E-MAGAZINE

Revolution Advancement in Electronics

Department of Electronics and Communication Engineering

Anantha Lakshmi Institute of Technology and Sciences

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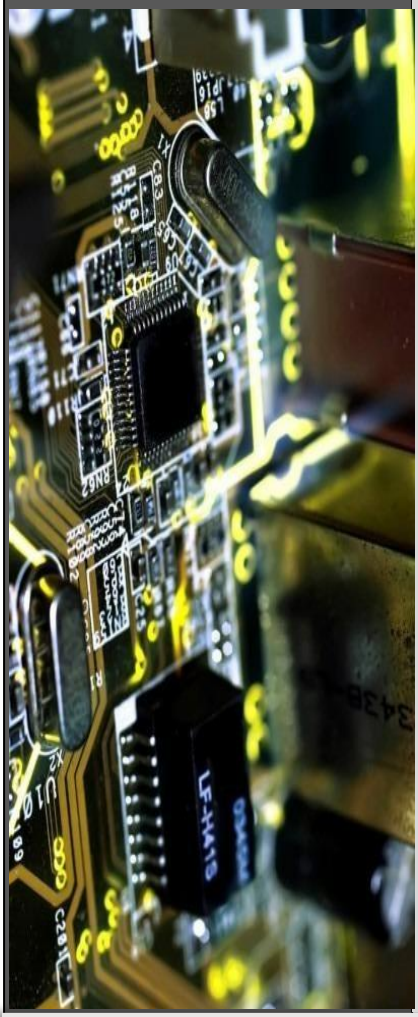

Visión

To produce professional engineers in Electronics and Communication with Ethical consciousness to meet local and global demands.

MISIÓN

M1: Providing an ambience of teaching-learning process through the state-of-art infrastructure and modern tools for impacting latest technical latest technical skills among the students.

M2: Providing students centric facilities and training for the students to acquire a strong collaboration with Electronics Industry.

M3: Providing value-based education to find solutions for societal needs.

ANANTHA LAKSHMI INSTITUTE OF TECHNOLOGY AND SCIENCES

Program Educational Objectives (PEO's):

PEO1:Graduates can acquire competent knowledge in Electronics and Communication Engineering.

PEO2: Graduates can have successful entrepreneurial and professional careers in the core and allied areas of electronics and communication engineering.

PEO3: Graduates can possess communication skills and work efficiently on team-based projects in electronics and communication with a sense of social responsibility.

Program Specific Outcomes (PSO's):

Students must be able to:

PSO1: Design and develop customized electronic circuits for domestic and industrial applications.

PSO2: Analyze and design the Digital Systems in Electronics using hardware and modern tools and fulfill the gap between academics and industry.

PSO3: Apply professional ethics and ethical responsibility to a successful career in open-ended problems of Electronics and Communication Engineering by adhering to technological changes.

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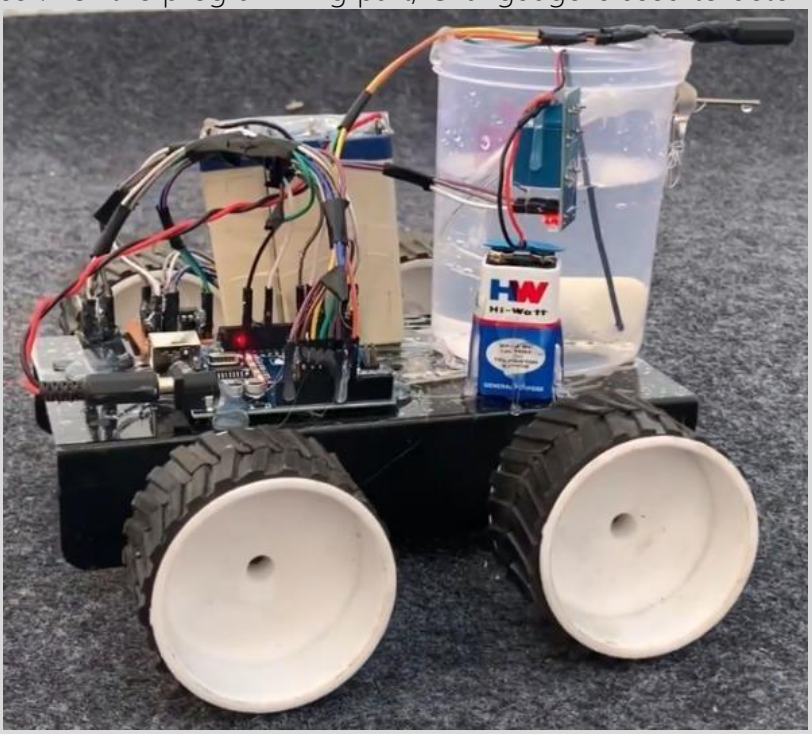
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

FIRE FIGHTING ROBOT

Fire fighting is an important job but it is very dangerous occupation. Due to that, Robots are designed to find a fire, before it rages out of control. It could be used to work with fire fighters to reduce the risk of injury to victims. This paper presents the Fire Fighting Robot competition that purposely to simulate the real-world operation of an autonomous robot to rescue 10 victims (table tennis balls) and stop 5 fires (emergency candles) in a house within three minutes. The robot development is consisting of three elements which is the hardware, electronic, and programming. The robot has three DC motor, two for driving system and another single DC motor for ball suction subsystem and the fire blowing subsystem. Various sensors are also interfaced with PIC16F877A as feedback to the robot such as photoelectric sensors, fiber optic sensor and RGB color sensors. LCD display also gives the graphical information of the robot status to the user. For the programming part, C language is used to determine the robot action gain from the sensors[i]



Arduino Sensor Shield is a low-cost board that allows you to connect a range of sensors to your Arduino using easy-to-attach jumper cables. It's a simple board with no electronics on it other than a couple of resistors and an LED. Its main role is to supply those header pins to make it easier to attach external devices like our servo motors. you can easily connect with usual Analog sensors by using this expansion board, such as temperature sensor. Those 3-way male pins allow you to connect servo motors. Everything is plug and play, and it's designed to be Arduino UNO compatible.

So all you need to do is to read the data from the sensors and output PWM to drive the servos by program in arduino. This is the latest version of sensor shield in the market. The major improvement over its predecessor is the power source. This version provides an external power connector so you don't need to worry about overloading the Arduino micro controller while driving too many sensors and actuators. If you remove the pin connector next to the power input, you can power it externally. You shouldn't power it with more than 5v or you can damage the arduino underneath.

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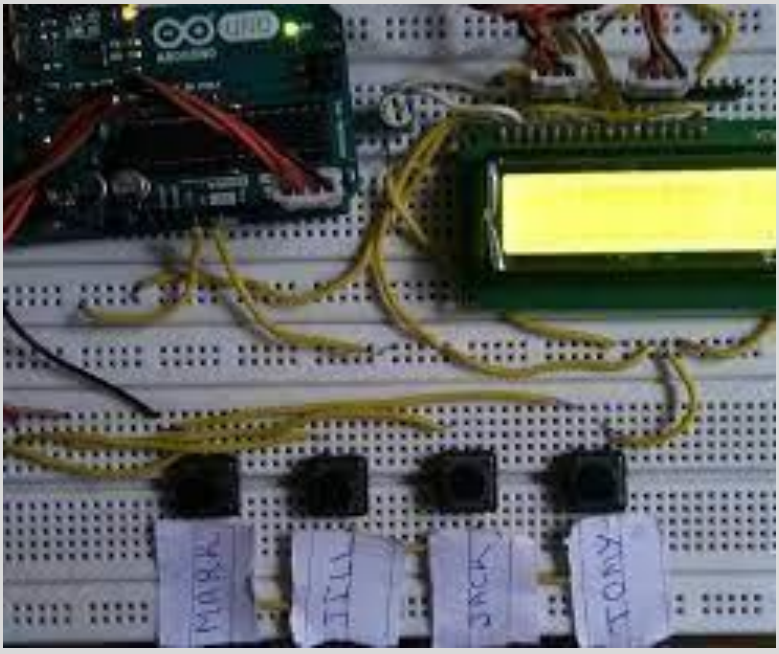
ELECTRONIC VOTING MACHINE

The basic idea of this project is to create an electronic voting machine that will help toeradicate defrauding of the manual voting systems and prior versions of electronic voting. The thesis looks into and proposes a system that includes multiple layers of verifications to ensure the reliability of the device. With the inclusion of biometric fingerprint sensor, each voter is entered into the system only after being recognized and checked with the given database of enlisted voters. Once the corresponding fingerprint is matched with the information provided, the voter will be allowed to proceed for choosing their preferred candidate from the panel of buttons. The final vote is then displayed onto a LCD for the satisfaction of voters. The proposed projectdisplays transparency and also carries the feature of being autonomous during the course of operation. This project is all about Simple & Smart Electronic Voting Machine Using Arduino. The basic idea of this project is to create an electronic voting machine that will help to eradicate defrauding of the manual voting systems and prior versions of electronic voting.



The system is provided with n number of the switch where n is the number of a political party. Here the voter will be allowed to proceed for choosing their preferred candidate from the panel of buttons. The final vote is then displayed onto an LCD for the satisfaction of voters. In the end, the result can be automatically calculated by pressing the Circuit of this project is quite easy which contains Arduino, push buttons and LCD. Arduino controls the complete processes like reading button, incrementing vote value, generating and result to LCD. Here we have added five buttons in which first button is for BJP, second for INC, third is for AAP, forth is for OTH means others and last button is used for calculating or displaying results.

We all are quite familiar with voting machines, even we have covered few other electronic voting machine projects previously here and here using RFID and AVR microcontroller. In this project , we have used the arduino controller to create an electronic voting machine.

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DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

AUTOMATIC SOLAR TRACKING SYSTEM

Solar panel has been used increasingly in recent years to convert solar energy to electrical energy. The solar panel can be used either as a stand-alone system or as a large solar system that is connected to the electricity grids. The earth receives 84 Terawatts of power and our world consumes about 12 Terawatts of power per day. We are trying to consume more energy from the sun using solar panel. In order to maximize the conversion from solar to electrical energy, the solar panels have to be positioned perpendicular to the sun. Thus the tracking of the sun's location and positioning of the solar panel are important. The goal of this project is to design an automatic tracking system, which can locate position of the sun. The tracking system will move the solar panel so that it is positioned perpendicular to the sun for maximum energy conversion at all time. Photoresistors will be used as sensors in this system. The system will consist of light sensing system, microcontroller, gear motor system, and a solar panel. Our system will output up to 40% more energy than solar panels without tracking systems. solar tracker, a system that positions an object at an angle relative to the Sun. The most-common applications for solar trackers are positioning photovoltaic (PV) panels (Solar panels) so that they remain perpendicular to the Sun's rays and positioning space telescopes so that they can determine the Sun's direction. PV solar trackers adjust the direction that a solar panel is facing according to the position of the Sun in the sky. By keeping the panel perpendicular to the Sun, more sunlight strikes the solar panel, less light is reflected, and more energy is absorbed. That energy can be converted into power.

Solar energy is abundantly in nature and sustainable energy resources around the world. The main challenge with the solar field is less amount of sun energy captured by using photovoltaic (PV) systems. The great performance of the PV systems can be achieved if the panel is kept perpendicular to the direction of the radiations of sun. Hence, solar tracker system is the method to keep the optimum position of the PV panel for always perpendicular to the solar radiation. This paper aims to review on various technologies of solar tracking to determine the best PV panel orientation. The various types of of solar tracking system have been discussed which includes passive solar tracker, active solar tracker and chronological tracker system. The movement degrees of solar tracking system also have been addressed which consisting single-axis solar tracking system and dual-axis solar tracking system. This paper is also overviews the tracking techniques performance, construction, performance, advantages, and disadvantages of existing solar tracking system. The limitations of solar tracking systems are also highlighted for future action improvement. Through this research studies, the most favourable solar tracking system was identified as active solar tracker.

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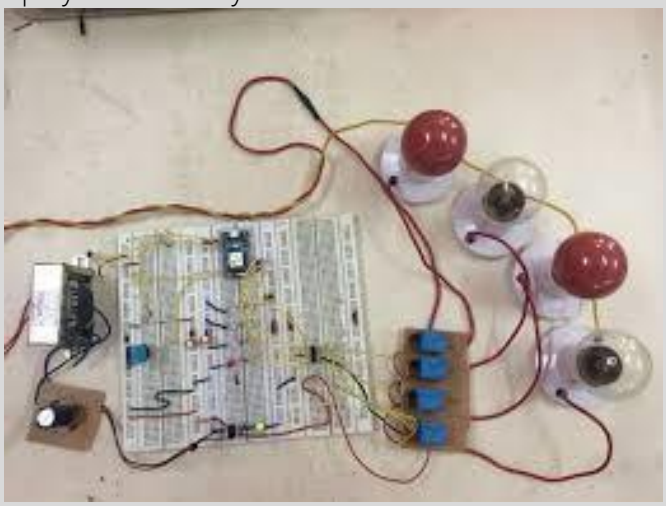
IoT based Home Automation System

The IoT based Home Automation System is used to control the home appliances remotely using the Internet. The proposed system not only checks the sensor data such as gas, temperature, light, but it also activates a procedure based on the necessity. For instance, turning on the light once it gets dim and also it stores the parameters of the sensor within the cloud in an appropriate method so that this method will assist the user to study the situation of different parameters in the house at anywhere and anytime. IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use IOT in order to control home appliances, thus automating modern homes through the internet. This system uses three loads to demonstrate as house lighting and a fan. Our user friendly interface allows a user to easily control these home appliances through the internet. For this system we use an AVR family microcontroller. This microcontroller is interfaced with a wifi modem to get user commands over the internet. Also we have an LCD display to display system status. Relays are used to switch loads. The entire system is powered by a 12 V transformer. After receiving user commands over the internet, microcontroller processes these instructions to operate these loads accordingly and display the system status on an LCD display. Thus this system allows for efficient home automation over the internet.



This project interesting IOT project in which we will build a Security system which can trigger an E-mail when it detects someone. This project has blend in the power of ESP8266, PIR sensor and ISD1820 Voice module. We built a fully functional Security system which can be Armed/Disarmed (Activated/De-activated) remotely via internet. You can record your own audio clip which will be played when a movement is detected and also send a mail with Date and time to a particular E-mail ID stating the intrusion. So let us build it.

The concept of Home Automation aims to bring the control of operating your everyday home electrical appliances to the tip of your finger, thus giving user affordable lighting solutions, better energy conservation with optimum use of energy. Apart from just lighting solutions, the concept also further extends to have a overall control over your home security as well as build a centralised home entertainment system and much more. The Internet of Things (or commonly referred to as IoT) based Home Automation system, as the name suggests aims to control all the devices of your smart home through internet protocols or cloudbased computing.

The IoT based Home Automation system offer a lot of flexibility over the wired systems s it comes with various advantages like ease-of-use, ease-of-installation, avoid complexity of running through wires or loose electrical connections, easy fault detection and triggering and above and all it even offers easy mobility.

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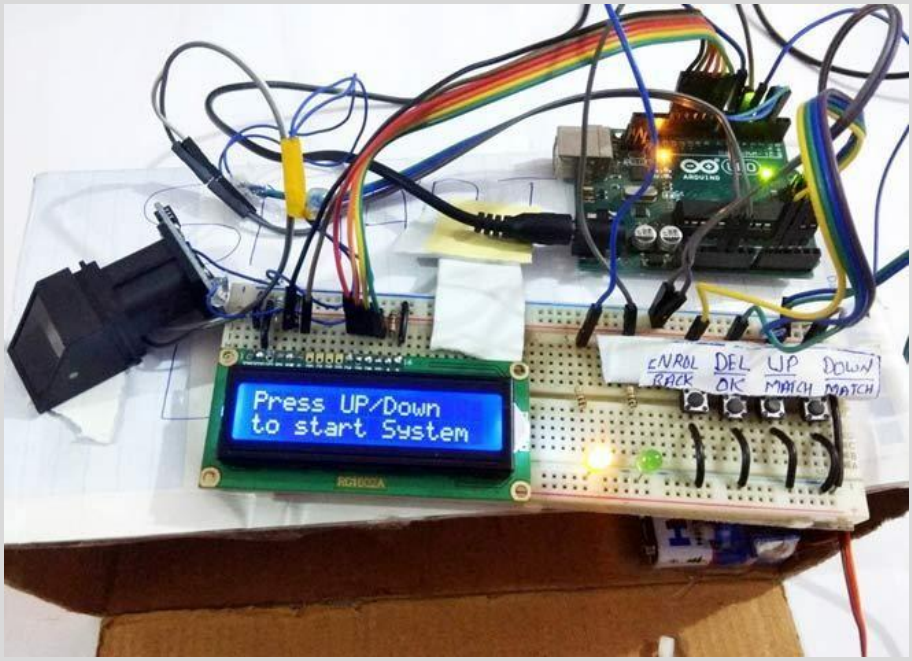
Biometric fingerprint identification for bank locker



The fingerprint based bank locker system is an enhancement to the traditional bank locker system that uses keys.

Now keys can easily be copied and made by thief's who know about it. Also, the keys must be taken care of and can also be lost due to some negligence. Well fingerprint-based bank locker system is here to solve all these issues. The fingerprinted authenticated bank locker system is safe as well as easy to use and maintain. No key handling no need to worry about key getting lost. The fingerprint sensing to read fingerprints and first store registered fingerprints against the bank locker record. Now next time a person scans finger the sensor reads it and compares it with past records. Now if match is found with existing prints, it sends the match signal to the microcontroller and the controller displays this data on the LCD display. Also, the controller drives the driver motor to open the bank locker door and opens it for authorized customers. The door of locker won't open for unauthorized customers.

Fingerprint based security system can be used in many places like Industries, Offices, and Colleges or even at our homes. This project is a fine combination of "Biometrics technology" and "Embedded system technology". The fingerprint sensor is the main part of this system. It makes use of a Biometric sensor to detect fingerprints. It is also called a Biometric sensor. The fingerprint sensor uses various types of techniques like ultrasonic method, optical method, or thermal technique. In this project, we used an optical fingerprint sensor.

The main blocks of this project are Microcontroller, Fingerprint module, Buzzer, Relay, Keypad, LCD display, and Motor. The user has to place his/her finger on the optical sensor part of the fingerprint module. We have seen Password based security system RFID based security system. The main feature or specialty of fingerprint is that it is unique. It gives this project a high-level security than other security systems. Person recognition using Fingerprint identification is used for a long time. The most common example is used in criminal cases.

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