

PROJECTS – IOT & EMBEDDED SYSTEMS

1. Smart helmet
<p>A SMART HELMET is a type of protective headgear used by the rider which makes Bike driving safer than before. This can be implemented by using advanced features like alcohol detection and helmet detection. This makes it not only a smart helmet but also a feature of a smart bike.</p> <p>It is compulsory to wear the helmet, without which the ignition switch cannot turn ON. A Bluetooth/wifi model can be used as wireless link for communication between helmet unit and bike unit. If the rider is drunk the ignition gets automatically locked, thus rider cannot start the bike. It necessary to provide proper medical attention when met with accident, this can be done by alerting the concerned person which will provide solutions to other major issues for accidents.</p>
2. Wheel alignment system
<p>A computer based wireless automobile wheel alignment measurement system using accelerometer is presented in this paper, which has the advantages of simple circuit, low cost , high resolution with high working reliability. The causes and effects of improper wheel alignment by traditional methods are analyzed in the model. In this system wireless transmission techniques are adopted to transmit data between measuring unit and computer. This makes the measurement operation much easier. This paper presents unique and innovative use of accelerometer for the measurement of automobile wheel parameters, such as camber and toe. The hardware and software realizations are also explored in this paper. The system practical applications shows that its performance meets the design requirements.</p>
3. Black box system with application interface
<p>This project discusses the configuration and functions of the Car Black Box System. It also focuses on monitoring of real-time driving and also records and saves the monitored data for further investigation in the case of an accident. This system helps the accident investigators as well as insurance companies to find out the cause of the crash. Other features such as navigation, speed tracking and Alcohol detection are also provided in the system. The perspective of this project is to make the user feel more safety about the car and to help knowing the actual cause of accidents if any.</p>
4. Campus car
<p>The campus cab project consists of two modules i.e. the transmitter module and the receiver module. The transmitter module is used to select the destination to which the user wants to move. CAB CALL Switches are connected to the RF encoder. The encoded output is then transmitted through the RF transmitter. At the receiver end, the received signal is decoded and then fed to the controller. On receiving a sequential digital data, the vehicle starts moving; using the line following technique and it will continuously monitor the RFID tag of selected place. Once the RFID tag is found, the vehicle stops and allows the users to get into it. Then the user will have an option to select the destination in the cab through switches. Once selected, the cab starts moving towards the destination. Once the entry-exit process is done, the cab starts moving towards its parking place.</p>
5. IoT based health monitoring system
<p>The internet of things, or IoT, is a system of interrelated computing devices, mechanical and digital machines, objects, animals or people that are provided with unique identifiers (UIDs) and the ability to transfer data over a network without requiring human-to-human or human-to-computer interaction. IoT can automate patient care workflow with the help healthcare mobility solution and other new technologies, and next-gen healthcare facilities. IoT in healthcare enables interoperability, machine to machine communication, information exchange, and data movement that makes healthcare service delivery effective.</p>
6. Waste segregation system
<p>The rapid growth in the population has also led to the surge in the volume of waste being generated on a daily basis. This increase in the generation of waste due to</p>

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continuous growth in the urbanization and industrialization has become a severe problem for the local and the national government. It is also posing a serious problem for the local authorities to manage the wastes being dumped everywhere as landfill. To ensure the minimal risk to the environment and human health, it is necessary to take meticulous measures when segregating and transporting waste. Segregation of waste in a proper manner brings to the limelight actual economic value of the waste. The traditional method used for segregating of waste in India is through rag pickers which are time-consuming and can have adverse effects on the health of the people who are exposed to such wastes. Here we propose the use of a Waste Segregator which is cheap and also an easy to use solution for segregation of household waste. It is designed to segregate the waste into three categories viz. metallic, wooden and plastic waste. The system makes use of a combination of laser and a light sensor for the segregation wooden, rock kind waste, inductive proximity sensor for the detection of metallic waste and rest of the waste such as transparent plastics, bottles are collected in the final bin. LCD display for displaying the result of segregation. It is evident from experimental reports that segregation of waste using this method has been successful.

7. Semi Automated Restaurant

Nowadays people are looking forward for a system that will satisfy their needs more comprehensibly. Most of the restaurants industries are looking for any application that enhances the dining experience as well as that increase the profit. The traditional food ordering system is entirely a manual process which involves waiters, pen and paper. The customer has to wait for waiters to take the order. The waiter notes down the orders from customers, take these orders to kitchen department, update them in records and again make the bill. Though this system is simple; it may involve errors while noting down the orders as well as in making calculations. Even it is sometimes difficult to interpret the handwriting of the waiter. To overcome these limitations in manual system, some systems are being developed to automate food ordering process. By using Smart Restaurant Ordering System, the ordering system is made more efficient and can help the manager to avoid human error and enhance business development. In this system, ordering transaction is a step by step process to make the transaction more systematic and system can guide the staff to avoid any order mistakes. The transaction between waiters and restaurant departments and also between waiters and cashier will be systematic and efficient. Besides the efficiency, this system can give better quality of service to customers and will attract more customers to get this quality services.

8. Accident Alert using GPS Technology and Automated Traffic Light Control for Ambulance

The rapid growth of technology and infrastructure has increased traffic hazards, road accidents and hazardous situations which cause huge loss of health and life due to the late arrival of emergency services. Factors that cause the delay in arrival of help are due to the lack of coordination between emergency services and large traffic. Hence, the system is proposed which will provide an optimized solution to this drawback by coordinating between emergency facilities to increase efficiency of rescue process. It requests for immediate help in case of any emergency situations by detecting the accident by the help of vehicle unit fixed on the vehicle. This system will then contact the nearest hospitals and the ambulance services to the site of the emergency. The unit starts working after it gets network from SIM Card. An impact sensor senses the impact caused by collision. When the accident is detected, the location is decoded from the output of a GPS module and this data is sent as a message to an emergency center by using a GSM module.

9. Power optimisation and monitoring

This project proposes the examination of Electricity and Power Theft Detection which expects to identify any theft identified with power. Electrical vitality is extremely basic and significant for regular day to day existence and goes about as a spine for the industry. Power is in control to our day to day life and plays an important role in every

possible way thus with expanding need of power the relating power robbery concerning power is likewise expanding. Power theft is a serious issue that keeps on plaguing power segment over the entire nation. The objective and motive of this project is to design a system in order to avoid the displeasure for the users from theft. This project manages robbery control system. To give solution over this, Bluetooth module is utilized to impart the sign to the power board. The measuring of energy meter and monitoring is required and it is done with Arduino Uno. The useful framework will be useful for the power board to screen the whole gracefully with no accident or bother. This model decreases the manual control work and robbery control and this prompts accuracy with respect to charging data.

10. Smart city

The Smart Cities project is creating an innovation network between governments and academic partners that is leading to excellence in the development and take-up of e-services and e-government, and which is setting new standards for e-service delivery across the whole North Sea region.

The proposed system approaches towards the development of smart cities and includes below features:

- Rain density measurement and pre-alert for flood detections.
- Accident detections and automatic location identification to the monitoring stations.
- Traffic Density Management and control system.

11. Dual axis solar tracker

This is able to enhance the performance of the photovoltaic modules in a solar energy system. The operating principle of the device is to keep the photovoltaic modules constantly aligned with the sunbeams, which maximises the exposure of solar panel to the Sun's radiation. As a result, more output power can be produced by the solar panel

12. RFID/coin based mobile charger

The coin-based mobile charger designed in this paper is providing a unique service to the rural public area. Where grid power is not available for partial/full daytime so we use coin based mobile charger using radio frequency identification and a source of revenue is provided. The coin based mobile battery charger can be quickly and easily installed outside any business purpose. The mobile phone market is a vast industry, and has spread into rural areas, public places and railways etc. as a essential means of communication. While the urban people use more complex mobiles with good power batteries lasting for several days, the rural people buy the mobile phones that require charging instantly. So many times battery becomes dead in the middle of conversation particularly at inconvenient times when access to a standard charger is not possible, so we use this coin-based mobile battery chargers are made to solve this huge problem. The user has to plug the mobile phone into one of the adapters and insert a coin or RFID reader then phone will then be given a power for charging. The capacity of mobile charging is developed with the help of fixed values. It is, of course, possible to continue charging the mobile by inserting more coins or RFID reader.

13. Automatic irrigation vehicle

The plant needs to be watered regularly, human intervention is necessary to provide water to the plant. In this paper, an Automatic Irrigation System using robotic vehicle with Arduino development board is modelled. In this Plant Watering System, seed sowing, soil moisture sensor monitors the moisture level in the soil and if the moisture level is low, the rain sensor is monitored, if it is raining then no function is performed and if not then Arduino switches on a water pump to provide water to the plants. Before proceeding towards a plant, the Robot will check the obstacle in its path and will trigger the Buzzer in case of any obstacle. Then the movement of the robot can be controlled remotely using Voice Command. This system is very useful in farms, gardens, home, Median Strips of highways, etc. This system is completely automated and there is no need for any human intervention.

14. Smart streetlight with vehicle speed detection system

Smart Street light is an automated system which automates the street. The main aim of Smart Street light is to reduce the power consumption when there are no vehicle movements on the road. The Smart street light will glow with high intensity when there are vehicles on the road otherwise the lights will remain dim. Using IR sensor we can also check the speed of the vehicle. With advancement of technology, things are becoming simpler and easier for everyone in the world today. Automation is the use of control systems and information technologies to reduce the need for human work in the production of goods and services. In the scope of industrialization, automation is a step beyond mechanization, whereas mechanization provided human operators with machinery to assist the users with the muscular requirements of work, automation greatly decreases the need for human sensory and mental requirements as well. Automation plays an increasingly important role in the world economy and in daily experience. Automatic systems are being preferred over manual system. The research work shows automatic control of streetlights as a result of which power is saved to an extent. The Smart street light provides a solution for energy saving which is achieved by sensing an approaching vehicle using the IR sensors and then switching ON a block of street lights ahead of the vehicle with high intensity. As the vehicle passes by, the trailing lights turn dim automatically. Thus, we save a lot of energy. So when there are no vehicles on the highway, then all the lights will remain dim.

15. Human detection robot

This paper deals with the tracking of persons in a human cluttered environment. It is performed by an active perception system, consisting of a camera mounted on a pan-tilt unit and a 360° RFID detection system which are embedded on a mobile robot. Particle filters enable the fusion of heterogeneous data into the proposal distribution from which the particles are sampled. The information provided by the tracker is then used to build sensor-based dedicated control laws in order to make the robot follow the RFID tagged person. Finally, experiments on our mobile robot are presented in order to highlight the relevance and complementarity of the developed perceptual functions.

16. Smart traffic control system

Most people in a metropolitan city will surely have faced the difficulty to reach home by a few minutes earlier than the usual timings, all thanks to the traffic. Many at times, the green light would be shown to empty roads when many other people would be waiting for a wink of it. To bring a change to this scenario, a new plan can be implemented by making the traffic lights a little intelligent. The lights must be able to know which side of the junction actually requires the green light. In order to enable our traffic lights with this capability, this paper proposes a way of training the traffic lights by positioning IR sensors and RFID chips to help detect the extent of the traffic. The RFID will be useful for assisting the fast movement of emergency vehicles and the IR sensors can check if the road is free or not.

17. Hand gesture based Robot

In this paper we have designed a basic robotic chassis which can be easily controlled with the help of accelerometer instead of using button control. Here the most significant device is accelerometer. The accelerometer is the 3 axis estimation gadget with +-3g range. This gadget is made by utilizing polysilicon surface sensor and signal controlling circuit to quantify acceleration. The outcome of the accelerometer is analog in nature and corresponding to the acceleration. This gadget measures the static acceleration of gravity when we tilt it. And gives an outcome in type of movement or vibration. The hand position is sensed and the coordinates generated is considered as the parameter and if necessary conditions are met, the statement prescribed in the arduino code is executed and the direction of the robot chassis is changed accordingly. So that it can perform the task such as forward moving, backward moving, turning left, turning right and stop. In many cases, the robot devices are some tough and complex while we control it with the help of buttons and switches. The major fields that prefers hand gesture

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	<p>robots are Defence field, industrial robotics, vehicle part assemble in civil side, medical field for surgery. In these fields if we are using remote controls and the button, the task will become complex. Sometimes the operator may get confuse in the switch control and button control, so a new concept is used to manage the gadget with the motion of the hand and at the same time it will manage the motion of the device.</p>
18. RFID/ biometric based ration dispenser	<p>This paper proposes a novel application for automating the Public Distribution System. The Government of India supplies essential commodities for everyday use like food grains (rice, wheat), kerosene (fuel for cooking) etc. to a large number of people by an elaborate machinery called Public Distribution System (PDS). This system currently works on manual processes. In this work, it is proposed that Smart Automated Ration Disbursal System (SARDS) using IoT replace the manual processes in PDS. This system consists of Embedded Controllers for online biometric authentication of the consumer, smart measuring for accurate disbursal of the commodities and real-time updating of data on the server. A prototype system to demonstrate its working is built using Arduino. An automatic dispensing system for solid as well as liquid commodity is fabricated and interfaced with the controllers using solenoid valves and sensors. Robust feedback is built into the system using sensors for accurate disbursal of material and detection of theft. Finally, experimental results showing accuracy of delivery of material and time required to process one consumer request are tabulated and analyzed. This system, when deployed in actual field, is expected to be operational 24x7 and ensure safe, secure, fast and corruption-free distribution of Ration commodities to the general public</p>
19. Mining workers tracking and safety system with application interface	<p>Here we propose a mining tracking as well as safety system for the mining industry using microcontroller based circuit on the worker helmet. We use rf based circuitry to detect workers moving through the entire mining site. The helmet is integrated with an rf based tracking system which in coordination with the tracker rf systems helps provide data over IOT. The system makes use of atmega microcontroller based rf tracker circuitry to receive the data transmitted by worker helmet nodes. This helps map the current location of workers through the entire mining site. Moreover each worker helmet circuit is integrated with a panic/emergency button. This button when pressed shows an emergency sign over the IOT web interface about the worker emergency. This can be used for any emergencies like – toxic gas inhalation, cave ins, physical injury etc. Thus the system ensures mining worker safety using IOT.</p>
20. Automated Paralysis Patient Healthcare System Project	<p>We come across hospitals and NGO's serving paralytic patients who have their whole or partial body disabled by the Paralysis attack. These people in most cases are not able to convey their needs as they are neither able to speak properly nor do they convey through sign language due to loss in motor control by their brain. In such a situation we propose a system that helps disabled person in displaying a message over the LCD by just simple motion of any part of his body which has motion abilities. This system also takes care of the situation wherein no one is present to attend the patient and thus sending a message through GSM of what he wants to convey in SMS. Our proposed system works by reading the tilt direction of the user part.</p>
21. Solar Street Lights With Auto Intensity Controller	<p>This system is mainly designed for LED based street lights with auto intensity control. This is done using solar power from photovoltaic cells. Due to the many benefits of using solar energy, many institutions are opting to make use of solar energy. For converting the sunlight to electricity, photovoltaic panels are used for charging the batteries. In order to control charging, charge controller is used. Intensity of street lights is required to be kept high during the peak hours. As the traffic on the roads tends to decrease slowly in late nights, the intensity can be reduced progressively till morning to save energy. Thus, the street lights switch ON at the dusk</p>

and then switch OFF at the dawn automatically. The process repeats every day.
22. Anti Terrorism vehicle authorizing System
<p>In this time of worldwide terrorism, there is a real need to provide promising security solutions in military zones. For the most part, the security needs to be guaranteed while a vehicle seems to enter unauthorized into any sensitive premises. The unapproved vehicles must not be permitted inside. Anyhow, the manual checking of the vehicles is not conceivable and so reliable activity to depend upon. Thus, we are set to fabricate a brilliant wireless correspondence framework, which is mounted in the vehicle that can offer an amazing security system.</p> <p>We propose a robotized check post framework where the vehicle is fitted with a remote embedded framework. This remote framework constantly transmits the vehicle information like the sort of motor number and the ID of an auto vehicle. This information is procured and processed by the framework at every check post. Just after getting an approval from a processor unit, the vehicle can pass the check post else it will be stopped.</p> <p>If there is any unapproved vehicle, the check post framework alerts the embedded framework, which in turn stops the vehicle to enter into the secured premises.</p>
23. Connected cars (vehicle to vehicle communication)
<p>The applications of this concept consists of providing our cars and roads with capabilities to make the road more secure (information about the traffic, accidents, dangers, possible detours, weather, etc.) and to make our time on the road more enjoyable (Internet access, network games, helping two people follow each other on the road, chat, etc.). These applications are typical examples of what we call an Intelligent Transportation System (ITS) whose goal is to improve security, efficiency and enjoyment in road transport through the use of new technologies for information and communication (NTIC).</p>
24. Automation System in Hospitals using RFID technology
<p>RFID is a technology being adopted in many business fields, especially in the medical field. This work has the objective to present a system for automation of a hospital clinical analysis laboratory. This system initially uses contactless smart cards to store patient's data and for authentication of hospital employees in the system. The proposed system also uses RFID tags stuck to containers containing patient's collected samples for the correct identification of the patient who gave away the samples. This work depicts a hospital laboratory workflow, presents the system modelling and deals with security matters related to information stored in the smart cards.</p>
25. Solar Powered Robot for Pesticides Spraying & Grass Cutting
<p>A Solar Powered Automatic Grass Cutting And Pesticide Spreading robot project is mainly proposal for reduce the manpower and usage of electricity. Solar plate is used to provide the source to the battery charging. It is an automated system for the purpose of grass cutting. The source is drive from the solar energy by using solar plate. The system control is done by the Arduino UNO R3. Automation is achieved by using sensors and Arduino UNO R3. Wheels and cutting operations are done using dc motors. DC battery is utilized for powering and standby mode operation of the system. The whole supply is provided through the battery and to charge the battery charger circuit is used to provide the charging for the battery. Also the second application is that the spreading of pesticide here we used the water pump with spreading nozzle.</p>
26. AUTOMATED MEDICAL DISPENSING SYSTEM USING ROBOTICS
<p>In today's world, people are suffering from several diseases and due to this the need for medication has increased exponentially. An average person takes 2-3 tablets a days and there is a chance for the person to let slip from the memory. In order to avoid such mistakes an automated system for dispensing medicines is required. In the paper, we present a prototype robotic system that automatically dispenses medicines to the patients in the hospital. The robot model which carries medicines for patients will deliver them at the respective time. The robot uses line follower method to deliver the</p>

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	<p>-pills to the patient's room. In this way the medication errors can be prevented and the need for the patient to remember their medicines is not needed anymore</p>
27. Smart Building using IoT & PIR	<p>This is a project-based course in which you will build an IoT based electronic device that forms the basis of smart buildings. Smart buildings are the ones where various parameters like temperature, lights, water etc. are monitored and analysed so as to make it highly efficient. In this project, we will work on smart lights in a smart building. Here we sense the number of occupants in the meeting room with the help of PIR sensors and automatically switch the lights ON/ OFF based on occupancy. You will be able to analyse the usage of the meeting room, number of persons at various times of the day, the time for which lights are on and the power consumed.</p>
28. IoT based Smart parking system	<p>In this paper, we present an IoT based cloud integrated smart parking system. The proposed Smart Parking system consists of an on-site deployment of an IoT module that is used to monitor and signalize the state of availability of each single parking space. A mobile application is also provided that allows an end user to check the availability of parking space and book a parking slot accordingly. The paper also describes a high-level view of the system architecture. Towards the end, the paper discusses the working of the system in form of a use case that proves the correctness of the proposed model.</p>
29. Over Speed Indication and Automatic Accident Avoiding System for Four Wheeler.	<p>The object of this project is to detect the speed of the vehicle and cut off the fuel if it exceeds set speed .this project designed with micro controller proximity sensor as a speed and driver circuit with relay and keypad. In this project we are using proximity sensor as a speed detector .a proximity sensor can detect object without physical contact .A proximity sensor often emits an electromagnetic field or beam and look for changes in the field .the object being sensed is often refer to as the proximity sensor target .here is an inductive proximity sensor, requires a metal target. This system is used to monitor speed of the vehicle and to avoid the accident by using the proximity sensors. This over speed indication and automatic accident avoiding system senses the opposite vehicle by the proximity detector and stops both engines and applies auto braking thus preventing the accident this system is used to read and control the data from the vehicle .and then process it by using microcontroller .the LCD module displays the rpm and the speed of the vehicle .for over speed the alarm raises and alerts the driver. This contains, Accident sensing module and RPM monitoring system.</p>
30. Coal Mine System for Safety Monitoring & Alerting	<p>The accidents in coal mines are increased day by day. There are numerous life losses of many skilled workers and labourers. There is no advent precaution measure to detect the alarming cause of the coal mine accidents and provide an alert system. Occupational accidents and occupational diseases are common in the mining. The most common causes of accidents in coal mining are firedamp and dust explosions, landslips, mine fires, and technical failures related to transport and mechanization. An analysis of occupational accidents in the consideration of social and economic factors reports that the real causes behind these accidents, which are said to happen inevitably due to technical deficiencies or failures. Thus an automated alarming coal mine accident detection system is employed to rescue and protect the workers from the hazards. This system incorporates the combined action of the temperature, pressure and gas sensor and IOT module to detect the temperature, pressure and atmosphere in the coal mine and log every data onto the cloud using data logging. Then these data are accepted by an admin controlled sever page through data acquisition. The data processing takes place at a server page and the alert is send to the device to glow the alarm and to the concerned officials and</p>
31. Intelligent Vehicle Control Using Wireless Embedded System in Transportation System Based On GSM and GPS Technology	<p>Currently almost of the public having an own vehicle, theft is happening on parking and</p>

sometimes driving insecurity places. The safe of vehicles is extremely essential for public vehicles. Vehicle security and accident prevention is more challenging. So in order to bring a solution for this problem this system can be implemented. Vehicle security enhancement and accident prevention system can be developed through the application of ignition control (tracking and locking), fuel theft, accident detection and prevention, driver fatigue, pollution control and speed limiting with efficient vehicle management system. The need for this project is to provide security to the vehicles by engine locking system which prevents the vehicle from unauthorised access. This technique helps to find out the exact location of the accident and with the help of server an emergency vehicle can be sent to the exact location to reduce the human life loss. It also detects the behaviour of the driver through sensors whether he/she is drowsy or drunk, so that occurrence of accident can be prevented. The place of the vehicle identified using Global Positioning system (GPS) and Global system mobile communication (GSM). This is more secured, reliable and low cost.

32. Hand gesture based intelligent wheel chair

This paper is to develop a wheelchair control which is useful to the physically disabled person with his hand movement or his hand gesture recognition using Acceleration technology. Various Projects have been undertaken previously to develop automatic wheelchair using various technology like button control, Retina controlled. But none have such combined features like Navigation, Dark Room Sensor, Automatic messaging, Obstacle detector. This project will make the user life more comfortable and more independent and is also cost effective and requires low maintenance. Tremendous leaps have been made in the field of wheelchair technology. However, even these significant advances haven't been able to help quadriplegics navigate wheelchair unassisted. It is wheelchair which can be controlled by simple hand gestures. It employs a sensor which controls the wheelchair hand gestures made by the user and interprets the motion intended by user and moves accordingly. Microcontroller controls the wheelchair directions like LEFT, RIGHT, FRONT, and BACK. The aim of this paper is to implement wheelchair direction control with hand gesture reorganization. The features included in this project are, We are using touch plate sensors to control wheelchair movement, Obstacle detection with the message on mobile via Bluetooth and deviation from the obstacle, Panic Switch with the alert message to the near ones, Illumination of the LEDs in the dark places, Navigation through Google maps.

33. Autonomous Robot with artificial vision for obstacle detection.

The purpose of this project is to build an Obstacle detection Robot with Ultrasonic Sensors. This Robot automatically senses the presence of obstacles in its path and changes its direction of movement. The obstacle detection mechanism is done by an ultrasonic sensor that makes uses of ultrasonic waves to find the presence of an obstacle in its path.

This consists of a Microcontroller based control system, battery powered DC motors and Ultrasonic Sensor. This autonomous robot senses the obstacles in its path by continuously transmitting the ultrasonic waves. If any obstacle comes in its vicinity then the ultrasonic waves get reflected back to the robot. The ultrasonic receiver fitted on the robot senses these ultrasonic waves and this information is passed onto the Microcontroller. Now the Microcontroller takes necessary action like taking the diversion, reversing the robot direction etc.

This robot is designed in such a way that there is no requirement of manual attention towards it. It makes use of the ultrasonic sensors to detect the obstacle present in its expected trajectory and dynamically changes the trajectory to be followed.

34. Transformer oil temperature monitoring with automatic Circuit Breaker operation.

This project aims at monitoring the oil temperature of a multiple transformers continuously and protects them from overheating. Since transformers are vital elements of the electric power transmission and distribution infrastructure, they need to be monitored to prevent any potential faults. Failures in a transformer can easily costs

several million dollars to either repair or replace, and will also cause a loss of service to customers and revenue until the symptom is found and repaired.

In transformers the need for monitoring the oil temperature is very much necessary. Turning the transformers OFF whenever the temperature is greater than its maximum operating temperature protects the transformer from damage and the lifetime of the transformer can also be increased. Since the oil is present inside the transformer there is a necessity to develop a system which can see the temperature of the oil inside the transformer and automatically switches ON the Circuit breaker if temperature exceeds the limit and also inform the electricity department through SMS to predefined number and also alerts through LCD display. The oil temperature of multiple transformers can be continuously monitored on LCD display provided in the system.

35. Packed food vending machine.

Vending machine is a coin operated machine for selling merchandise. Vending machine provides various product such as snacks, beverages, water, tickets, and others product. Vending machine has many benefits such as no need human energy, flexible in time, and saving time.

Firstly vending machine benefit is not using any human energy on it. The vending machine is managed by operator. Machine manufacturers sell machines to the operator that decides which payment system. The labour work can be saving from having operators that's operated on it.

Secondly, vending machine is flexible in time that does can operate in 24 hours a day, seven days a week; each consuming between 2,500 to 4,400 kWh per year. The vending machine can be operated anytime although that was holiday or weekend.

36. Automatic paint mixing machine

Detection of desired colour and its automated generation can be very useful. Each colour has specific wavelength in visible spectrum ranging from 400nm-700nm. Based on its wavelength and other properties a machine could be developed that could utilize the principle of robotics to automatically mix the primary colors viz. red, blue and green (RGB) in required proportions to obtain the similar color as required. The automated system can be further developed to spray-paint a given area with the help of robotic arm. This fully automated system will definitely have the following benefits. Improved quality: with an automated robotic spray painting arm, we can expect to create a more reliable, high quality end product. The robotic spray gun always remains at the proper distance away from target object hence provide accessibility in hard to reach areas with ease. Conserve paint: it can cut down the material cost as it is precise and does not overspray. Play-it-safe: avoid exposure to harmful toxins. Save energy: Robotic spray allow for more compact and precise painting which requires less physical effort

37. Remote controlled camera assisted pick and place robot

The design analysis of a Remote Controlled “Pick and Place” Robotic vehicle has been presented in this paper. This work unravels the fact that man would always want to adhere to safety precautions at workplace and even in its environment, to be able to handle some specific tasks, like sending the robotic vehicle to hazardous environment to obtain samples for chemical analysis. A typical Robotic Vehicle is capable of travelling over various terrains and traversing obstacles. In one embodiment, the design in this work includes a Robotic arm of five Degree of Freedom with its base resting directly on top of the vehicle, a body having four drive wheels coupled to the ends thereof. The wheels are selectively powered to propel the vehicle. The design methodology involves the hardware, software part and implementation of both designs. A prototype of the Remote Controlled “Pick and Place” Robotic vehicle was built to validate design specifications. The results obtained were very satisfactory. The use of Robots is highly recommended for Industries especially for safety and productivity reasons.

38. Obstacle detection robot with ultrasonic sonic sensor

This project describes about an obstacle avoidance robot vehicle which is controlled by ultrasonic sensor. The robot is made using ultrasonic sensor and it is controlled by

Arduino microcontroller. Ultrasonic sensor fixed in front portion of the robot vehicle. The sensor gets the data from surrounding area through mounted sensors on the robot. The sensor is sense the obstacle and deviate its path to choose an obstacle free path. The sensor will be send the data to the controller is compared with controller to decide the movement of the robot Wheel. The robot wheel movement and direction will be based on the sensing of the ultrasonic sensor and also using a wheel encoder. This vehicle is used for detecting obstacle and avoiding the collision. We have programmed the controller to be used with ANDROID app.

39. Wildlife Monitoring System using GSM System.

Every living creature on this earth has equal importance in the ecosystem. But nowadays life of wild animals is in danger. Wild animals used to move freely in the forest or in the jungle. If any accident happens to them in the forest, physical injury or any disease may cause even death of animals in the forest. In such situations we cannot find out exact location of animal in such a large area. To avoid such problems in the finding exact geographical location of animal in the jungle, national park or in wildlife reserves, wildlife animal tracking system is used. This system utilizes technologies such as Global Positioning System and Global System for Mobile Communication.

40. Weather monitoring system using IoT

In this research, a foundation is set for an efficient solution for tracking the weather conditions of a specific location and making the information available anywhere in the world. The technological advances behind this is Internet of Things (IoT), which is an efficient and effective solution for linking the things to the web and to connect the entire world of things in a network. Here things could be like electronic gadgets, sensors, and automotive electronic devices. The system functions with tracking and monitoring environmental circumstances such as temperature, relative humidity, light intensity, pressure and quantity of rainfall with sensors and whenever these scores exceed a selected threshold limit for each an e-mail, an SMS alerts the appliance owner to take the required steps.

41. Automatic Conveyor for Industrial Automation

In this project we have to control the conveyor automatically by sensing the objects placed in the conveyor. Also, by using RPM sensor we have to control the speed the motor. The number of tags handled by the conveyor on the whole will be displayed simultaneously along with regulating the speed of conveyor. This project will save the power of motor operating the conveyor by regulating the conveyor automation, i.e. the conveyor actuates only when a tag is sensed.

42. Power efficient smart inverter

Inverters are nothing but they serve as a backup power when electricity is shut down. This project focuses on DC to AC power inverters, which aims to efficiently transform a DC power source to an AC source, by minimizing some amount of transformer no load losses. The proposed system can save the energy by having a concept of no load shutdown.

This project describes the nullification of no load losses in the transformer. The no-load loss is nullified with the help of continuity tester, which check whether the load is connected or not. Which means in the inverter mode, when no load is detected the system will cut off the inverter supply automatically. When the inverter is in off mode and if the user switches on any of the connected load, the system will identify the user requirement and will switch on the inverter automatically.

43. Smart shopping trolley with automatic billing

Now a day's interest in shopping malls is widely increasing among people. People get daily necessities from shopping malls. There is an emerging demand for easy and quick payment of bills in shopping malls. Shoppers are frustrated at locating the items on the shopping list when shopping in shopping malls and when no assistance is available in shopping. To eliminate these problems, each product in the shopping mall will be provided with a RFID tag, to identify its type. Each shopping cart is implemented with a

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	<p>Product Identification Device (PID) that contains a microcontroller, an LCD, RFID reader and a ZIGBEE transmitter. RFID reader will read the purchasing product information on the shopping cart and the information about the product is displayed on LCD which is interfaced to the microcontroller. At the billing counter, the total bill will be transferred to PC at the counter side by using ZIGBEE module.</p>
44. Voice Operated Intelligent Fire Extinguisher Vehicle	<p>This paper shows the investigation and use of voice operated fire extinguisher vehicle with water jet spray. The vehicle is controlled through related talk input. The vernacular information allows a customer to team up with the robot which is unmistakable to an extensive segment of the overall public. The upsides of voice operated robots are sans hands and fast data input operations. The voice affirmation structure is set up in a way that the robot is controlled in perspective of the rule through the Speech Commands. The whole structure contains three subsystems, the discourse acknowledgment framework, transmitter range besides, the authority fragment (on vehicle). The results exhibit that proposed robot is prepared for controlling fire, sidestepping obstacles in addition, perception the significance of speech requests.</p>
45. Electronic Vehicle Identification In The Intelligent City	<p>Transportation is one of the major sectors contributing to the growth of any country's economy. Involvement of information technology increases both efficiency and safety of such an important sector. The objective of this thesis is to propose a single cost effective solution that merges many applications improving the efficiency and safety of the existing transportation infra-structure in Egypt. The most promising systems to do so, is the Electronic Vehicle Identification (EVI) system, we present the implementation of two applications on that system: speed limitation and electronic toll collection. By comparing these technologies we choose active RFID to implement our system.</p>
46. Solar automatic grass cutter	<p>In subsisting system the motored powered engines are utilized for the grass cutting. The fundamental downside of the subsisting framework is the different individual is required to operate the machine. In any case, in our framework we actualize the BLUETOOTH module. Right now module is utilized to control the entire system movement. According the data received from the Bluetooth the vehicle move. A sun powered board will be connected on the highest point of the robot due to this decreases the force issue. The framework is utilized for the House gardens, little ranches, nurseries, play areas and so forth.</p>
47. IOT Based Accident Prevention and Tracking System	<p>Fatal Road accidents can be easily avoided by understanding the psychological state of drivers. Majority of the road accidents occur during driving due to the drowsiness state of vehicle drivers. This paper provides head movement that alerts the subject during the state of drowsiness. An embedded system based on psychological state of the subject by monitoring head movements is useful in warning drivers during initial sleep cycle phase of drowsiness. The physiological sleep state analysis of the subject can be determined by monitoring head movement using an accelerometer. If he/she falls asleep, then an alarm will ring to wake him/her up. An Internet of Things (IOT) enabled sensors are used to transmit the entire data collected by sensors over a smart grid network for quick response team to take actions under emergency conditions.</p>
48. RFID based Airport Luggage Security System.	<p>In the proposed system we are going to use latest technology RFID (Radio Frequency Identification). The RFID technology is used everywhere in which the main factor is Uniqueness. The unique property is provided by creating unique number for every RFID Tag. In this Tag we can store certain amount of data which are used in identification. The data in the Tags are read via RFID reader. In our proposed system we are going to implement passive RFID for luggage identification. In every luggage we are going to give a RFID Tag with the passengers detail in it. The main aim of this paper is that to trace and check the luggage at different security stages at the airports and</p>

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inform the passenger about the status of his/her luggage every time the luggage passes each stage. Every luggage attached with an RFID card with unique number. That number is given to the passenger at the entrance of the airport. If this RFID tag make in communication with the RFID reader at the each stage, the data passes to the PC through the RS 232 cable and checks for any prohibited items like metals by using metal sensor contained in the luggage. This checking of metals in the luggage was done by the metal sensor. If the metal detected, the system gives alarm and inform the user through the message using GSM modem and the same information was passed to the database.

49. IoT based Real time Automation of Irrigation

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

50. Dual Controlled, Solar Powered, Smart Pesticide & Fertilizer Spraying Robot

With the increasing population day by day the focus on effective and agricultural methods is getting more attention. The technological advancements are used to required scale in industrial sector, but agricultural sector still uses obsolete methods. Thus with this as a major area of concern, this project deals with the development of wireless dual control solar powered smart insecticide and fertilizer spraying machine to help Farmers. The proposed machine should be able to spray insecticides pesticides and fertilizers using a tank provided onto the machine. The dual mode control permits the control of machine using remote controller. In addition the proposed machine should have the ability to adjust the height of spraying for different crops.

51. Detection of Traffic Density & Signal Adjustment using IR

The project is a traffic signal controller system that reacts to the density of traffic. The time required on changing signals adjusts automatically depending on the density of traffic. Well traffic problems contribute a major problem in many cities and also increase fuel consumption as well as pollution. Traffic signals operating on fixed signal timing delays do not adjust to the changing traffic density. When the traffic density increases more than a limit at one particular side, it needs longer green light duration to ease traffic flow. Our system uses a microcontroller of the Atmega family that is interfaced with IR sensors. These IR sensors are used for line of sight object detection using which the system gets an input of the traffic density. Traffic density is measured as “low, medium and high”. Based on this density reading the system adjusts and varies the traffic signal duration for that particular way. This system can also be further enhanced by using multiple such systems across the city and synchronizing them through a network.

52. Detection of Air Pollution in Vehicles using Embedded System

Air pollution is not only harmful to the environment but to all the other living beings on earth. Seventy-five percent of the total carbon monoxide emissions are caused due to automobiles. In urban areas, automobile emissions contribute to 50-90% of the total air pollution. Every vehicle will have emission. It is not possible to avoid emissions completely but it can be monitored and controlled by using a pollution detection system. The standard levels of emission are set by the government as per Bharat Stage norms. Due to the improper maintenance of vehicles the emission level of the vehicle increases. When the emission levels of the vehicle increases, vehicle owner will be informed about the harmful levels of pollution. If no action is taken by the owner then this information along with the location of the vehicle will be given to pollution regulatory body. This

information will be helpful to identify the polluting vehicles in an area. Hence, necessary action can be taken by the authority against the vehicle owner to control pollution. The real time data of the polluting vehicle can be given to the pollution regulatory body. The synchronization and execution of the entire process is monitored and controlled by using microcontroller.

53. Monitoring & Detection of Manhole using IoT

Nowadays, accidents due to broken and missing manhole covers are quite frequent. Manholes are not monitored properly in developing countries. These accidents can lead to serious injuries and also death. Hence, here we propose a system to overcome this problem. We have included an array of sensors for complete monitoring of the manhole cover so that such accidents can be prevented. This project includes a gas cover to monitor the gas emitted from the sewage systems so that toxicity can be monitored, the internal temperature is also monitored if a check for a change in the temperature as the property of manhole change with temperature which could need to crack formation, a tilt sensor is introduced to indicate whether the manhole can tilt. Also, a float sensor is used to indicate when the water level goes beyond a certain level, in case of any alert due to any of the parameters we send an SMS to an authority number as well as on the IOT website. Also, all the parameters are continuously updated on the website.

54. Ultrasonic radar robot

Recently, academia and industry have focused on the creation of new systems for mapping and exploration of unknown spaces in order to create advanced guide systems for robots and people affected by disabilities. In particular, the most common applications are related to the exploration of unknown and/or dangerous spaces that are not accessible to people by exploiting the advantages offered by ultrasonic technology. This work aims at designing a new low-cost system, namely Ultrasonic Radar System (URAS), to blindly map environments by using ultrasonic sensors, then displaying the acquired information through an Android/ Windows based device.

55. Smart dustbin with IoT

In the recent years, there was a rapid growth in population which leads to more waste disposal. So, a proper waste management system is necessary to avoid spreading some deadly diseases. But due to lack of resources, ineffective groundwork, some waste is not collected which poses serious health hazard to the surrounding environment. The government of India announced smart cities and the key to smart cities is cleanliness. In support of clean city we design a dustbin which can interact with the cloud (free cloud for demonstration) and push its filling percent at regular intervals (say every 1 hour or its status set to full). If the status of the dustbin is filled, a message is pushed to the municipal person who is responsible to empty the bin. The filling percent monitored by weight sensor and ultrasonic sensor continuously. The status of the bin set to full when either the threshold weight reached (may be some space available in the bin) or it is filled up to a threshold level (may be the weight less than the threshold) and by using analysis of statistics to estimate area wise quantity of waste which in turn used to rank areas which helpful in cities clean.

56. Smart colour based product sorting machine

Sorting of products is a very difficult industrial process. Continuous manual sorting creates consistency issues. This paper describes a working prototype designed for automatic sorting of objects based on the colour. TCS230 sensor was used to detect the colour of the product and the PIC16F628A microcontroller was used to control the overall process. The identification of the colour is based on the frequency analysis of the output of TCS230 sensor. Two conveyor belts were used, each controlled by separate DC motors. The first belt is for placing the product to be analyzed by the colour sensor, and the second belt is for moving the container, having separated compartments, in order to separate the products. The experimental results promise that the prototype will fulfil the needs for higher production and precise quality in the field of automation.

57. Automatic floor cleaning robot
Households of today are becoming smarter and more automated. Home automation delivers convenience and creates more time for people. Domestic robots are entering the homes and people’s daily lives, but it is yet a relatively new and immature market. However, a growth is predicted and the adoption of domestic robots is evolving. Several robotic vacuum cleaners are available on the market but only few ones implement wet cleaning of floors. The purpose of this project is to design and implement a Vacuum Robot Autonomous and Manual via Phone Application. Vacuum Cleaner Robot is designed to make cleaning process become easier rather than by using manual vacuum. The main objective of this project is to design and implement a vacuum robot prototype by using Arduino Mega, Arduino Shield, LDR Sensor, Real Time Clock, Motor Shield L293D, Ultrasonic Sensor, and IR Sensor and to achieve the goal of this project. Vacuum Robot will have several criteria that are user-friendly.
58. RFID Based Library Management System Project
Radio Frequency Identification (RFID) is a new generation of Auto Identification and Data collection technology which helps to automate business processes and allows identification of large number of tagged objects like book, using radio waves. RFID based Library Management system (LMS) would allow fast transaction flow for the library and will prove immediate and long term benefits to library in traceability and security. The proposed system is based on UHF RFID readers, supported with antennas at gate and transaction sections, and library cards containing RFID-transponders which are able to electronically store information that can be read / written even without the physical contact with the help of radio medium. This paper presents the experiments conducted to set up RFID based LMS.
59. Distribution Transformer Monitoring
This project is about design and implementation of a mobile embedded system to monitor and record key parameters of a distribution transformer like load currents, voltage and ambient temperature. The idea of on-line monitoring system integrates a HC-05 Bluetooth, with a standalone Arduino and different sensors. It is installed at the distribution transformer site and the above parameters are recorded using the analog to digital converter (ADC) of the embedded system. The obtained parameters are processed and recorded in the system memory. If any abnormality or an emergency situation occurs the system sends a notification message to the mobile phones containing information about the abnormality according to some predefined instructions programmed in the microcontroller. This mobile system will help the transformers to operate smoothly and identify problems before any catastrophic failure.
60. Thermoelectric Refrigerator
The objective of this project work is to develop portable thermoelectric refrigeration system capable of maintaining vaccine temperatures between 10°C and 15°C. The main system consisted of thermoelectric module as cooling generator along with insulated cabin, microcontroller and SMPS.