

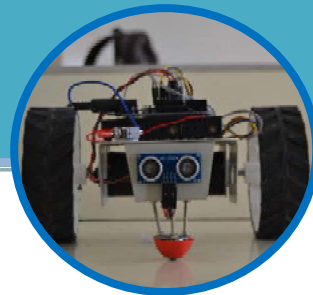


Magazine

EPROX '18

A Technical Project Expo

17th March 2018



Organized by

THE MINI PROJECT FORUM

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

NATIONAL ENGINEERING COLLEGE, K.R. NAGAR, KOVILPATTI

NATIONAL ENGINEERING COLLEGE, K.R. NAGAR, KOVILPATTI

(An Autonomous Institution, Affiliated to Anna University, Chennai)

Department of Electrical and Electronics Engineering

EPROX '18
A TECHNICAL PROJECT EXPO

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The Mini project Forum

Department of Electrical and Electronics Engineering

Convener:

Dr. M.Willjuice Iruthayarajan, HOD/EEE

Coordinators

Mr.B.Venkatasamy, AP/EEE

Ms.k.Gowthami, AP/EEE

Mr.F.Antony Jeffery Vaz, AP/EEE

Preface

The “MINI PROJECT FORUM” has been established in the department, to equip the students in practicing real-time projects and to participate in various project expo conducted in inter and intra college events. Every odd Saturdays, practical classes are being conducted for the students to learn and develop their own ideas into projects. The forum has been equipped with various instruments such as sensors, microcontroller modules, robotic kits, consumables and almost all types of recent electronics. The student can make use of components to develop their own projects. The students share their own ideas with the expert members, for the implementation of projects. For every semester, workshops and project expos has been conducted by the department to encourage the students to develop projects to solve real-time problems.

Project expo “EPROX '18” has been organized by the Mini Project Forum of EEE department on 17th March 2018. In this regard, several practical sessions were conducted for the second and third year EEE students during odd Saturdays of the semester. The sessions are coordinated by Mr.B.Venkatasamy, AP/EEE, Ms. K.Gowthami, AP/EEE and Mr. F.Antony Jeffery Vaz, AP/EEE and the student volunteers are Mr.S.Prabhu, Final EEE, Mr.P.R.Prakash, Final EEE, Mr. B.Mathana Gopal, Final EEE and R.Narain Krishna, Final EEE. 31 projects are demonstrated in the expo, 41 Second Year, 68 Third Year and 3 Final Year students have actively participated in the Expo. The students have demonstrated their projects to our Principal Dr.S.Shanmugavel, Head of the Department Dr.M.Willjuice Iruthayarajan, Staff members and our department Students. A review committee has been framed for judging the projects.

**Being active participants in the “Mini Project Forum” can enhance
the practical skills of the students in the field of electronics
which may useful for their better placement in the core areas.**

Contents

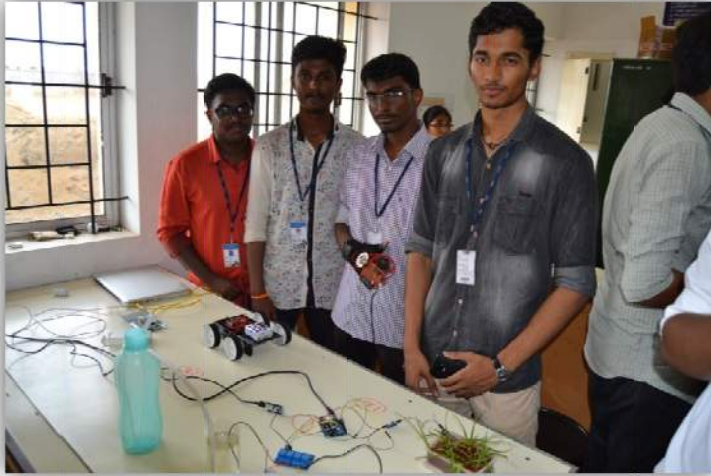
S.No	Project Title	Students Name	Class	Participation / Prize	Page No
1.	Home Automation Surveillance	Shunmuga Sundaram K Naveen Kumar A.G Ranjith King Jimmson M Sivasorna Ram R	2 nd Year EEE	I Prize	8
2.	Self Balancing Robot	Premsha S Arun Kumar I Mohammed amjath Kani M Nagaarjun K.N Viswanath G	3 rd Year EEE	II Prize	9
3.	Solar Tracker	Divya D.R Ani Nithusha M Aasha A Anandhi R Jebisha Gnanadeepam I	3 rd Year EEE	III Prize	10
4.	Voice Controlled Robot	Gandhi Muthu K	2 nd Year EEE	III Prize	11
5.	Heart Beat Sensor	Divya D.R Ani Nithusha M Aasha A Anandhi R Jebisha Gnanadeepam I	3 rd Year EEE	Participation	12
6.	Digital Soil Moisture Meter	Sankari J Santhiya lakshmi K Sreevidya Chidambara Vadivoo	3 rd Year EEE	Participation	13
7.	Smart Theft Detector	Anitha M Pavithra R Ranjitha R.A Rishika N	3 rd Year EEE	Participation	14

8.	Automatic Door Opener	Cherma Jeya K	2 nd Year EEE	Participation	15
		Eswari Prabha P			
		Saranya S			
		Leela Nivashini M			
		Madhmitha K			
9.	Smart Street Light System	Cherma Jeya K	2 nd Year EEE	Participation	16
		Eswari Prabha P			
		Saranya S			
		Leela Nivashini M			
		Madhmitha K			
10.	Gas Leakage Detector	Maha Sweetha P	3 rd Year EEE	Participation	17
		Shibana C			
		Shenbaga Devi K			
		Sakthi K.N			
11.	Automatic Railway Gate Control	Maha Sweetha P	3 rd Year EEE	Participation	18
		Shibana C			
		Shenbaga Devi K			
		Sakthi K.N			
12.	Smart Operating System in Hotel	Suganthi M	3 rd Year EEE	Participation	19
		Gowsalya M			
		Nandhini R			
		Navitha N			
13.	Gas Leakage Detector	Rathna S	3 rd Year EEE	Participation	20
		Sathya Gomathy P			
		Uma B			
		Sindhuga G			
14.	Automatic Solar Tracker	Ramesh Moorthi I	3 rd Year EEE	Participation	21
		Saravana Kumar S			
		Prasana VenketeshanN			
15.	Voice controlling Home Appliances	Ariharan S	3 rd Year EEE	Participation	22
		Kartheeswaran M			

16.	Automation Irrigation System	Shunmuga Sundaram K	2 nd Year EEE	Participation	23
		Naveen Kumar A.G			
		Ranjith King Jimmson M			
		Sivasorna Ram R			
17.	Home Appliances Automation	Shunmuga Sundaram K	2 nd Year EEE	Participation	24
		Naveen Kumar A.G			
		Ranjith King Jimmson M			
		Sivasorna Ram R			
18.	Gesture Controlled Robot	Shunmuga Sundaram K	2 nd Year EEE	Participation	25
		Naveen Kumar A.G			
		Ranjith King Jimmson M			
		Sivasorna Ram R			
19.	Home security Alarm using PIR	Arockia Ranjith Kumar S	2 nd Year EEE	Participation	26
		Arun G			
		Pio P			
		Gowthamaraj M			
20.	Obstacle Avoidance Robot	Rama Chandra Bharathi P	4 th Year EEE	Participation	27
		Rajasree P			
		Nalini M			
21.	Smart Dustbin	Jeniba K.R	3 rd Year EEE	Participation	28
		Kayalvizhi T			
		Mahibala A			
		Nithiyasree A			
22.	Smart Headlight	Radha B	3 rd Year EEE	Participation	29
		Priyadharshini P			
		Sugasini M			
		Vishnupriya K			
23.	Touch-less Door Bell Alarm	Seetha K	3 rd Year EEE	Participation	30
		Sethana devi K			
		Soumiya P.T			
24.	Line Following Robot	Mohemed niyas G	2 nd Year EEE	Participation	31
		Samivel Subash S			

25.	Obstacle Avoidance Robot	Jothi Basu M	3 rd Year EEE	Participation	32
		Surendaran B			
		Selva Kumar T			
		Sathish Kumar M			
		Nithyanandan B			
26.	Automatic Shed using Rain Sensor	Kavitha P	3 rd Year EEE	Participation	33
		Lakshmi Brindha S			
		Muthuvarathalakshmi M			
		Reshma priyadarshini S			
27.	Car Speed Detector	Sheeba J	2 nd Year EEE	Participation	34
		Malini L			
		Priya Darshini A			
		Meenakshi S			
28.	Automatic Head Light Dimmer	Nivetha N	2 nd Year EEE	Participation	35
		Pavithra S			
		Meenakshi A			
		Ramalakshmi V			
29.	Ultrasonic Blind Walking Stick	Nivetha M	2 nd Year EEE	Participation	36
		Sonia M			
		Supriya S			
30.	Heart Beat Monitoring System	Jothi Meena A	3 rd Year EEE	Participation	37
		Rama Lakshmi S			
		Padmavathi R			
		Selva Lakshmi S			
		Sindhu Muhila S			
31.	Avoid Vehicle Collision	Aarthy B	2 nd Year EEE	Participation	38
		Abirami M			

HOME AUTOMATION SURVEILLANCE

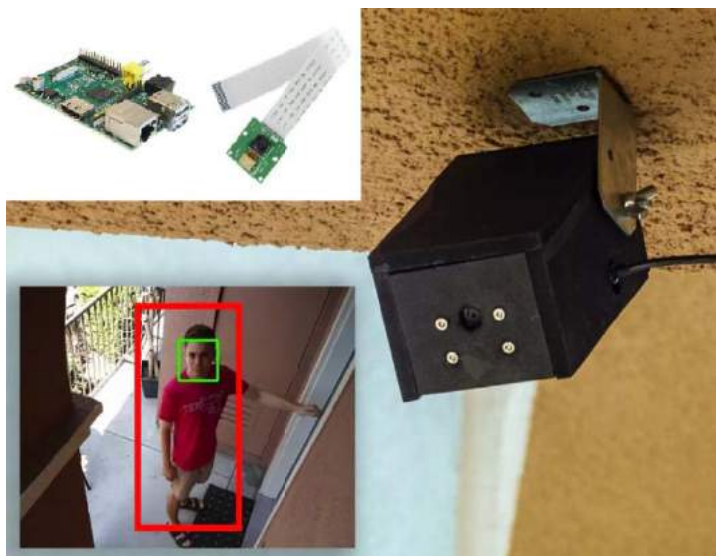


By

I Prize

*Shunmuga Sundaram K
Naveen Kumar A.G
Ranjith King Jimmson M
Sivasorna Ram R*

Nowadays the need for a safe and secure system is desired by each and every individual in the society. The most commonly used system, Closed Circuit TeleVision (CCTV) is being implemented everywhere such as in hospitals, warehouses, parking lots, buildings etc... However this very system though effective has its downside when it comes to cost. Thus the need for a cost effective system is required. The existing system for surveillance is a security camera with the night vision capabilities using raspberry pi and openCV. This is a cost effective method that uses a credit card sized chip RPI. The image is captured and each frame is processed. The image is stored and an email is sent if human is detected. The existing system has accuracy of about 83 %. In this project we propose to use an enhanced recent model- raspberry pi 2 which has operating speed 900MHz. Also we use a pi camera. So the image is captured via the pi camera and it is send to the raspberry pi 2 for processing for face and human detection with the help of openCV. Then, the face detected is compared with the database, if the human detected is known (visitor) or not (stranger) and based on the output, an audio output is produced and a message is sent to the user. Thus, one can provide a low cost security system.



SELF BALANCING ROBOT

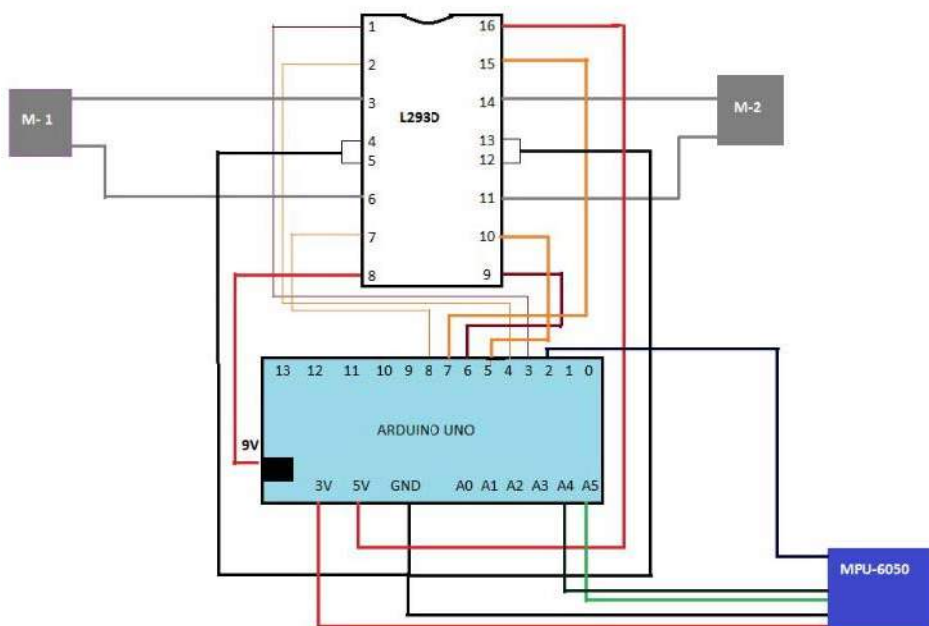


By

*S.Arun Kumar
K.N.Nagaarjun
S.Premsha
G.Viswanath*

II Prize

This project will undertake the construction and implementation of a two-wheeled robot that is capable of balancing itself. The structural, mechanical, and electronic components of the bot will be assembled in a manner that produces an inherently unstable platform that is highly susceptible to tipping in one axis. Moreover, the control of bot system used PID controller and implemented in Arduino board. Each of these parameters has gains, normally called K_p , K_i , and K_d . PID provides correction between the desired value and the actual value. The MPU-6050 3 Axis Gyro with Accelerometer, which gives both acceleration and rotation in all three axes of the robot and feeds it to the PID algorithm, which performs calculations to control the motor and keep the robot in the upright position.



SOLAR TRACKER



By

III Prize

M.Ani Nithusha

D.R.Divya

T. Jebisha Gnanadeepam

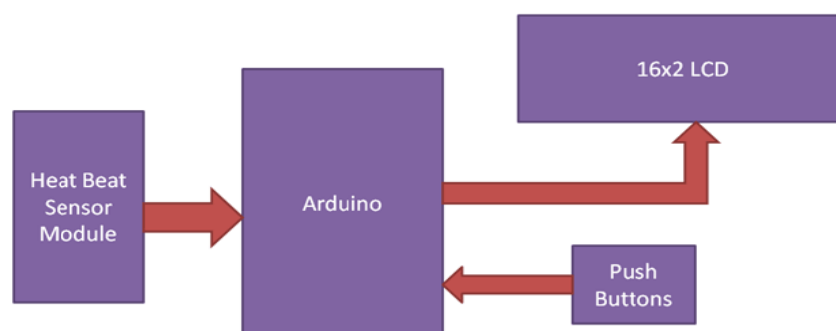
A.Aasha

R.Anandhi

SOLAR TRACKER

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 Photoresistors, arduino, servo motor and a solar panel. Our system will output up to 40% more energy than solar panels without tracking systems.

HEART BEAT SENSOR



VOICE CONTROLLED ROBOT

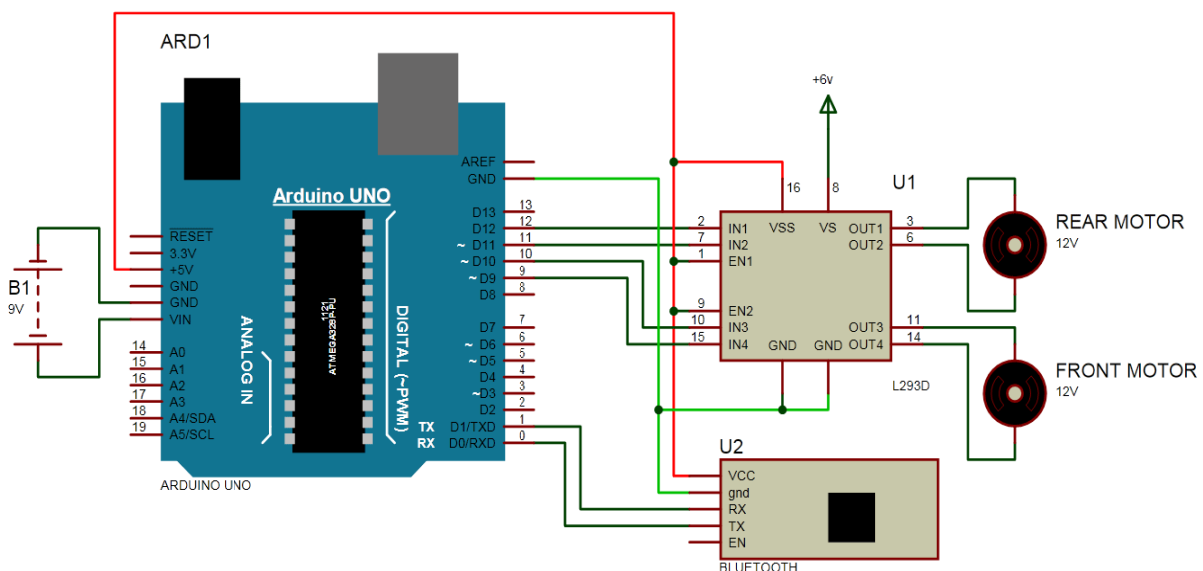


By

III Prize

K. Gandhi Muthu

Voice controlled car is based on Arduino, Motor Driver (L298N) and a Bluetooth module (HC-05). Arduino is an open-source electronics platform based on easy to use hardware and software. Arduino uses an ATmega328p micro-controller. This is a simplified version of any other voice control robot, No complex coding easy to understand coding with easy algorithm. The app is developed in such a way that it converts the voice command to text and transfer the text to the connected Bluetooth device. The Bluetooth connected on the Arduino board receives text from the Android app as characters and stored them as string to the assigned String. There are words pre-programmed (forward, reverse, right, left and stop) to the arduino, whenever the received text matches with the pre-programmed words ,the arduino executes the command that assigned to the words.



HEART BEAT SENSOR



By

M.Ani Nithusha

D.R.Divya

I. Jebisha Gnanadeepam

A.Aasha

R.Anandhi

Technological innovations in the field of disease prevention and maintenance of patient health have enabled the evolution of fields such as monitoring systems. Heart rate is a very vital health parameter that is directly related to the soundness of the human cardiovascular system. Heart rate is the number of times the heart beats per minute, reflects different physiological conditions such as biological workload, stress at work and concentration on tasks, drowsiness and the active state of the autonomic nervous system. It can be measured either by the ECG waveform or by sensing the pulse - the rhythmic expansion and contraction of an artery as blood is forced through it by the regular contractions of the heart. The pulse can be felt from those areas where the artery is close to the skin. Our project based on the principal of photo phelthysmo graphy (PPG) which is non-invasive method of measuring the variation in blood volume in tissue using a light source and detector. While the heart is beating, it is actually pumping blood throughout the body, and that makes the blood volume inside the finger artery to change too. This fluctuation of blood can be detected through an optical sensing mechanism placed around the fingertip. The signal can be amplified and is sent to Arduino with the help of serial port communication. With the help of processing software heart rate monitoring and counting is performed. The sensor unit consists of an infrared light-emitting-diode (IR LED) and a photo diode. The IR LED transmits an infrared light into the fingertip, a part of which is reflected back from the blood inside the finger arteries. The photo diode senses the portion of the light that is reflected back. The intensity of reflected light depends upon the blood volume inside the fingertip. So, every time the heart beats the amount of reflected infrared light changes, which can be detected by the photo diode. With a high gain amplifier, this little alteration in the amplitude of the reflected light can be converted into a pulse.

DIGITAL SOIL MOISTURE METER



By

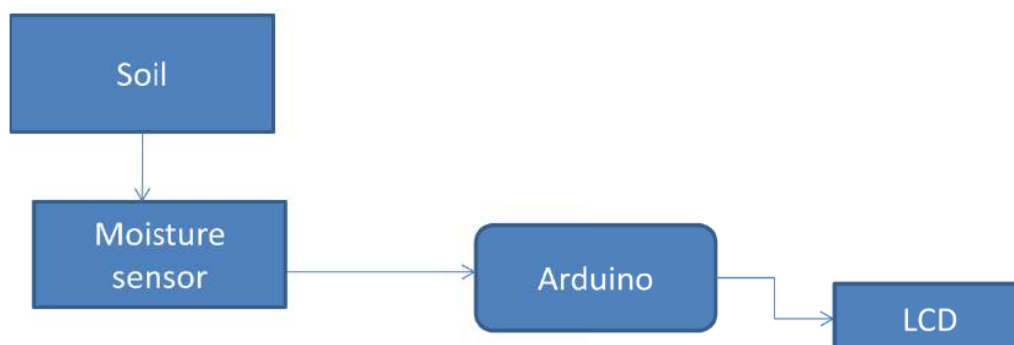
J. Sankari

K. Santhiya Lakshmi

T. Sreevidya Chidambara

Vadivoo

This is a break through soil moisture meter for professionals, but is the price range that any home gardener affords it. Not only does it provide accurate readings of soil moisture content. It is used for irrigation and sprinkler systems. It is used for environmental monitoring for measuring the water level in the soil for further action. The measured level is précised. The probe will not corrode so easily. It provides the volumetric water content (VWC). The probe is buried and it is water proof. It is simple to use by all people. The process is , at first the soil moisture sensor senses the moisture content in the soil. It further sends information to the arduino connected to it. The arduino then helps in displaying the moisture content in the soil.



SMART THEFT DETECTOR



By

M. Anitha

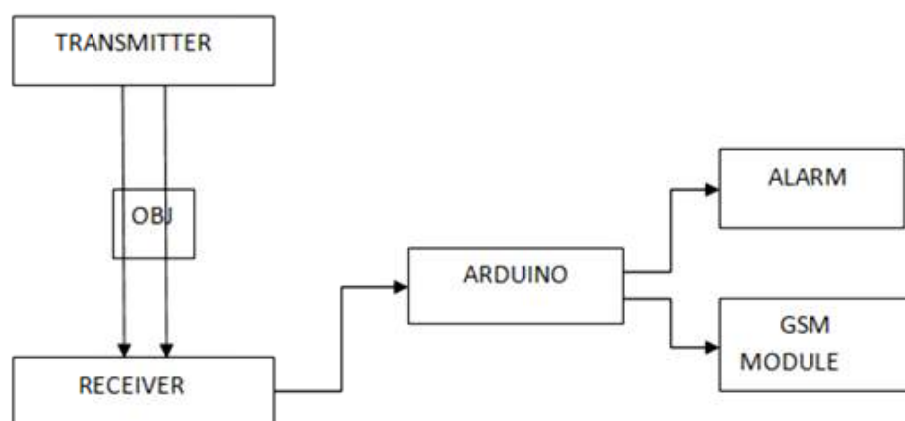
R. Pavithra

R.A. Ranjitha

N. Rishika

Safety and security of any living or working place is one of the most primary concerns in today's world. Today's security system includes CCTV surveillance which is very costly and many of these systems do not trigger any alarm if intrusion is detected. In the present scenario, millions and millions of innocent people gets affected as the effect of theft. In order to achieve a theft free environment even at a very low level, we need a cost effective and fast reactive system. The operation of this product is very simple and can be used by anyone with basic knowledge of operating mobile phones. The user was informed about the action through a reply SMS sent by the modem at the receiver and we can make a call using GSM module.

It is easy to upgrade as per the user requirement. This security system can be employed in our homes easily. In this product, we use a simple circuit using arduino, transmitter and receiver and additionally GSM module. This system is very user friendly.



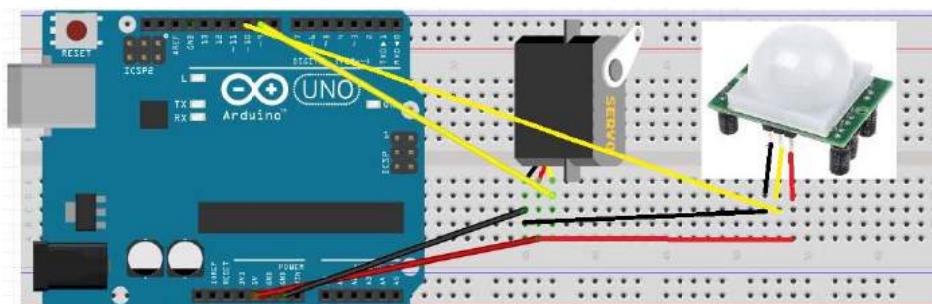
AUTOMATIC DOOR OPENER



By

*K.Cherma Jeya
P.Eswari Prabha
M.Leela Nivashini
K.Madhu Mitha*

Opening and closing of doors have been always required some attention, especially in places where a person is always required to open the door for visitors such as hotels, shopping malls and theatres. Here is a solution to open and close the door i.e, movement sensed automatic door opening and closing system. This project is used to sense any body movement nearby the door. This is achieved with the help of a passive infrared sensor. Generally, a human body emits infrared energy which is detected by the PIR sensor from a particular distance. This signal which is detected by the sensor is fed to a controller to function a door motor through motor driver IC. When a body reaches the operating range of the PIR sensor, it sends a signal to the microcontroller to open and close the door. This proposed system uses a PIR sensor to sense the human body movement near to the door. Generally a human body emits infrared energy in the form of heat, which is detected by the PIR sensor from a particular distance. Then the sensing signal is fed to a Arduino to function a door motor via motor driver IC. When a live body approaches in the operating range of the PIR sensor, it sends a signal to open the door. The door routinely closes with a particular time delay. If there is no extra movement within the operating range of a PIR sensor. Interrupt indications are used through limit switches to avoid the motor's locked rotor condition.



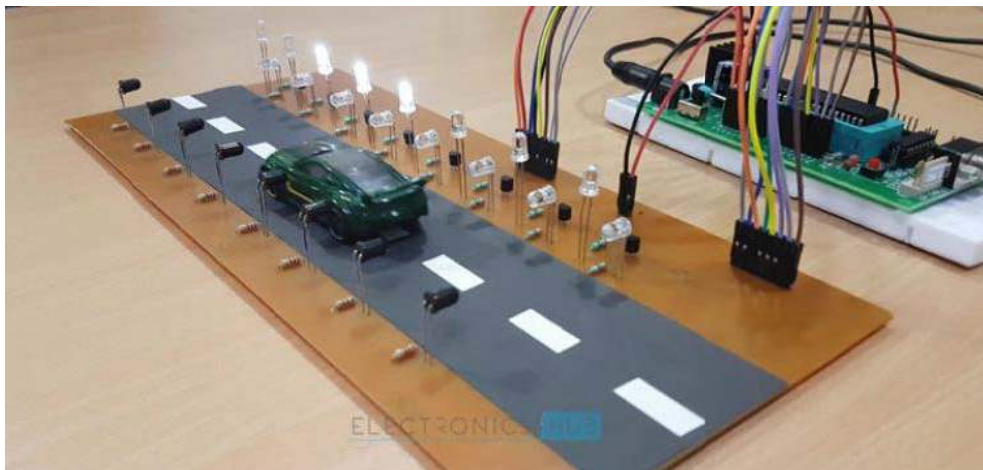
SMART STREET LIGHT SYSTEM



By

*K.Cherma Jeya
P.Eswari Prabha
M.Leela Nivashini
K.Madhu Mitha*

Nowadays, street lighting systems in industries or cities are growing rapidly. The important considerations in the field of different technologies like electrical and electronics are cost effective, automation and power consumption. There are different street lighting systems are developed to maintain and control the lighting systems. These lighting systems are used to control and decrease energy consumption. This article illustrates the street light that glows on detecting vehicle movement. Street light controlling is one of the most developing systems in India to conserve the energy. This project is about smart street light, street light will turn on while vehicle is passing through it. Here we are using 4 IR sensors that senses the position of the vehicle, the IR sensors controls 3 Street lights. When vehicle passes by a particular IR sensor it senses the position of vehicle and gives its signal to the arduino board and it will turn on the LED's.



GAS LEAKAGE DETECTOR



By

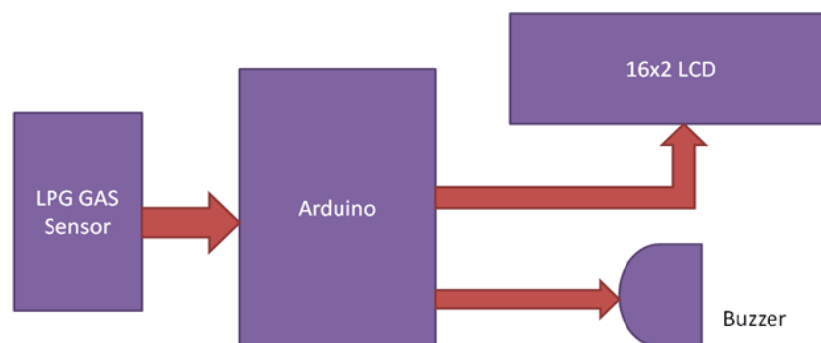
P.Maha Swetha

C.Shibana

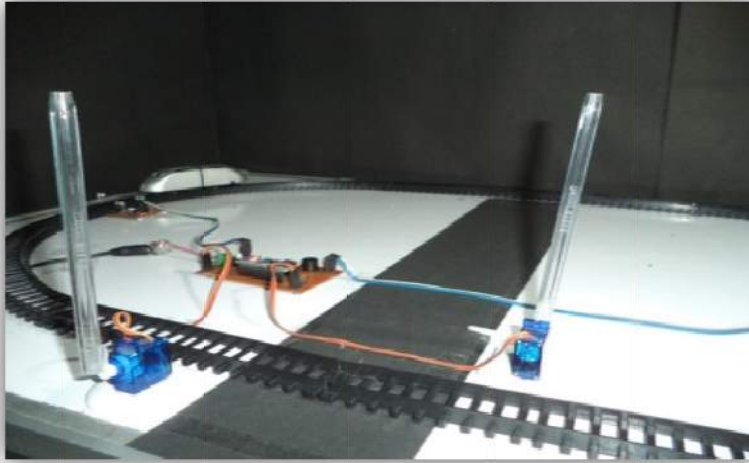
K.Shenbaga Devi

K.N.Sakthi

To avoid accidents due to carelessness in kitchen, we have developed a device called gas leakage detector to detect the leakage of gas and to alert the people before some mishappenings. As gas leakage detector is not new to the market, at present the detector in market is developed using microcontrollers. It is not widely used by all the domestic customers because of the rate of the product. Keeping all the domestic customers in consideration we have developed our gas leakage detector using arduino. It is cheap compared to microcontrollers and all type of customers can purchase it. Here MQ6 gas sensor is used. When the sensor senses the gas, immediately the buzzer gets turned on by arduino and the LCD display as "gas leakage alert". After clearing the problem i.e., if no gas is sensed, automatically the buzzer gets turned off and the LCD display as "no gas leakage".



AUTOMATIC RAILWAY GATE CONTROL



By

P.Maha Swetha

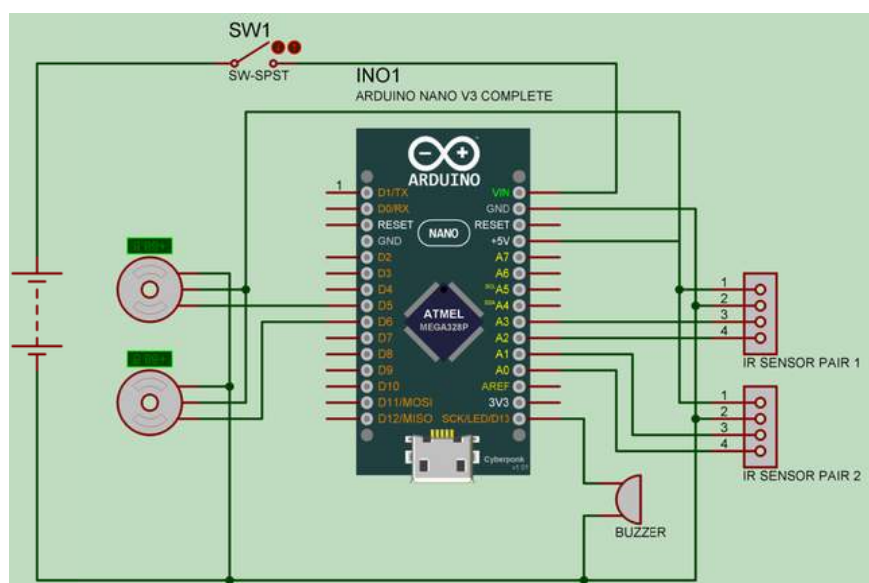
C.Shibana

K.Shenbaga Devi

K.N.Sakthi

The Automatic Railway Gate Control System using IR Sensor & Arduino focuses on systematic traffic control of railway gates that are both manned and unmanned. This project will not only make the system more reliable & precise, but also save the authorities from hiring man power to do the job. You may take it as a onetime investment.

The Automatic Railway Gate Control System Project makes use of an Arduino Nano to control the whole circuit. Two Servo motors are used to open and close the railway gates. Four IR sensors are used for sensing the arrival or departure of train. The main objective is to close the railway gates when the train approaches it, so as to block vehicles from going across the track. As soon as the train moves further away from the railway crossing, the gates must automatically open to allow vehicles to cross



SMART THEFT DETECTOR



By

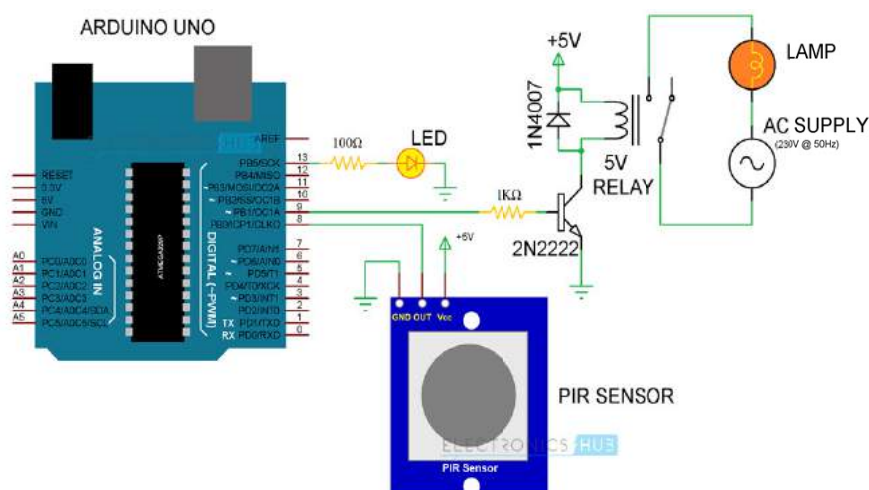
R. Nandhini.

N. Navitha.

M. Gowsalya.

M. Suganthi

We are reaching the age of full automation and with increased automation come increased power consumption. There is a constant demand to automate things while minimizing power consumption for the same. So here we propose smart operating systems like light. People usually forget or don't care to switch off lights, fans after use on public properties. This leads to huge power wastage. So our proposed system senses when a user is using the seat and only then switches on the lights also allows user to operate the light as long as user is sitting on the seats. This puts forward a method to provide automated service to hotels. Our system consists of PIR sensor that is to be embedded in tables in order to detect if a human is sitting on it. After sensing user the system gives signal to the arduino and switches on lights automatically as long as user is seated in the seat. After getting up even if the user forgets to switch off the lights, the system automatically detects this and switches off the lights automatically. Thus it saves a lot of power while providing an automated light switching system.



GAS LEAKAGE DETECTOR



By

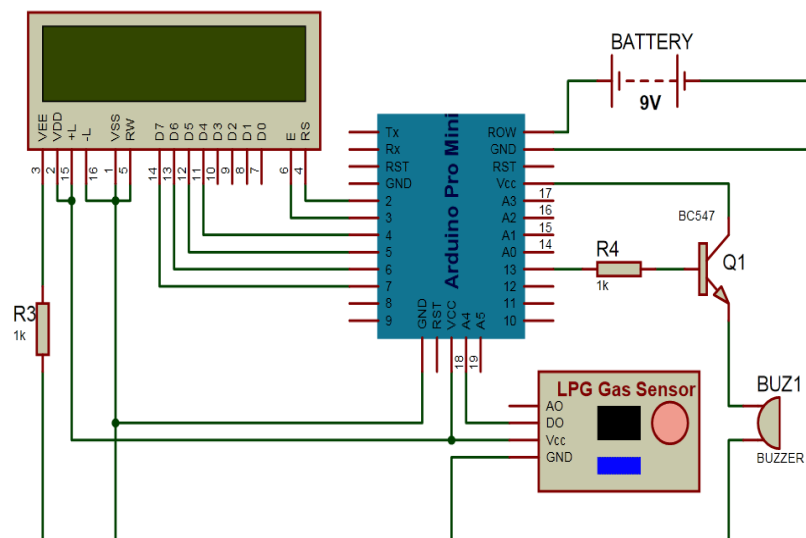
Rathna S

Sathya Gomathy P

Uma B

Sindhuga G

LPG is an essential need of every household; its leakage could lead to a disaster. To alert on LPG leakage and prevent any mishappening there are various products to detect the leakage. Here we have developed an Arduino based LPG gas detector alarm. If gas leakage occurs, this system detects it and makes an alert by buzzing the buzzer attached with the circuit. This system is easy to build and anyone who has some knowledge of electronics and programming can build it. We have used a LPG gas sensor module to detect LPG Gas. When LPG gas leakage occurs, it gives a HIGH pulse on its DO pin and arduino continuously reads its DO pin. When Arduino gets a HIGH pulse from LPG Gas module it shows "LPG Gas Leakage Alert" message on 16x2 LCD and activates buzzer which beeps again and again until the gas detector module doesn't sense the gas in environment. When LPG gas detector module gives LOW pulse to arduino, then LCD shows "No LPG Gas Leakage" message.



AUTOMATIC SOLAR TRACKER



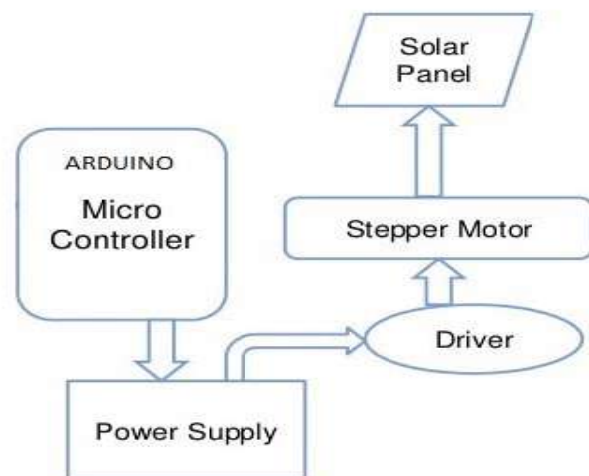
By

S.Saravana Kumar

N.Prasanna Venkatesh

I.Ramesh Moorthi

Sun is an abundant source of energy and this solar energy can be harnessed successfully using solar photovoltaic cells and photovoltaic effect to convert solar energy into electrical energy. But the conversion efficiency of a normal PV cell is low. One of the main reason for this is that the output of PV cell is dependent directly on the light intensity and with the position of the sun in the sky changing continuously from time to time; the absorption efficiency of an immobile solar panel would be significantly less at certain time of the day and year; for the solar photovoltaic cells are maximum productive when they are perpendicular to the sun and less productive otherwise. So to maximize the energy generation and improve the efficiency; solar trackers come into play. This paper presents the design and construction of an inexpensive active dual-axis solar tracking system for tracking the movement of the sun so as to get maximum power from the solar panels as they follow the sun. It uses Light Dependent Resistors to sense the position of the sun which is communicated to a Arduino Uno microcontroller which then commands a set of two servo-motors to re-orient the panel in order to stay perpendicular to the sun rays. The design was constructed successfully and tested using Lab View to determine the improvements in efficiency. Evaluation results show that the new system performs 13.44% better than the immobile solar PV system



VOICE CONTROLLED HOME APPLIANCES

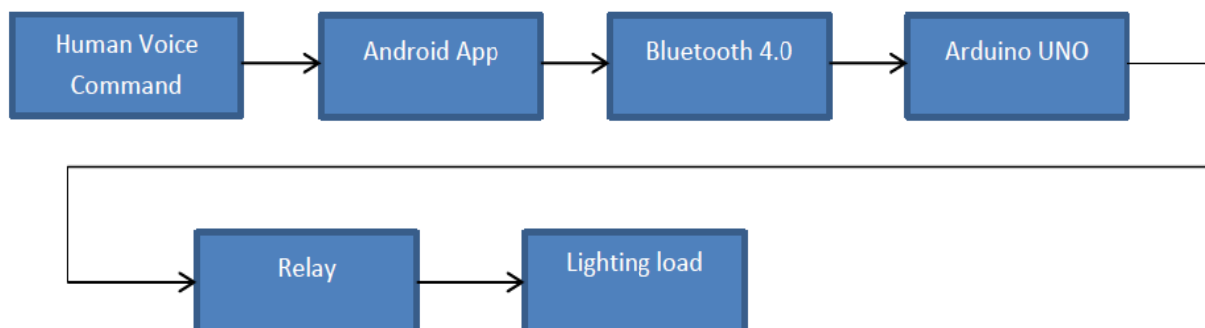


By

S. Ariharan

M. Kartheeswaran

There has been a tremendous increase in old-age homes in India for the past 15 years. It is expected to increase more in the future which is an embarrassment to the country which is viewed as the world's cradle of civilization. The majority of the elder population of our country suffers from several physiological disorders. These include diabetes mellitus, diabetes insipidus, obesity etc. The major concern for the elder people is safety and tackling nature's call during night. Our product exploits Android's speech recognition by an app called "BT voice control for Arduino" (which can be downloaded from Google play store at free of cost). The app pairs the smartphone with a Bluetooth module and converts the voice command of the user into a string which is received by an Arduino UNO. The string initiates to turn ON & OFF an electrical lighting load with the help of a relay.



AUTOMATION IRRIGATION SYSTEM



By

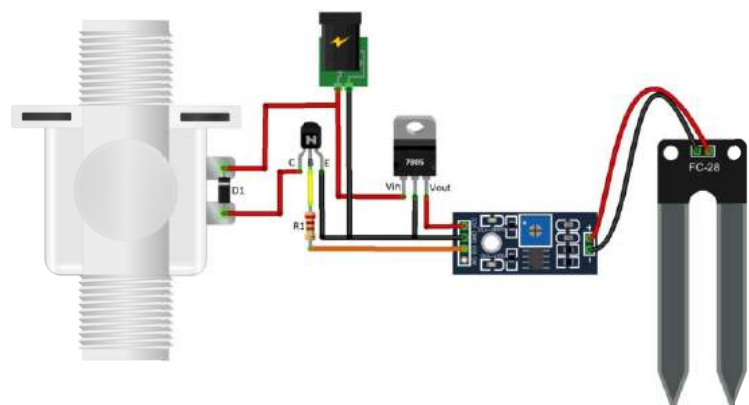
Shunmuga Sundaram K

Naveen Kumar A.G

Ranjith King Jimmson M

Sivasorna Ram R

The project is designed to develop an automatic irrigation system which switches the pump motor ON/OFF on sensing the moisture content of the soil. In the field of agriculture, use of proper method of irrigation is important. The advantage of using this method is to reduce human intervention and still ensure proper irrigation. An FC-28 consists of a sensor module and a sensor. The sensor module mainly has an LM393 comparator, potentiometer, indicator LED light – Power and Digital Output Indicator LEDs; commonly red for power indication and blue for digital output. The sensor is a pair of test probes which are placed or inserted into the soil. The moisture level measurement works with the basic principle of electrical conductivity of water. A wet soil will have less resistance value than a dry soil. Thereby more current flows through the soil. Similarly, a dry soil will have poor electrical conductivity. From this, the corresponding moisture level can be obtained by the sensor module with respect to the electrical conductivity of the soil. Using the digital output, the FC-28 sensors can be used as a standalone system to directly drive devices without any microcontrollers. For direct applications, the digital output can be used as an input signal to low power relays or transistors to operate any high power devices. Here, circuit a solenoid valve is using for water control. So the system automatically opens and closes the water supply depending on soil condition. The solenoid valve requires an external power supply. An NPN transistor is used as a switch to control the solenoid valve.



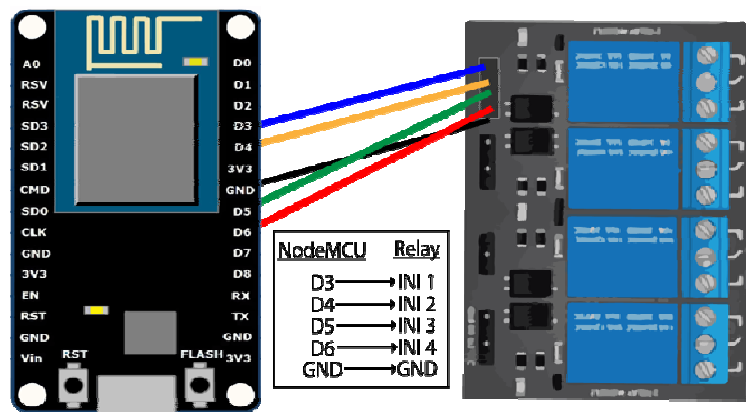
HOME APPLIANCES AUTOMATION- IOT



By

*Shunmuga Sundaram K
Naveen Kumar A.G
Ranjith King Jimmson M
Sivasorna Ram R*

This project takes the help of two online platforms, IFTTT and Adafruit MQTT. IFTTT is a great platform on which we can merge two services by making an applet. In this, we need to provide one condition and one action. The Action will be performed whenever the particular condition will be satisfied. With the help of IFTTT, we can merge Google Assistant and Adafruit MQTT. **“If Google assistant listens to turn on fan, then send data 1 to fan feed of Adafruit MQTT broker.”** IFTTT combines Google Assistant and Adafruit MQTT. Now how does Adafruit MQTT works? Basically, MQTT works on Broker Client Publish Subscribe method in which Clients are subscribed to one topic on the broker. Any data change in that topic will be reflected to all the devices connected to that same topic in that broker. MQTT broker can be a local broker that works in the range of a Wi-Fi router, or it can be a cloud based broker that works from anywhere in this world. NodeMCU is connected with the Relay board. The connection diagram is as shown in figure. Now to power up the NodeMCU we can use a normal phone charger, just make sure its voltage is not too high. And to power up the Relay board, you can use a battery or a separate bread board power supplier. As we are using a four-channel relay you can connect at most 4 electronic appliances to the Relay and control them over the internet.



GESTURE CONTROLLED ROBOT



By

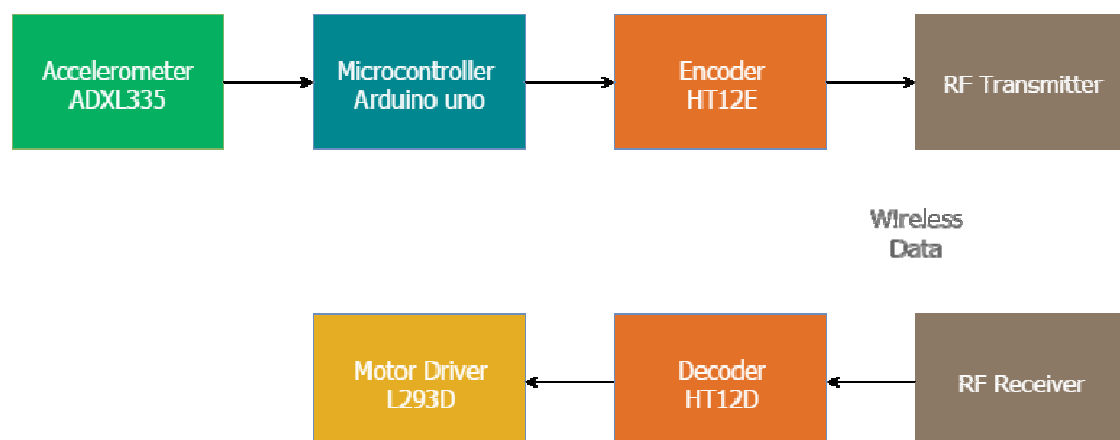
S.Saravana Kumar

N.Prasanna Venkatesh

I.Ramesh Moorthi

In order to understand the principle of operation of Hand Gesture Controlled Robot, let us divide the project into three parts. The first part is getting data from the MPU6050 Accelerometer Gyro Sensor by the Arduino. The Arduino continuously acquires data from the MPU6050 and based on the predefined parameters, it sends a data to the RF Transmitter. The second part of the project is the Wireless Communication between the RF Transmitter and RF Receiver. The RF Transmitter, upon receiving data from Arduino (through the Encoder IC), transmits it through the RF Communication to the RF Receiver. Finally, the third part of the project is decoding the Data received by the RF Receiver and sending appropriate signals to the Motor Driver IC, which will activate the Wheel Motors of the Robot.

Flow



HOME SECURITY ALARM USING PIR



By

Arockia Ranjith Kumar S

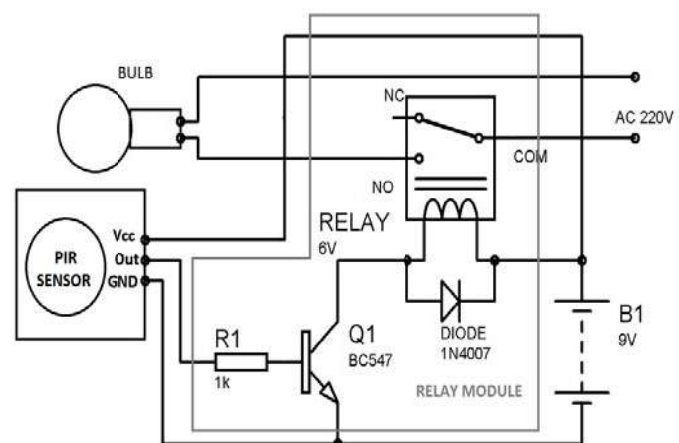
Arun G

Pio P

Gowthamaraj M

All of us have overwhelmed watching those incredibly breath-taking futuristic rooms and halls in movie scenes with all those different sensors. It's really motivational for tech-savvy guys to watch those scenes and try them out in real. Now we are going to show you how to make a motion sensor alarm circuit easily with the help of PIR module. This simple PIR security circuit can detect human presence in an area and produce sound alerts. PIR is basically an infrared motion detector sensor module and is the core component used here. It is able to detect motion within a range of 7 meters, the detection range and alerting duration can be adjusted as per your needs.

PIR sensor is used here to detect the Human body movement, whenever there is any body movement the voltage at output pin changes. Basically it detects the Change in Heat, and produce output whenever such detection occurs. Whenever PIR sensor detects any body movement, its OUTPUT pin becomes HIGH, which applies the triggering voltage to the base of the transistor, transistor get ON, and current started flowing through the coil. Coil in Relay gets energies and create electromagnetic field, which attracts the lever and COM and NO get connected. This allows a much larger current (220v AC) to flow, which turns ON the BULB. You can increase or decrease the Bulb ON duration by setting up PIR sensor.



RPI- OBSTACLE AVOIDANCE ROBOT



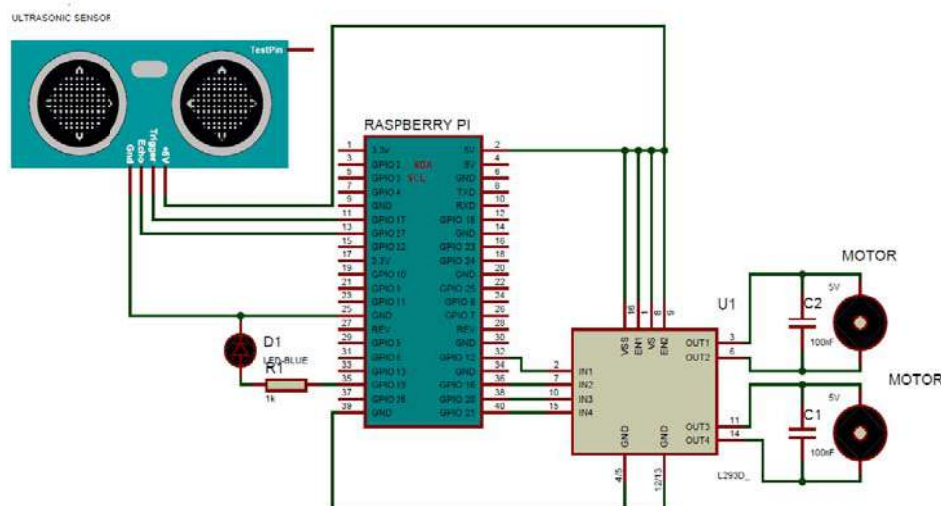
By

Rama Chandra Bharathi P

Rajasree P

Nalini M

Robots are machines which reduce the human efforts in heavy works by automating the tasks in industries, factories, hospitals etc. Most of the robots are run by using some control unit or components like a push button, remote, joystick, PC, gestures and by executing some command by using controller or processor. But today we are here with an Automatic Robot which moves autonomously without any external events avoiding the entire obstacle in its path, yes we talking about Obstacle Avoiding Robot. In this project, we have used Raspberry Pi and Motor driver to drive the robot and Ultrasonic sensor for detecting objects in the path of Robot. Circuit is very simple for this Obstacle Avoiding Robot using Raspberry Pi. An Ultrasonic Sensor module, used for detecting objects, is connected at GPIO pin 17 and 27 of Raspberry Pi. A Motor Driver IC L293D is connected to Raspberry Pi 3 for driving robot's motors. Motor driver's input pins 2, 7, 10 and 15 are connected to Raspberry Pi GPIO pin number 12, 16, 20 and 21 respectively. Here we have used two DC motors to drive the robot in which one motor is connected to the output pin 3 & 6 of motor driver IC and another motor is connected at Pin 11 & 14 of motor driver IC.



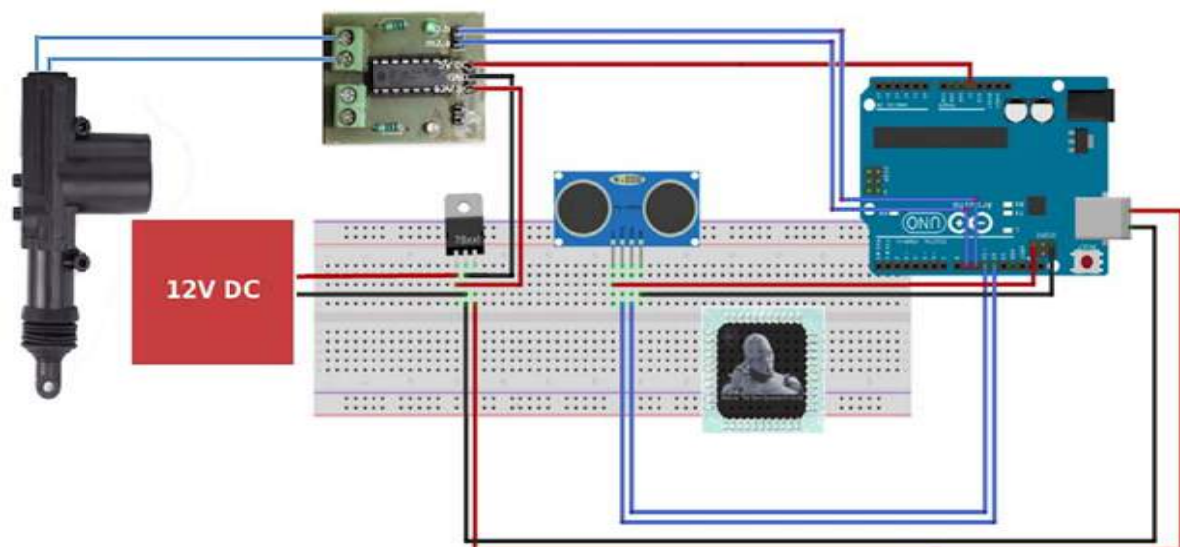
SMART DUSTBIN



By

*K.R.Jeniba
T.Kayalvizhi
A.Mahibala
A.Nithiyasree*

As people are getting smarter so are the things. While the thought comes up for Smart cities there is a requirement for Smart waste management. The idea of Smart Dustbin is for the Smart buildings, Colleges, Hospitals and Bus stands. The Smart Dustbin thus thought is an improvement of normal dustbin by elevating it to be smart using sensors. Smart dustbins is a new idea of implementation which makes a normal dustbin smart using infrared sensors for garbage level detection and alert the respected person to dispose it. In the recent decades, Urbanization has increased tremendously. At the same phase there is an increase in waste production. Waste management has been a crucial issue to be considered. This paper is a way to achieve this good cause. Then this smart dustbin is also reduce the time to be used for put our waste in dustbin.



SMART HEADLIGHT FOR VEHICLE



By

*B.Radha,
K.Vishnu Priya,
M.Sugasini,
P.Priyadharshni.*

Headlights of vehicles pose a great danger during night driving. The drivers of most vehicles use high, bright beam while driving at night. This causes a discomfort to the person travelling from the opposite direction and therefore experiences a sudden glare for a short period of time. This is caused due to the high intense headlight beam from the other vehicle coming towards the one from the opposite direction. In this project, an automatic headlight dimmer which uses a Light Dependent Resistor (LDR) sensor has been designed to dim the headlight of on-coming vehicles to avoid human eye effects. This automatically switched the high beam into low beam, therefore reducing the glare effect by sensing the light intensity value of approaching vehicle and also eliminated the requirement of manual switching by the driver which was not done at all times. Arduino software was employed in designing the project. The system device was able to automatically switch the headlight to low beam when it sensed a vehicle approaching from the opposite side using LDR sensor. This automatically switches the high beam into low beam thus reducing the glare effect by sensing the approaching vehicle. It also eliminates the requirement of manual switching by the driver which is not done at all times.



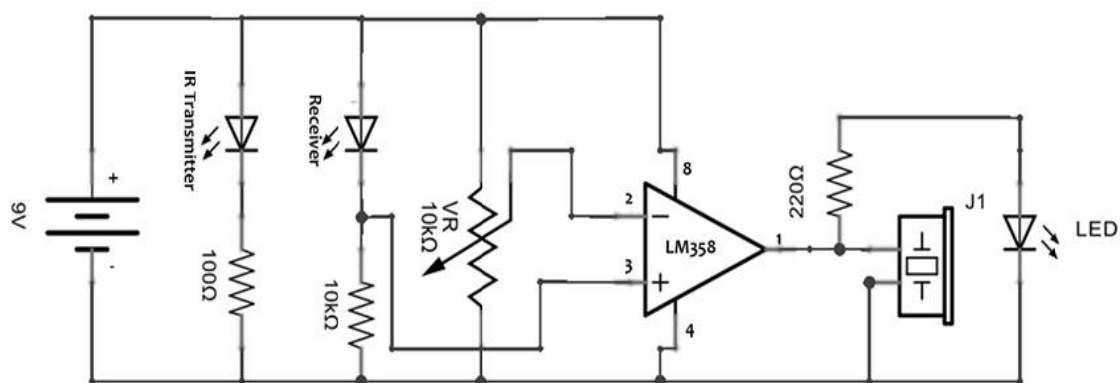
TOUCH-LESS DOOR BELL ALARM



By

*K. Seetha
K. Sethana Devi
P. T. Soumiyaa*

Technology advancements have made our lives much easier. New innovated products are launched every day. One of the products that must be mentioned is a touch less doorbell. In the earlier days, a simple doorknocker was enough to intimate the house owner about the presence of an individual at the door. However, today house owners desire to install various alarm systems in their home. We all have a doorbell at our homes. When a visitor comes to our house, he searches for the doorbell switch and then rings it to let us know his presence. If the who came to our house cannot find the doorbell or else if the person is so short that he cannot reach the doorbell, what can be done? How will it be if we use touch less doorbell which rings as soon as a person arrives at our place. There are no more hassles. The person who comes to our house need not search for the doorbell and press it any more. If we install this touch less doorbell circuit, the circuit will automatically sense the presence of the person and it rings the doorbell.



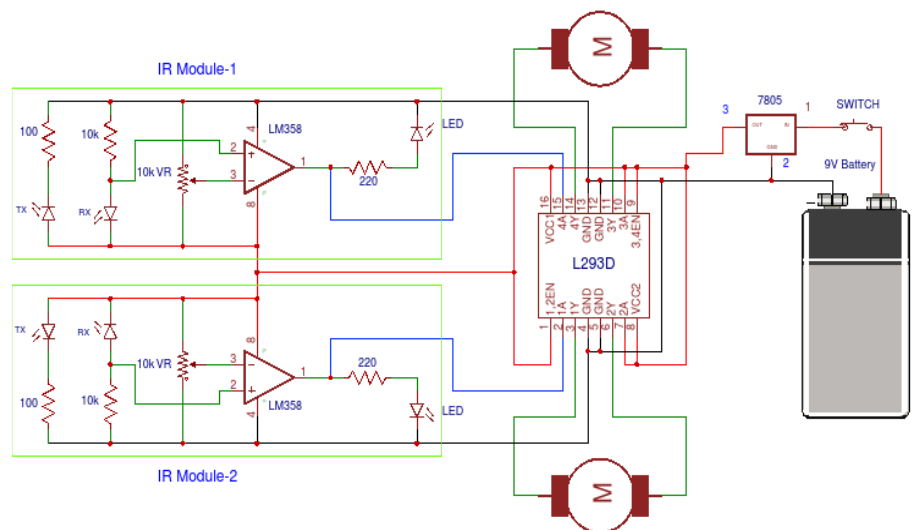
LINE FOLLOWING ROBOT



By

Mohamed niyas G
Samivel Subash S

It is a machine that follows a line, either a black line on white surface or vice-versa. This line follower which will follow black line on a white surface, we will be using two IR sensor pair which will have an IR LED and Photo diode. Generally IR rays will be reflected by white surface while black surface will absorb IR rays. In the line follower that we are going to build; both the IR sensors will be on the white surface. IR rays will be emitted and reflected back which will be detected by the Photo diode, in this state the IR sensor will send a HIGH digital signal ("1"). Similarly when the sensor is on a black surface IR rays will be emitted and will not be reflected back which will be absorbed by the black surface, in this state the IR sensor will send LOW digital signal ("0"). Thus with these digital values 1 and 0 we can easily identify the state of the sensors. We will be using two 500rpm DC motors here. These motors will work when they are connected to any DC power source and the direction of rotation of the motor can be changed by changing the polarity of the source. IC L293D will be used to control the motors which will work with digital I/O. Assume that the input given to the motor through L293D is HIGH ("1") and LOW ("0") that will make the motors to rotate in clockwise direction, similarly when the inputs are LOW ("0") and HIGH ("1") the motor will rotate in anticlockwise direction. But when both the inputs are same (1 & 1 or 0 & 0) the motors won't work.



OBSTACLE AVOIDANCE ROBOT



By

7.Selvakumar

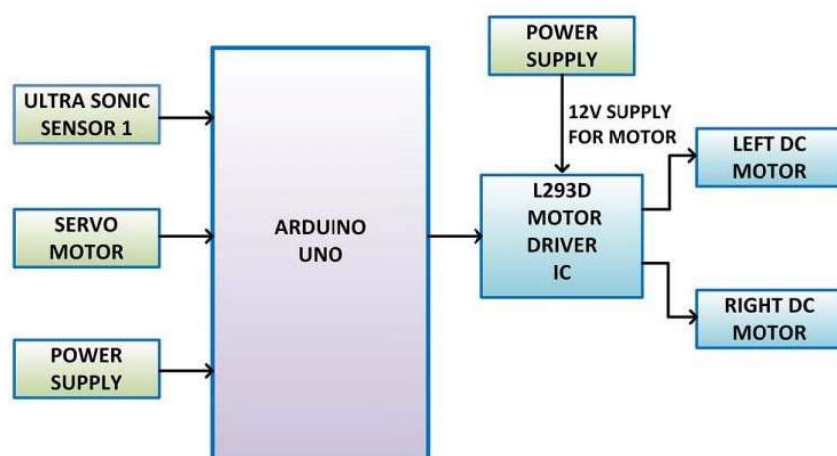
M.Sathishkumar

B.Nithyanandhan

B.Surendaran

M.Jothibasu

Obstacle avoidance is one of the most important aspects of mobile robotics. Without it, robot movement would be very restrictive and fragile. This project proposes robotic vehicle that has an intelligence built in it such that it directs itself whenever an obstacle comes in its path. So, we can protect the robot from any physical damages. This can be design to build an obstacle avoidance robotic vehicle using ultrasonic sensors for its movement. A micro-controller (AT mega 328P) is used to achieve the desired operation. An ultrasonic sensor is used to detect any obstacle ahead of it and sends a command to the micro-controller. Depending on the input signal received, the micro-controller redirects the robot to move in an alternate direction by actuating the motors which are interfaced to it through a motor driver.



AUTOMATIC SHED USING RAIN SENSOR



By

M. Muthuvarathalakshmi

P. Kavitha

S. Lakshmi Brindha

S. Reshma Priyadharsin

When unseasonal rain falls on the harvested crops, clothes which are kept to dried up, they rot up and get destroyed due to which farmers and home people have to face enigma. Some crops must be dried before it is sold to the agriculture market yard, so the farmer needs some space for the crops to dry which most of the farmers don't have and it take loads of time to dry up. As the farmers have invested their time almost three to four months and huge amount of capital both, in the yield and as it gets ruined by rainfall, farmer's assets and time goes in vain. So as farmer's and people get worry and faces loss, this device is built up to protect them from severe loss and tension.

This device is used in agriculture purpose, for saving the dried clothes and can protect the interior parts of automobile in a way when the rain drops falls on the rain sensor, the roof automatically gets over the crops or upon the clothes kept for drying. This device consists of rain sensor, Arduino -Uno, motors and card board material (or) bio-degradable plastic material for shade. When the rain is detected by the sensor it gives signal to Arduino-Uno. Further Arduino gives signal to the motor due to which the roof gets over the object we need and protect it from being destroyed. And when the rainfall stops the roof automatically opens. This device is simple but very useful for farmers and home people to save their money and work which they have invested and their time. The cost is low and eco-friendly.

CAR SPEED DETECTOR



By

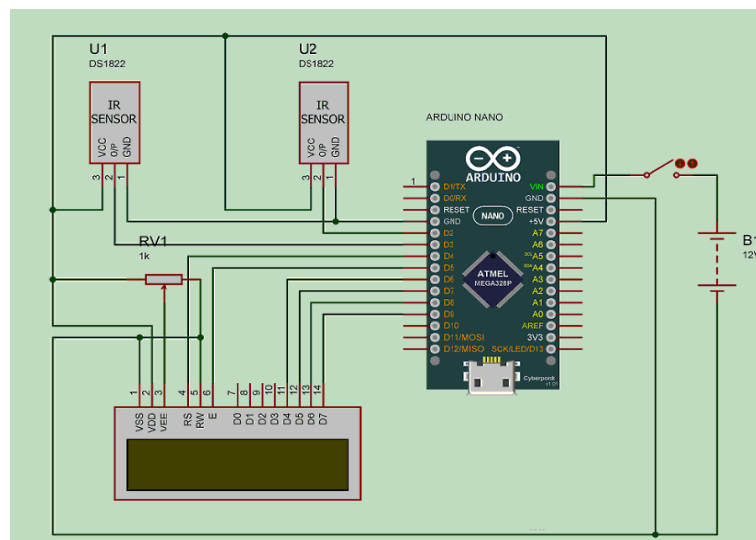
Sheeba J

Malini L

Priya Darshini A

Meenakshi S

In this project, two IR sensors are placed apart on one side of road. When any vehicle crosses the sensors, the internal timer of Arduino counts the time between activation of sensor. Now speed is measured by using simple distance time relationship. Both IR sensors are connected to the interrupt pin of Arduino, and they detect the falling wave. The purpose of using interrupt is that, it improves the efficiency of system. A LCD is connected to Arduino and measured speed is shown on LCD. When car moves in front of the first sensor, it gives the output signal to Arduino, Arduino detects the falling wave, now internal timer of Arduino is started and when car moves in front of second sensor timer is stopped. Now Arduino measures the speed of car which is measured by distance time relationship. The IR sensor includes an IR LED and a phototransistor. When an object passes between the sensors, light reflects from the object and falls on the phototransistor. An operational amplifier IC (LM358) is used and the phototransistor is connected to it. When object come in front of sensor, it sends a logical HIGH signal to Arduino.



AUTOMATIC HEAD LIGHT DIMMER



By

*Nivetha N
Pavithra S
Meenakshi A
Ramalakshmi V*

Automatic headlamps are the latest convenience in today's cars. These eliminate the need for the driver to manually switch on or switch off the headlamps in most driving situations. The automatic headlight switcher system reacts like the human eye to outside light levels and independently turns the lights on and off when needed. Such a system offers both safety and convenience. The circuit is built around timer NE555 (IC1), light-dependent resistor LDR1 and some discrete components. Potentiometer VR1 is used to set the light sensitivity of LDR1. On sensing the darkness, LDR1 turns the headlights 'on'. Basically, an LDR is a resistor whose resistance decreases with increase in the intensity of the incident light. Usually, an LDR exhibits very high resistance in darkness and low resistance in the presence of ambient light. Thus a varying voltage drop can be obtained across it with changing ambient light conditions. The LDR1 is connected to the trigger input (pin 2) of IC1. The output of IC1 is connected to the base of relay-driver transistor T1. The 12V supply voltage is connected to the circuit through switch S1. LDR1 and the 100-kilo-ohm preset constitute a voltage divider arrangement at pin 2 of IC1.

Working of the circuit is simple. Enable the circuit using switch S1. When there is sufficient ambient light, the resistance of LDR1 remains low (a few hundred ohms). The voltage at pin 2 is greater than two-third of 12V. The output at pin 3 of IC1 remains low-stable state for mono-stable mode of operation and the headlights of the vehicle connected to the normally-open (N/O) contacts of relay RL1 remain off. When the ambient light decreases, the resistance of LDR1 decreases to a few mega-ohms and the voltage at the trigger input (pin 2) of IC1 decreases to less than one-third of 12V. The output at pin 3 of IC1 goes high to energise relay RL1 and turns the headlights 'on'. Switch S2 can be used to manually operate the headlights.

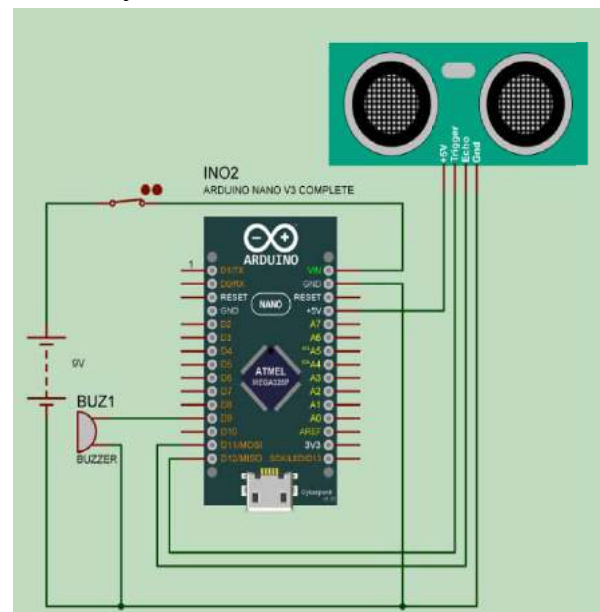
ULTRASONIC BLIND WALKING STICK



By

*Nivetha M
Sonia M
Supriya S*

According to the WHO, about 30 million people are estimated to be permanently blind worldwide. These people are totally dependent on others. They even cannot walk on their own. We have created designed and built an “Ultrasonic Blind Walking Stick” device which will help blind people to walk with ease independently. As a simpler version, we have used only one ultrasonic sensor in this project. For better accuracy and assistance two or three sensors can be used. The main objective of this project is to help blind people to walk with ease and to be warned whenever their walking path is obstructed with other objects, people or other similar odds. As a warning signal, a buzzer is connected in the circuit, whose frequency of beep changes according to the distance of object. The closer the distance of obstruction, the more will be the buzzer beep frequency. We can say that the beep frequency is inversely proportional to the distance. The main component used for this device is the ultrasonic sensor. The ultrasonic sensor transmits a high frequency sound pulse and then calculates the time to receive the signal of the sound echo to reflect back. The sensor has 2 circles. One of them acts as the transmitter and transmits the ultrasonic waves. The other one acts as a receiver (mostly a small microphone) and receives the echoed sound signal. The sensor is calibrated according to the speed of the sound in air. With this calibrated input, the time difference between the transmission and reception of sound pulse is determined to calculate the distance of the object.



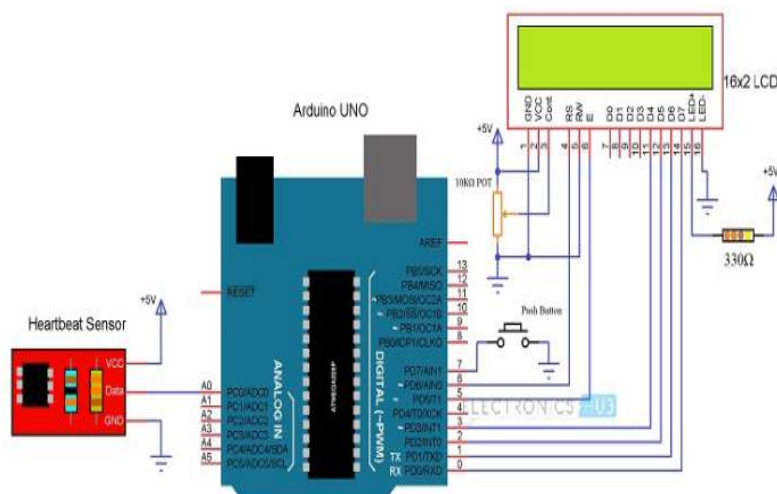
HEART BEAT MONITORING SYSTEM



By

*A.Jothi Meena
R.Padmavathi
S.Rama Lakshmi
S.Selva Lakshmi
S.Sindhu Muhila*

Heartbeat Sensor is an electronic device that is used to measure the heart rate i.e. speed of the heartbeat. Monitoring body temperature, heart rate and blood pressure are the basic things that we do in order to keep us healthy. In order to measure the body temperature, we use thermometers and a sphygmomanometer to monitor the Arterial Pressure or Blood Pressure. Heart Rate can be monitored in two ways: one way is to manually check the pulse either at wrists or neck and the other way is to use a Heartbeat Sensor. In this project, we have designed a Heart Rate Monitor System using Arduino and Heartbeat Sensor. The principle behind the working of the Heartbeat Sensor is Photo plethysmo graph. According to this principle, the change in the volume of blood in an organ is measured by the changes in the intensity of the light passing through that organ.



VEHICLE COLLISION AVOIDING SYSTEM

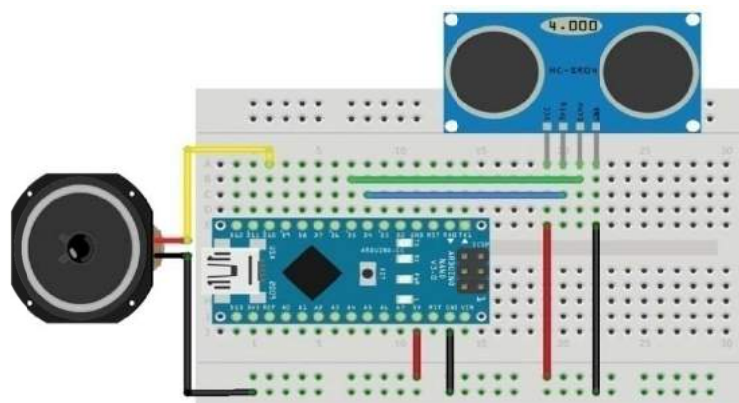


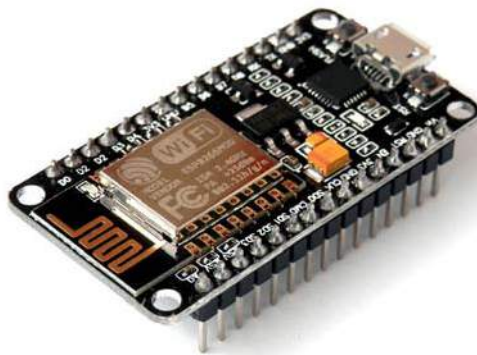
By

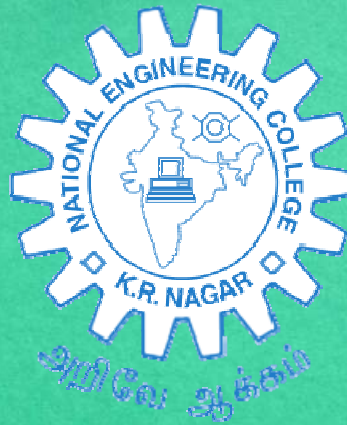
Aarthy B

Abirami M

This is an Arduino-based collision detection warning system. This kind of system is the fastest growing safety feature in automotive industries. Such a system enables vehicles to identify the chances of collision and give visual and audio warning to driver, so that the driver can take necessary action to avoid collision. This project idea is based on an Arduino controller and the whole project will give you very good understanding of how this system works. The step-by-step method is explained so that you can make this system. The hardware connection, pin information and Arduino program is explained clearly. We have used only one ultrasonic sensor in this project. For better accuracy and assistance two or three sensors can be used. The main objective of this project is to indicate or alert the vehicle when it is very near to another vehicle to avoid collision. As a warning signal, a buzzer is connected in the circuit, whose frequency of beep changes according to the distance of object. The closer the distance of vehicle, the more will be the buzzer beep frequency. We can say that the beep frequency is inversely proportional to the distance.



I Prize:**[Raspberry Pi Model B+]****II Prize:****[ESP8266 NodeMCU IOT Module]****III Prize:****[Bluetooth Module (HC-05)]**



EPROX '18

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