Vehicle Tracking System Using GSM & GPS

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Name of the Guide: Prof. Dr. R. A. Patil

Abstract

The project design consists of a Receiver kit and a mobile application. The Receiver kit includes a GSM module, a GPS module and Arduino UNO. For keeping the track of the vehicle we use GPS module. To get location of the vehicle, a message from the mobile application by entering mobile number of the sim card in GSM module and password is to be sent. In the Receiver kit Arduino continuously monitors whether the GSM has received any msg. From the received message, Arduino extracts the mobile number and password and then checks for password match. If the password matches, then the GPS is activated. The latitude and longitude are taken from the GPS module by Arduino and encrypted into a message and sent on the received mobile number using GSM module. The application receives the location in the form of latitude and longitude, and it has the facility to plot the location on Google maps.

SMILE DETECTION USING IMAGE PROCESSING

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Name of the Guide: Prof. DR. P. P. REGE

Abstract

Many studies have shown that facial expressions are vital for human-human interaction, and they are considered one of the most important cues in the psychology of emotion. People express their emotion mostly through visual, facial and bodily expressions. Consequently, facial expression recognition is the major indicator of a human affective state.

The Android project implements a fast mood meter based mostly in smile/frown detection. We pre-process the image and implement Haar cascade object detection to get based on neighborhood pixels' size detecting smile. The novelty of this project is the restrictions of battery drain in mobile devices that is addressed through strategies to save the battery consumption and improve the accuracy not implementing a better classifier but educating the user to eliminate false positives.

The MATLAB project is based on image processing on both static images and frame-by- frame video. Firstly, we applied face detection method to locate face in the images. Here, we used Viola-Jones algorithm for face detection with MATLAB program. Mouth is detected in same manner as the face is detected. Then, we apply selection criteria for detecting the interest points with the help of a rectangle drawn on the mouth portion. The thresholding concept has been implemented to find out mouth corners. Further, we applied smile detection algorithm to count the number of zeros in left and right image and if the count is less than some threshold value then accordingly ratings are given. For setting threshold approximately 150(smiling and non-smiling) images are used.

Smart Irrigation using Wireless Sensor Networks

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Name of the Guide: Prof. Dr. R. A. Patil

Abstract

Agriculture uses almost 85% of the available freshwater resources worldwide. This percentage will continue to be dominant in water consumption because of population growth and increased food demand. Irrigation control systems solve most of the problems mentioned above. But, most of the irrigation control systems used wired layout. It has complex wiring, installation and maintenance costs associated with it. These systems can be improved further by Wireless Sensor Networks (WSNs).

An automated irrigation system built using wireless sensor network is feasible and cost effective for optimizing water resources for agricultural production. Using the automated irrigation system, we can prove that the use of water can be reduced for different agricultural production. The irrigation system provides only required amount of water to crop.

The system that is developed in this project consists of two major components, viz. end system and a Control Unit. End system is basically a wireless sensor unit (WSU) where the data pertaining to the conditions in the farm is fetched through sensors. Control Unit is the system where the data fetched from the sensor is stored and analyzed to generate control signals.

WSU is to be placed in the field with the sensors near root zone of the plant. Wireless sensor node includes a temperature and humidity sensor, a soil-moisture sensor and a motor interfaced to a microcontroller and a XBee module to transmit the data fetched from the sensors and to receive the control signals. The other end of the system consists of control unit with a XBee transceiver. Control unit comprises of a RF transceiver and a controller (personal computer or a laptop). Control unit is housed at a place of convenience of the user. The data transmitted from all the sensor nodes employed in the farm is collected at control unit and processed as per the algorithm to generate control signals which are sent back to the corresponding sensor node.

Testbed for Attitude Control System of satellite

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Name of the Guide: Prof.A.M. Sapkal

Abstract

Attitude determination and control systems of satellites (ADCS) only operate as designed in the reduced friction and magnetic environment of space. Emulating these characteristics of space in a laboratory environment in order to test individual components and integrated ADCS systems is a necessary and challenging step in verifying and predicting satellite's behavior in space. This generic platform is being built for testing passive and active control strategies for satellites. The testbed comprises of the Helmholtz cage, hemispherical air bearing and a series of sensors for attitude determination. The air bearing has an ingenious low cost design, its hemispherical design interface with satellite casing allows 3 axis movement of satellite with restricted rotational freedom.

Electrical circuitry is divided in two sections – transmitting and receiving section. Transmitting PCB consists of magnetometer, accelerometer, gyroscope and temperature sensors. These sensors are interfaced with controller via I2C interface. Accelerometer, gyroscope and magnetometer data is transmitted to the receiving side over a wireless Bluetooth link. This PCB is mounted on air bearing which is placed inside Helmholtz cage.

Copper wire wound over Helmholtz cage is used for generating uniform magnetic field per axis. Receiving PCB consists of three low power solenoid driving circuits designed for driving Helmholtz coils. All these circuits will be powered up using AC mains. Transformer, Rectifier, and regulators will be used. Integration of these circuits with independent microcontroller allows real time response and accurate control on feedback from magnetometer placed in the setup. Pulse width modulation with adaptive duty cycle is used to control excitation of coils. Orbit is predicted using SGP4 model and orbital two line elements Magnetic field is calculated using International Geomagnetic Reference Field (IGRF) model. Both these models are implemented on a computer which is interfaced with receiving side controller. Complementary filter implemented on the computer, combines the accelerometer and gyroscope data received, predicting the angular displacement of the satellite while suppressing sensor's noise to increase precision.

Thus the setup allows attitude determination and control algorithms to be tested in a simulated magnetic field, near frictionless and torque less environment. This project involves orbital and magnetic field simulation techniques followed by the design and construction of a Helmholtz cage and PCBs at transmitting and receiving side suitable for the testing and evaluation of the attitude determination and control system (ADCS) of a satellite.

Patient Monitoring System

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Name of the Guide: Prof. Dr. R.A. Patil

Abstract

In this seminar, Continuous technological innovation in research and development in the last two decades has resulted in the development of divergent smart system for health monitoring for individuals at their home with wireless technology. Patient monitoring system is gaining importance due to the increase of cardiac diseases which demands monitoring of health status of patient. Therefore, a wearable non-invasive device has been developed to monitor physiological parameters, such as temperature and heart rate of a human subject.

The system consists of an electronic device which is worn on the wrist and finger of person to be monitored. The system can be used by elderly or the person at risk or even by a normal person for the monitoring of physiological parameters. Using several sensors to measure divergent vital signs, the person is wirelessly monitored within his own home. A Blood pressure sensor has been developed to monitor the blood pressure continuously. The device has the capability to determine the stressed condition of the person and may be used to send an alarm signal to a receiver unit that is connected to a computer via Arduino Yun Board. This sets off an alarm, allowing help to be provided to the user.

Smart Campus with Auto Irrigation system and Wireless Biometric Attendance System

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Navdeep Kaur (141307009)

Project Guide: Mrs. Vaishali Ingale

Abstract

The Smart Campus project envisions a university campus where technology assists faculty, staff, students and visitors to improve and more efficiently accomplish their daily activities. The objective of this project is to design and implement an Automated Irrigation System which waters the plants around the campus by checking with the weather forecast to see if any rain is expected. This systems stores the moisture values on to a server with the help of an WiFi Module. This data can be used to analyze the soil quality as well as to predictively vary the moisture threshold. Another objective is to implement a Wireless Biometric Attendance System to reduce the time wasted in lectures to take attendance. The attendance data is stored on an Internet of Things server on which it can be displayed with the help of various visualizations using MATLAB.

The First chapter introduces us to the concept of Smart Campus and Smart City. It explains how this project is instrumental in the development of a city. The Second chapter explains the aim of this project and the various objectives that have to be accomplished to reach our goals. The Third chapter introduces us to the various components and services used to implement this project. These include the Arduino Mega, the moisture sensor, the WiFi Module (ESP8266) as well as the Things peak IoT service. The Fourth chapter talks about the methodology involved in designing and implementing the project. The Fifth chapter contains the results obtained after successfully implementing the project. The Last chapter explains the project in brief and also explains some future goals that could be implemented to further assist the goal of becoming a “Smart Campus”.

VEHICLE LOCATION DETECTOR USING AUTOMATED NUMBER PLATE RECOGNITION

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Name of the Guide :Prof. Dr. Vibha Vyas

Abstract

Automatic number plate recognition is a mass surveillance method that uses optical character recognition on images to read the license plates on vehicles. ANPR technology tends to be region specific, owing to plate variation from place to place.

The project aims at developing a system, which captures movements of traffic on the road(the image of number plate of vehicle) and authenticates the owner of the vehicle. The owner of the vehicle is alerted when the particular vehicle is spotted in an area where the system is being installed. The platform being used to develop the system is Raspberry Pi 3board. The reason for choosing this platform is that the board in addition to being small in size, can efficiently communicate with input and output peripherals which are added on the board. When any vehicle passes by the system, the image of the number plate of vehicle is captured using camera. The image of the number plate details is fed as input to the Raspberry Pi processor. The Processor takes responsibility to detect the number plate ofthe vehicle. Once the vehicle details are recognized then the processor sends aSMS/EMAIL to the owner.

WIRELESS SENSOR NETWORK

Sayali Badambe (141307005)
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Name of the Guide: Prof.Vanita Agarwal

Abstract

There is a need for some innovation in the field of agriculture. This can be achieved through modern technologies which assist computing, communication and control within devices. WSN suit for this purpose. Wireless sensor networks (WSN) technologies have become a backbone for modern precision agriculture monitoring. WSN in agriculture helps in distributed data collection, monitoring in harsh environments, precise irrigation and fertilizer supply to produce profuse crop production while diminishing cost and assisting farmers in real time data gathering. It presents the preliminary design on the development of WSN for crop monitoring application. The proposed WSN system will be able to communicate each other with lower power consumption in order to deliver their real data collected to the farmer's.

As population increases, it becomes necessary to improve the efficiency of farming practice. Advancement in wireless sensor network made this idea possible which was nearly impossible few decades ago. Real-time data can be collected using Wireless sensor network which can be useful for taking various types of decision for farming practice so that large amount of output can be gained using limited amount of resources and there is no waste of resources. Study some of the agricultural parameters such as soil, Water, crops, Irrigation, Chemical fertilizers issues and environmental issues of specific region. Adopt technique for controlling the agricultural parameters that Use different sensors to sense the agricultural parameters, collect transmit the information, wireless receiver receives the information. Design the module which useful in rural development and observation of readings. Always measure the performance and benefits to the farmers. WSN is an intelligent private network made by a large number of sensor nodes which do specific function. Precision agriculture and WSN applications combine an exciting new area of research that will greatly improve quality in agricultural production, precision irrigation.

GPS based Soldier Tracking and Health Monitoring System

Subcarriers

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Name of the Guide: Prof. Mrs.D.V.Niture

Abstract

In today's world, enemy warfare is an important factor in any nation's security. We all know that soldiers play an important role in the world. There are many concerns regarding the safety of soldiers. Many instruments are mounted on the soldiers to view their health status. Bio-sensor systems comprise various types of small physiological sensors, transmission modules and processing capabilities, and can thus facilitate low-cost wearable unobtrusive solutions for health monitoring.GPS is used to get the longitude and latitude so that direction can be known easily. These GPS devices are used to track the position of the soldier. GSM module can be used for High-speed, short-range, soldier-to-soldier wireless communications that will be required to relay information on related data during special operations and other mission. We are trying to implement the system for soldiers that will help them. This device is of low cost and it is highly reliable.

In our project we have come up with an idea of tracking the soldier as well as to give the health status of the soldier during the war, which enables the army personnel to plan the war strategies. To design a soldier tracking system using GSM and GPS to provide wireless system for monitoring the parameters of soldier are as – Body temperature & Blood pressure. To find the health status of soldier sensors are used, a body temp sensor to measure body temperature as well as pulse rate sensor to measure the blood pressure. These parameters are then signal conditioned and will be stored in the memory.

SMART AGRICULTURE

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Name of the Guide: Prof. S.P. Mohani

Abstract

India is a developing country and a major part of our GDP growth rate belongs to agriculture alone. Agriculture in India has been the most important priority in the economic development of the country since independence. More productive agriculture requires a major shift in the way land, water and soil nutrients resources are managed to ensure that these resources are used more efficiently. The technological development in wireless sensor networks made it possible to use them in monitoring and control of greenhouse parameter in precision agriculture. Due to uneven natural distribution of rain water it is very crucial for farmers to monitor and control the equal distribution of water to all crops in the whole farm or as per the requirement of the crop. All the parameters of greenhouse require a detailed analysis in order to choose the correct method. With the evolution in wireless sensor technologies and miniaturized sensor devices, it is possible to use them for automatic environment monitoring and controlling the parameters of greenhouse for agriculture application. In our project, measurement of different parameters i.e. atmospheric temperature, humidity, soil moisture and pH of the soil is done and the data is given to PIC microcontroller. The data is then analyzed and notification is sent to the authorized user's mobile phone via GSM whenever the values exceed the threshold. The notification message is also displayed on the LCD for monitoring the data onsite. The system is interactive and user can switch on or off the sprinkler by sending a message.

IoT Based Vehicle Safety Gadget and Analysis for Accident Prone Zone

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Name of the Guide: Prof. P. P. Bartakke

Abstract

Our project aims at developing IoT based vehicle safety gadget and analyzing the data from gadget to determine accident prone zones. The Internet of Things is a paradigm where everyday objects can be equipped with identifying, sensing, networking and processing capabilities which will allow them to communicate with one another and services over the Internet, with intelligent decision making, to accomplish some objective. Ultimately, IoT devices will become global,
context-aware and will enable ambient intelligence. Our gadget is capable of automatic accident detection by sensing shocks. Shocks are sensed by Vibration/Shock sensor module. When sensor values are greater than threshold, Galileo board accesses log file of GPS coordinates, which is generated by GPS Logger Android application, with the help of SSHDroid Android app. Thus, Galileo gets GPS coordinates from mobile phone and searches for the nearest hospital from database maintained on PHP server. GPS coordinates of nearest hospital and its contact number are fetched. GSM module interfaced with the board, sends the GPS coordinates of accident location to nearest hospital in order to provide medical service. Simultaneously, these coordinates of accident detected locations are stored in database and are given as input to html + java script based code to locate accident prone on map.

DTMF BASED MOBILE OPERATED SURVEILLANCE VEHICLE

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Name of the Guide: Prof. Mrs.Y.M.Vaidya

Abstract

The objective of designing this robot is simply to facilitate the humans in the future for security purposes. In the present scenario, there are many recent developments of robotics and communication on a large scale. The robot is in the form of a vehicle mounted with a mobile phone, which acquires and sends pictures PC. The movement of vehicle is controlled by microcontroller. Our idea is to make a robot to tackle the hostage situation &the worst conditions which cannot be handled by human being. Hence Humans are moved out from direct exposure to potentially dangerous situations. Robotic system can perform many security and surveillance functions more effectively than humans.

Drive and Obstacle avoidance system for Automated Guided Vehicle

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Name of the Guide : Prof. Dr. S. P. Mahajan

Abstract

An automated guided vehicle (AGV) is a mobile robot that follows markers or wires in the floor, or uses vision, magnets, or lasers for navigation. Efficient and cost effective movement of materials is an important and common element in improving operations in many manufacturing plants and warehouses. Because automatic guided vehicles (AGVs) can deliver efficient, cost effective movement of materials, they can be applied to various industries in standard or customized designs to best suit an industry's requirements.

In this project, we are building an AGV which can move from source to destination autonomously. AGV is able to avoid stationary and mobile obstacles. This AGV can be employed in the human environment without any danger to humans. Here, we propose a method to design the AGV using 2-D laser scanner, vision system, inertial measurement unit (IMU) and rotary encoders for navigation and obstacle avoidance. Obstacle avoidance system is used to keep track of current path and to give necessary corrections to the encoders and IMU based drive system. This approach helps to provide AGV flexibility required in manufacturing environments. AGV can be monitored and controlled from the central control system to track the processes run by AGV.

Congestion Detection Using Computer Vision Technology

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Tania Liz Mathews (111207060)

Name of the Guide: Prof. M. S. Sutaone

Abstract

A project which uses Computer Vision Techniques for tracking and help prevent hazardous situations in huge gatherings which is the need of the hour as the number of video streams generated far outnumber the personnel watching them. This system is based on optic flow estimation and detects sequences of crowd motion that are characteristics for devastating congestions. Initially, the temporal features of the scenes are extracted by consecutive subtraction of consecutive frames in the video stream. Then optical flow is calculated for each subtracted frame, Lucas-Kanade method is used to determine the optical flow vectors. Segmentation of the frame is done and threshold entropy set such that the tracking of populated area can be followed. Finally, location of crowd congestion is presented that helps in taking further measures to prevent a devastating event from occurring.

Design of Charge Particle Monitoring and Maximum Power Point Tracking module for CubeSat using Field Programmable Gate Array

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Name of the Guide: Prof.Vaishali Ingale

Abstract

The ionosphere of the earth is surrounded by heavy radiation particle belts. Space vehicles and satellites are quite frequently exposed to these particles and thus, are adversely affected. Hence, it is important to monitor and map the energies as well as the fluxes of these charged particles. This would lead to development of elaborate reference models for helping future satellite missions tackle the adverse effects of radiation. For this purpose, satellites with charged particle detectors are launched in space. Scintillation detector is one of the charged particle detectors, which is suitable for cube satellites.

Constrained by space and size, CubeSats have limited area for mounting solar panels. This restricts the amount of generated energy and thus, limits the scope of space missions. On-board charged particle detection will further increase the power requirements. In order to increase the energy production, we need to either increase the surface area of solar panels or have higher efficiency solar panels. These factors may not comply with mission's volume and cost constraints. For the last decade, the focus of CubeSat power subsystem development and advancement has been on supporting the needs of relatively large, high power missions and reducing the losses. One such development is DC-DC converter incorporating Maximum Power Point Tracker (MPPT), which changes the operating point of solar panels to extract maximum available power.

A pulse is produced when a charged particle is incident on the detector. This pulse is amplified and processed by an analog circuit. This processed pulse is then sampled and quantized using an Analog-to-Digital Converter (ADC) in a System-On-Chip (SoC) which maintains a table of the number of particles incident on the detector for a range of voltage levels of those pulses which represent the energy of the particles. This table is transferred to a computer to generate a plot of the spectrum of the charged particles. The MPPT algorithm is implemented on the soft fabric of the SoC. The algorithm controls the fixed-frequency pulse width modulated (PWM) driving signal to SEPIC DC-DC converter. This

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iteratively traces the power versus voltage curve for solar panel in order to track the maximum power point. The project encompasses the parallel implementation and operation of charged particle monitoring and MPPT on the SoC.

Cellular signal strength meter

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Name of the Guide: Prof. V.B. Narayane

Abstract

The objective of this project is to design and implement an RF front-end of a digitally controlled RF power meter for wireless coverage measurements. This is done by designing and implementing printed antenna at frequency of 935 MHz to 960 MHz. Antenna designed is microstrip patch antenna. The antenna is implemented and tested in the lab and the results showed good agreement with the simulation results. The measurement data was used as design specifications for the system level simulation of the RF front-end. Antenna part is followed by a cascade of low noise amplifiers. The signal at the output of the amplifier block is fed to detector circuit which provides output voltage proportional to input signal strength. These voltage readings can be used for input cellular signal strength measurement by controller and display unit.

The RF front end was built such that it can translate the measured signal having a power varying between –110dBm and –30dBm into the power range of the detector that is between -70dBm and +10dBm. The performance designed prototype was experimentally validated and this prototype was used to perform coverage measurements at various locations.

Cellular Signal Strength Booster

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Name of the Guide: Prof. Dr. R. D. Joshi

Abstract

Poor cellular signal reception at some indoor location in cities and at some remote places is a well-known issue. Accurate measurement of cellular signal levels at such locations is important in order to provide proper solution to weak signal problem.

This project contains two parts: 1. Signal strength measuring 2. Signal strength boosting. Signal strength meter design is done by the other group. This project aims to design and develop a cost effective handheld cellular signal strength booster using the reading given by strength meter. This multiband bidirectional cellular strength booster consists of amplifier and internal and external antennae.

Based on signal level measured by this device an appropriate signal level booster or repeater can be installed to have better signal coverage for mobile phones. The operation of booster can be switched between different frequencies of various providers according to user requirement. Also concern effects on human health is handled as SAR value is maintained within the range. The project work involves software simulations and hardware implementations of designs in domain of RF and mobile communications and embedded systems to some extent.

Block Matching Motion Estimation using Evolutionary Strategy

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Name of the Guide: Prof. V.N. More

Abstract

In recent years there are lot many algorithms being developed for motion estimation in video processing. These algorithms were developed in order to reduce the size of a video by reducing the temporal and spatial redundancy. Full search is brute force algorithm which is computationally complex but very accurate. To reduce this complexity various different algorithms were developed in spite of their degradation in PSNR. In this project new approach for block based motion estimation is present which uses evolutionary strategy called Genetic Algorithm. Experimental results demonstrate that this algorithm provides nearly same quality as full search in locating global optimum which is computationally simpler. Another feature of genetic algorithm is parallelism, which makes the process faster.

Genetic algorithm is used to generate useful solutions to optimization and search problems using techniques inspired by natural evolution such as inheritance, mutation, selection and crossover. These concepts are being used in order to find global optimum in block based motion estimation. The beauty of this algorithm is randomness is being used. Due to iterative nature of algorithm it is found to be approaching towards global minimum and does not trapped in local minimum.

Genetic algorithm is recently applied for block based motion estimation. In this algorithm raw video i.e. uncompressed video is used as an input e.g. mobile.yuv with 176X144 resolution. The algorithm is applied to any two frames of the video which have large motion. The results of Genetic algorithm in motion estimation is compared with the full search algorithm and accordingly observations are done. It is shown that GA based motion estimation algorithm nearly approaches full search algorithm. Matlab version 15 is used for simulation purpose.

Advanced Home Automation System

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Mahesh Yerawar (111207067)

Name of the Guide: Prof.D. V. Niture

Abstract

Home automation involves introducing a degree of computerized or automatic control to certain electrical and electronic systems in a building. These include lighting, temperature control, security systems, etc.

A hardware system is installed to monitor and control the various appliances. The system would control the appliances based on its configuration. For example, it could measure the ambient light using a hardware sensor and turn on the lights when it grows dark. It can also allow a person to control appliances from a remote location. For example, one could turn on the air conditioning from remote location by using GSM system.

We propose to provide home automation system which will work in two modes. First mode which will be the default mode at the initialization is Automatic mode. In Automatic mode system will monitor Conditions in home and its environment by using different sensors. For monitoring ambient (Lighting conditions) we have used to light sensor (NORP12 LDR), and for monitoring temperature in home we are using temperature sensor (LM35). We can use these sensors in grid or in different combinations to detect conditions in different rooms. Data collected from these sensors will be provided to central control system which consist of ATmega328P microcontroller based Arduino board and other processing circuits. Depending on Sensor data decisions will be made whether to turn on or off certain Appliance in home like Fan, Air- conditioner, Light tubes etc. Decision making algorithm is programmed into ATmega328P microcontroller.

In second mode which is the manual mode of controlling home appliances, we are using SIM900 GSM module for communication between controlling system which is located at Home and user who wish to control Home appliances from remote location. We have developed Android application for communicating with controlling system. Applications provide user friendly Graphical User Interface (GUI), with buttons named after different home appliances, and selecting mode of control. By simply clicking on Appliance button on user android handset you can turn on or off any appliance in your home. Android handsets are available with most of user, so it will provide universal base. But in case if user does not have Android Phone, we can provide him instruction string which is to be sent in the form of SMS on specified number to control home appliances.

LCD is provided for displaying information to user. Status of system and different home appliances is periodically displayed on LCD. In this way we propose to provide dual mode microcontroller based Advanced Home Automation system.

Agricultural Parameter Analysis and Automation

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Mayur B Khodke (111207033)
Pritesh M Pakhale (111207048)

Name of the Guide: Prof. V.B. Narayane

Abstract

Today the farmers are facing a great problem of scarcity of water for their fields. The crops which are cultivated in the farms do not get the adequate amount of water. Though there is adequate supply of water, there is tremendous loss of water.

Though the sprinklers, slow drip irrigation system types of water conservation methods are applied, there is no proper management of water supply to the crops. Also sometimes in the cases like water pump running though there is rain, the wastage of water due to manual mistakes, there exists wastage of water. A proper system can be developed in order to overcome this type of problem.

In this project we are developing a system, which can be used to monitor the water usages. It is done by continuously monitoring the soil moisture level of the farm. The system can be turned ON/OFF by the user by using SMS system of the mobile. The logical function of the system controls the water management in the farm. This helps to provide the flexibility between the user and the system.

Implementation of a Low-Cost Home Automation System based on Android Application

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Name of the Guide: Prof. Dr. Mrs. Pratibha Shingare

Abstract

This project presents a design and prototype implementation of new Home Automation system that uses Wi-Fi technology as a network infrastructure connecting its parts with android application. The project aims at designing an advanced home automation system using Wi-Fi technology. The devices/applications can be switched ON/OFF using a smart phone through Wi-Fi.

Today is a world of advanced ubiquitous mobile applications which are used exhaustively to save time and energy. These applications ease day-to-day life of a common man. Based on these technologies and applications we designed a Home Automation System. An attractive market for Home Automation System is for busy families and individuals with physical limitations. Users can control electrical appliances in home or office via smart phone.

System supports a wide range of home automation devices like power management components and security components. The proposed system is better from the scalability and flexibility point of view than the commercially available home automation systems.

DUAL AXIS SOLAR TRACKER

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Name of the Guide: Prof. Dr. R.A. Patil

Abstract

Normally solar cells are placed in a ground in one direction only. But sun moves in an elliptical path. So only few hours the sunlight falls into the cell. During the rest of the hours the percentage of Sunlight, which falls into the cell, is very less. This results in less amount of energy generation. To overcome this problem, we can construct a model where we can place the solar cell in it and which can move in elliptical path to track the sun.

Solar power generation had been used as a renewable energy since years ago. Residential that uses solar power as their alternative power supply will bring benefits to them. The main objective of this project is to present development of an automatic solar tracking system whereby the system will have caused solar panels will keep aligned with the Sunlight in order to maximize in harvesting solar power. The system focuses on the controller design whereby it will have caused the system is able to tracks the maximum intensity of Sunlight is hit. When the intensity of Sunlight is decreasing, this system automatically changes its direction to get maximum intensity of Sunlight. LDR light detector acts as a sensor is used to trace the coordinate of the Sunlight by detecting brightness level of Sunlight. While to rotate the appropriate position of the panel, a DC-motor is used with a specified characteristic. Avery small circuitry is used here hence total cost is also affordable to the customers and users. This project is covered for a single axis and is designed for low power and residential usage applications. From the hardware testing, the system is able to track and follow the Sunlight intensity in order to get maximum solar power at the output regardless motor speed.

GSM Based Home Automation System

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Name of the Guide: Prof. Metkar S.P.

Abstract

This project aims at building an efficient and simple automated home security and surveillance system. The setup is equipped with motion sensor that are able to detect the presence of motion and set off an interrupt to ARDUINO. A GSM module, connected to the same is used to send an SMS to user and alert home owner. This also support automatic fan speed regulation, switching action of bulb and fire alarm system with SMS alert which is used to inform the home owner. This automation system helps to make human life more comfortable.

Home automation using speech processing

KalyaniTayade (111207061)
SnehaVirkar (111207064)
Madhuri Wankhede (111207066)

Name of the Guide: Prof.

Abstract

This project aims at designing a complete 'Home Automation System' using Speech Processing. We have aimed at controlling home appliances such as motor, fan and bulb. The system focuses on matching of test speech commands with speech commands already stored in data base where MFCCs are used as features representing speech commands. XBee is used as transceiver wireless communication module.

Environmental Area Radiation Monitor

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Name of the Guide: Prof. Dr. Pratibha Shingare

Abstract

At present our scientific understanding of air pollution is not sufficient to be able to accurately predict air quality at all times throughout the country. This is where monitoring can be used to fill the gap in understanding. Monitoring provides raw measurements of air pollution concentration, which can then be analyzed and interpreted.

Here we are monitoring the amount of gases which are mainly methane, carbon monoxide. These are one of the major contributors in the in reducing the air quality. Also its effect on the atmospheric temperature is also being studied.
