of the current room temperature, then the controller will give the action to maintain the required fan speed. LCD is used to display the fan speed and room temperature. All of these can be summarized in a diagram as shown in Fig. 1.

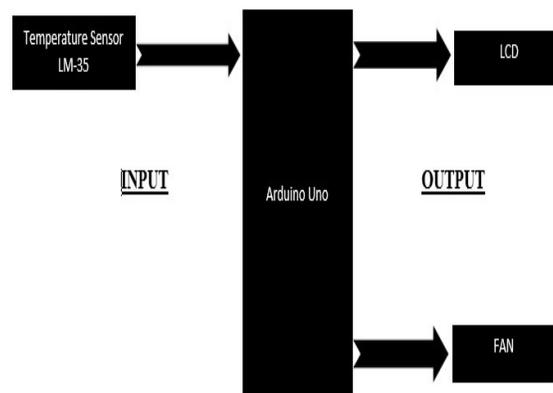


Fig. 1 Block diagram of fan speed control system

A. Arduino (Microcontroller)

A microcontroller is a computer control system on a single chip. It has many electronic circuits built into it, which can decode

A NOVEL APPROACH OF INTERNET OF THINGS: MICROCONTROLLER BASED AIR POLLUTION MONITORING SYSTEM

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Abstract - Air pollution means the presence into the air of a substance which has harmful or poisonous effects. Traditionally, pollution measurements are performed using expensive equipment at fixed locations or dedicated mobile equipment laboratories. In this paper we introduce IOT Based Air Pollution Monitoring System in which we will monitor the fine-grained Air Quality in real-time over a web server using internet and will trigger an alarm when the air quality goes down beyond a certain level, means when there is sufficient amount of harmful gases are present in Sulphur-Die-Oxide, volume of CO₂, detection of leakage of any gas -smoke, LPG, benzene and NH₃. It will show the air quality in PPM on the LCD and as well as on webpage so that we can monitor it very easily. We have used MQ135 sensor which is the best choice for monitoring Air Quality as it can detect most harmful gases and can measure their amount accurately. In this IOT project, you can monitor the pollution level from anywhere using your computer or mobile. We can install this system anywhere and can also trigger some device when pollution goes beyond some level, like we can switch on the Exhaust fan or can send alert SMS/mail to the user.

Index Terms - MQ135 sensor, IOT, PPM, LCD, NH₃, LPG

I. INTRODUCTION

Air pollution is the biggest problem of every nation, whether it is developed or developing. Health problems have been growing at faster rate especially in urban areas of developing countries where industrialization and growing number of vehicles leads to release of lot of gaseous pollutants. Harmful effects of pollution include mild allergic reactions such as irritation of the throat, eyes and nose as well as some serious problems like bronchitis, heart diseases, pneumonia, lung and aggravated asthma. The commercial meters available in the market are Fluke CO-220 carbon monoxide meter for CO, Amprobe CO₂ meter for CO₂, Forbix Semicon LPG gas leakage sensor alarm for LPG leakage detection. The researchers in this field have proposed various air quality monitoring systems based on WSN, GSM and GIS. No such system is present that monitors various gases present in the environment like CO, CO₂, smoke, LPG, iso-Propane, iso-Butane as well as the temperature and humidity in the environment at the same time and monitors these parameters at a remote location, provides extra precaution for the most crucial parameter and provides parameters important to all users such as temperature and humidity to every person in the range of the monitoring system.

II. PROPOSED WORK

In this paper we can use Microcontroller and Gas sensor with Wi-Fi module with other following components: a) Arduino Uno, b) Wi-Fi module ESP8266, c) 16X2 LCD display d) MQ135 Gas sensor, e) Breadboard, f) 10K potentiometer, g) 1K ohm resistors h) 220-ohm resistor, i) Buzzer

Circuit Diagram and Explanation

First of all, we will connect the ESP8266 with the Arduino. ESP8266 runs on 3.3V and if you will give it 5V from the Arduino then it won't work properly and it may get damage. Connect the VCC and the CH_PD to the 3.3V pin of Arduino. The RX pin of ESP8266 works on 3.3V and it will not communicate with the Arduino when we will connect it directly to the Arduino.

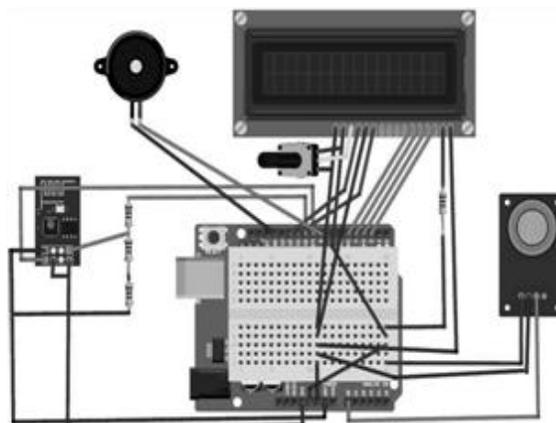


Fig. 1 Complete Circuit Diagram

A web based nucleotide sequencing tool using BLAST algorithm

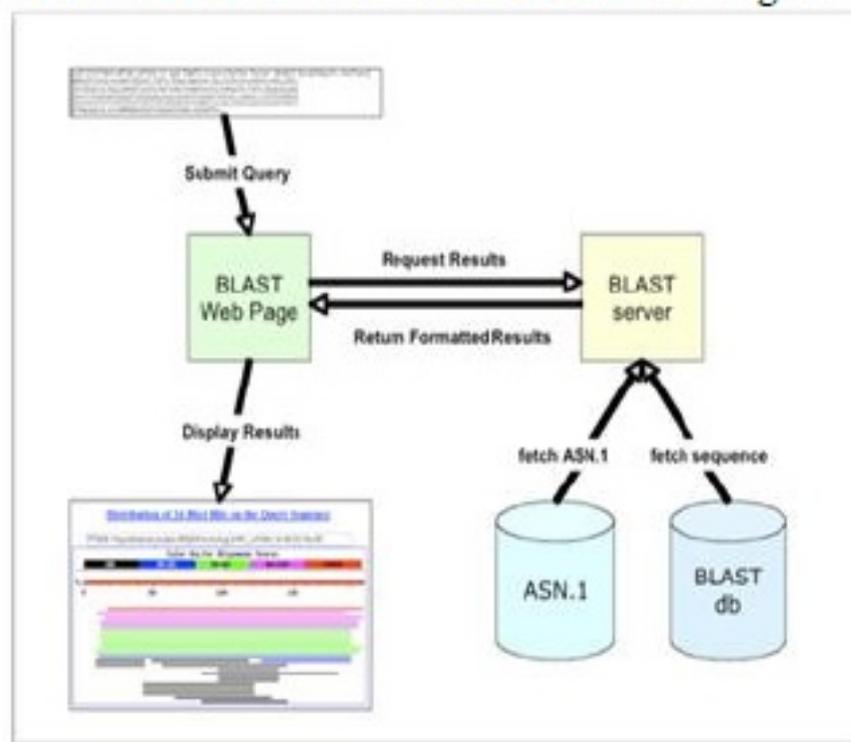
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Abstract — One of the most important methods which specifies the biological functionalities of a gene is by running a sequencing or similarity search on the existing protein and DNA sequence databases. The most famous tool for performing nucleotide sequencing is the NCBI's Basic Local Alignment Search Tool (BLAST) or its different various. This web based tool provides an alternative to the present BLAST tool, providing a faster access to the analytics of the protein structure with a more interactive interface. The tool also provides a user friendly and hassle free access with sorted and visually informative analytics.

Keywords — DNA, Protein sequence, Global sequence alignment, Homology, Basic Local Alignment Search Tool (BLAST).

global alignment), fewer similarities would be detected. The entire workflow is described in Fig. 1.



Implementation of Driverless Pod using Voice Commands: A Novel Approach

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Abstract: The Internet of things (IoT) refers to the concept of extending Internet connectivity beyond conventional computing platforms such as personal computers and mobile devices, and into any range of traditionally "dumb" or non-internet-enabled physical devices and everyday objects. Embedded with electronics, Internet connectivity, and other forms of hardware (such as sensors), these devices can communicate and interact with others devices over the Internet, and they can be remotely monitored and controlled. Specifically, when the automations are needed to be controlled using just voice commands from a remote location, that may be a large distance. This paper also includes detection of obstacles and the device come to a stop/waiting for the voice command from the control room (which is in remote location) and then take next decision.

Keywords: IOT, wi-fi, Motion estimation, IR

I. INTRODUCTION

IoT devices are a part of the larger concept of home automation, which can include lighting, heating and air conditioning, media and security systems. Long term benefits could include energy savings by automatically ensuring lights and electronics are turned off. The IoT can assist in the integration of communications, control, and information processing across various transportation systems. Application of the IoT extends to all aspects of transportation systems IOT is an upcoming technology that allows us to control cars through the internet. Here we propose to use IOT in order to control car through the internet. This system uses a small electronics car to demonstrate the model. Our user friendly interface allows a user to easily control this car through the internet. For this system, we use nodeMCU wifi module, a 8051 microcontroller, motor drivers, rf modules etc. This module is interfaced with a wi-fi modem to get user commands over the internet. The entire system is powered by a 12 V battery. After receiving user commands over the internet, nodeMCU processes these instructions to operates the car using motor drivers with sending wireless alert to the control room. The remainder of this paper is organized as follows.

Section II presents a survey of "state-of-the-art" frameworks and their limitations. Section III describes our proposed technique. Finally, Section IV discusses limitations and further work.

II. STATE OF THE ART

The basic concept of an Infrared Sensor which is used as Obstacle detector is to transmit an infrared signal, this infrared signal bounces from the surface of an object and the signal is received at the infrared receiver. The basic concept of IR (infrared) obstacle detection is to transmit the IR signal (radiation) in a direction and a signal is received at the IR receiver when the IR radiation bounces back from a surface of the object[1]. Here in the figure, the object can be anything which has certain shape and size, the IR LED transmits the IR signal on to the object and the signal is reflected back from the surface of the object. The reflected signals are received by an IR receiver. The IR receiver can be a photodiode / phototransistor or a readymade module which decodes the signal. In order to implement the IR obstacle detection, we need to understand the following:

We need to understand how to transmit IR signal using commercially available electronic components. Same way we also need to understand the IR receiver. Our main focus in this paper is to explain the implementation of IR based obstacle detection in detail.

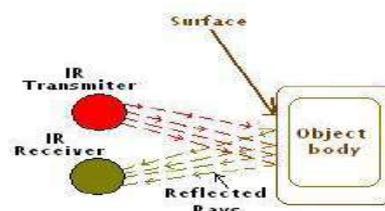


Fig. 1