

1. DISTRIBUTED SENSORS FOR ENVIRONMENTAL MONITORING AND CONTROLLING

COLLEGE:SRIDEVI WOMENS ENGINEERING COLLEGE

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ABSTRACT:

Now a days sensors are used in daily applications in order to reduce the human need in industries. Basically sensor is a device that detects events or changes in quantities and provides a corresponding output generally as an electrical or optical signal. In our project some sensors are used to satisfy the human needs like automatic ON and OFF.

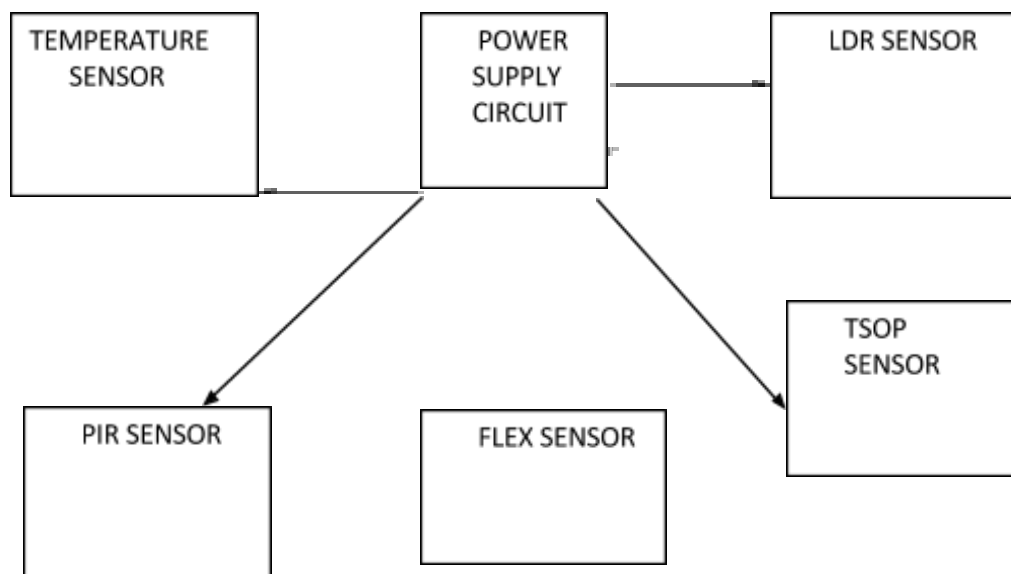
This project is included with temperature sensor for measuring temperature ; LDR sensor for automatic lights ON and OFF depending on light ; TSOP sensor for detecting an obstacle while blind people are walking on roads ; FLEX sensor for paralysis people to intimate their feelings ; finally PIR sensor for burglar indication. Power Supply of 12V converted to 5V, by 7805 regulator.

HYPOTHESIS: Usage of sensors is more often seen in industries in order to reduce the human need. Here we discuss about different types of sensors and their applications in real time. Sensors are used in daily appliances ie; in home, hospitals etc. Day by day usages of sensors are rapidly increasing.

METHOD: SENSORS SENSING METHOD.

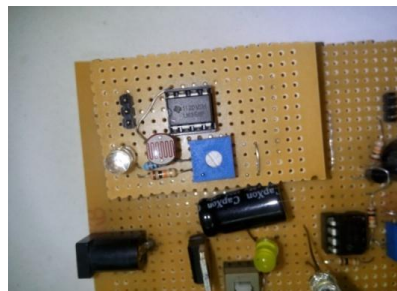
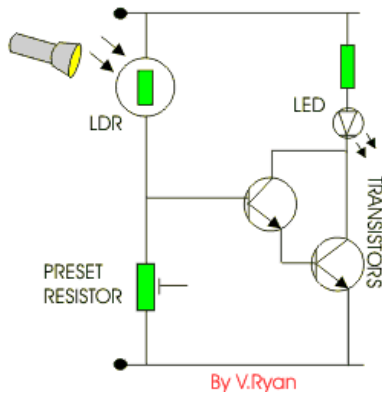
EXPERIMENT:

BLOCK DIAGRAM

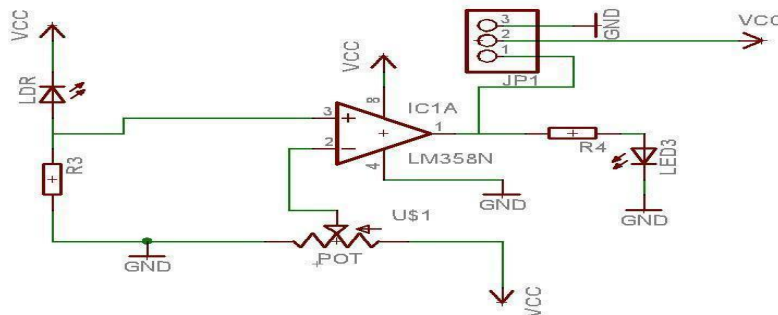


output of LM358 is given to transistor as input. The output of transistor is given to ground terminal of FAN&LED. The transistor acts as a switch. Whenever the output of LM35 is greater than the ref temperature it indicates temperature is high automatically fan will turn ON to cool the room and whenever LM35 output is less than the ref. temperature it indicates temperature is low then LED glows to heat the room.

3. LDR SENSOR: LDR means light dependent resistor. It consists of high resistance. When light falls on the resistive element it allows current to pass through it. Whenever light is low the resistance will be high and it does not allow current to pass through it and LED does not glow, when light falls on LDR LED glows.

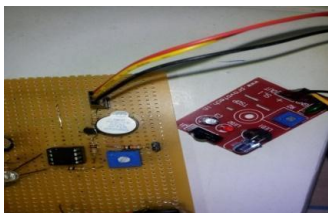


CIRCIUT DIAGRAM:



The power supply of 5V is given to the Input terminals of LDR&LED, POT and also given as Vcc to the IC LM358.LDR output is given to the inverting terminal &POT output is given to the non-inverting terminal. The output of LM358 is given to the LED. When there is no light falling on LDR the resistance of LDR is greater than the resistance of POT so LED glows. When light falls on LDR the resistance is less than resistance of POT so LED does not glow. So we use LDR sensors in AUTOMATIC STREET LIGHTS.

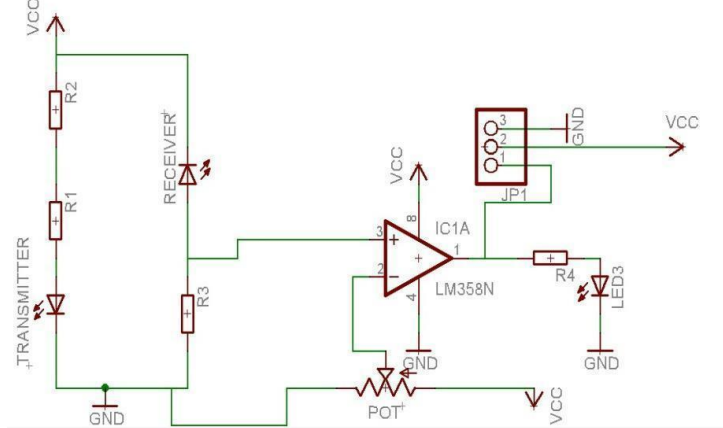
4. TSOP SENSOR: TSOP sensor is miniaturized receiver for infrared remote systems. It consists of an IR receiver it receives only discontinuous waves as input.



TSOP-1738

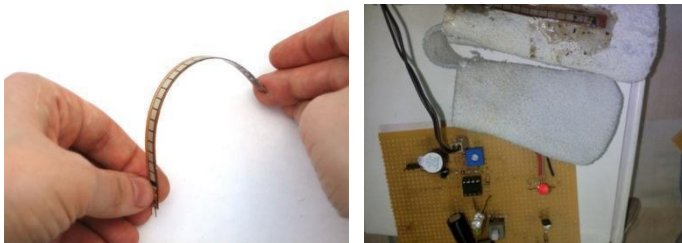


CIRCUIT DIAGRAM:

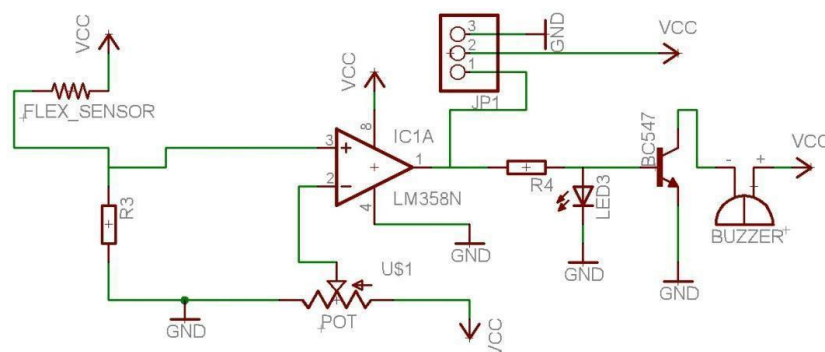


The input supply 5V is given to the input terminal of buzzer and input terminal of TSOP sensor. Ground terminals are grounded and the output from the TSOP sensor is connected to the ground terminal of buzzer through a transistor since it acts as a switch. Whenever TSOP sensor detects an obstacle the switch closes and the buzzer sounds .It is used for the blind people to cross the road.

5. FLEX SENSOR: Flex sensors are sensors that change in resistance depending on the amount of bend on the sensor. They convert the change in bend to the electrical resistance the more the bend the more the resistance. Flex sensors are Analog resistors . They work as Analog voltage divider. When the substrate is bent the sensor produces a resistance output relative to the bend.



CIRCUIT DIAGRAM:

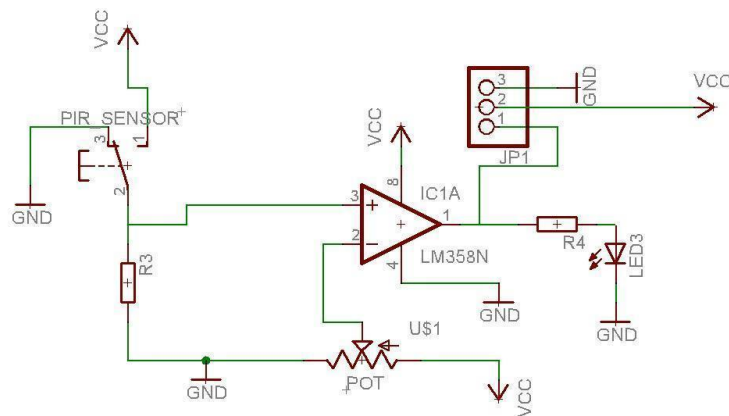


The input supply 5V is given to the input terminals of buzzer, FLEX sensor, POT, LED and to the Vcc of LM358. The FLEX output is given to the non-inverting terminal and POT output is taken as reference and given to the inverting terminal of IC. The output of IC is given to the base terminal of transistor. The output of transistor is given to the ground terminals of LED & Buzzer. Whenever the flex sensor is bent the resistance increases and the LED glows and Buzzer sounds.

6. PIR SENSOR: PASSIVE INFRARED sensor is a motion detector. Everybody emits some heat in the form of IR radiation. PIR sensor detects this radiation and gives some indication. It detects about 5 to 12 metres.



CIRCUIT DIAGRAM:



The input 5V is given to the input terminals of PIR sensor and LED. The output terminal of PIR is given to non-inverting terminal of IC and reference POT is given as inverting input. Whenever PIR detects an object is moving under it, it detects IR radiation and produces output to the LED, thus the LED glows

SUMMARY:

- TEMPERATURE SENSOR helps in maintaining temperature in industries.
- LDR SENSOR is used for automatic street lights.
- TSOP SENSOR helps the blind people to cross the road.
- FLEX SENSOR helps paralysis people to indicate their feelings.
- PIR SENSOR is used in Lift lobby, burglar alarm

2. MOBILE SOLAR WATER PUMPING SYSTEM

COLLEGE: SIDDHARTHA INSTITUTE OF ENGINEERING AND TECHNOLOGY

GUIDE: DR.SOWBHAGYALAKSHMI

SCHOOL STUDENTS: B.VIVEK BABU, V.GOPALA KRISHNA, 9TH CLASS, TS MODEL SCHOOL, BONGLOOR X ROAD,IBRAHIMPATNAM

COLLEGE STUDENTS: S.PRASHANTH KUMAR, U.SAI KIRAN CIVIL 3RD YEAR

ABSTRACT:

Take a solar panel and it will attached to the trolley it will help to move one place to another place and this is act just like as sunflower now the solar panels attached to the dc motor with the help of wire and switch without help of battery, now the panels are kept in the sunlight area the motor is running with the help of solar panels now the motor is deliver the water to reacquired area with the help of pipe

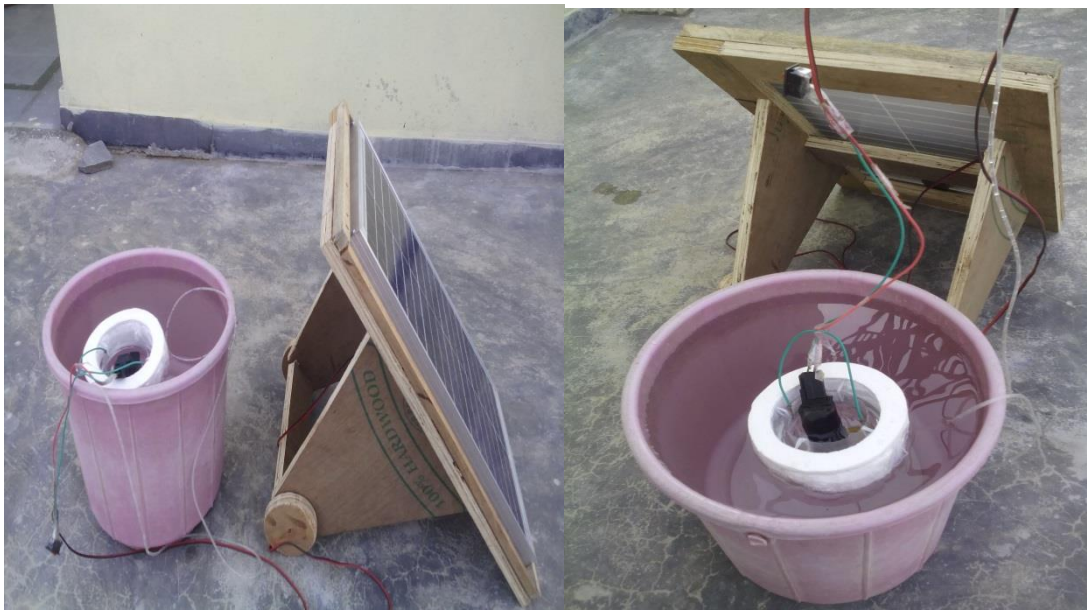
HYPOTHESIS:

To determine the feasibility of using photovoltaic (PV) modules to power water pump for a small drip Irrigation system. Paper is on complete photovoltaic water pumping system, falls within the potential application for sustainable agriculture, including agro-food sector to reduce fossil fuel consumption and greenhouse gas emissions. Through a reduction in energy and water consumption, a solar powered drip irrigation system would allow farmers in rural and developing areas

METHOD:

Solar radiation is an important variable to consider when estimating the potential photovoltaic electrical output along with temperature, wind, and precipitation. The successful application of photovoltaics calls for the availability of long-term daily global horizontal solar radiation data, H (MJ m⁻² d⁻¹). This is the total radiation incident on a horizontal plane at the earth's surface. Both historic and current climate data rarely include such solar radiation data, as there are a limited number of weather stations that have long-term solar radiation measurements.





NOTE: The picks are shown in just a model of the mobile solar water pumping system

SUMMARY:

As the cost of fuel continues to rise and the environmental effects of fossil fuel power become ever more apparent, discovering alternative energy sources as well as practical applications will become increasingly more important. Photovoltaic technology is continually improving, becoming more efficient in a range of environmental conditions, while at the same time decreasing in cost. PV water pumping is a common practice throughout many countries and can only improve in efficiency and effectiveness. Drip irrigation is a highly efficient and proven technology, which is applicable to a variety of crops. With an increasing understanding of solar radiation and the associated PV electrical output, further, more accurate prediction models will be developed. The union of photovoltaics and drip irrigation could be a positive step toward sustainable agriculture.

3. AN INTELLIGENT ROAD TRAFFIC CONTROL SYSTEM

COLLEGE: STANLEY COLLEGE OF ENGINEERING AND TECHNOLOGY FOR WOMEN

GUIDE: RAMA SHARMA

SCHOOL STUDENTS: AFREEN, ALEKYA FROM 9TH CLASS STANLEY GIRLS HIGH SCHOOL

COLLEGE STUDENTS: A.MEENAKSHI

ABSTRACT:

Nowadays congestion in traffic is a serious issue. The traffic congestion can also be caused by large Red light delays, etc. The delay of respective light is hard coded in the traffic light and it is not dependent on traffic. In this paper we studied the optimization of traffic light controller in a City using microcontroller. The system tries to reduce possibilities of traffic jams, caused by traffic lights, to an extent. The microcontroller used in the system is 89V51RD2 which is MCS- 51 family based. The system contains IR transmitter and IR receiver which are mounted on the either sides of roads respectively.

The IR system gets activated whenever any vehicle passes on road between IR transmitter and IR receiver. Microcontroller controls the IR system and counts number of vehicles passing on road. Microcontroller also store vehicles count in its memory. Based on different vehicles count, the microcontroller takes decision and updates the traffic light delays as a result. The traffic light is situated at a certain distance from the IR system. Thus based on vehicle count, microcontroller defines different ranges for traffic light delays and updates those accordingly.

The system records vehicle count in its memory at user predefined recording interval on real time basis. This recorded vehicle count data can be used in future to analyse traffic condition at respective traffic lights connected to the system. For appropriate analysis, the recorded data can be downloaded to the computer through communication between microcontroller and the computer. Administrator sitting on computer can command system (microcontroller) to download recorded data, update light delays, erase memory, etc. Thus administrator on a central station computer can access traffic conditions on any approachable traffic lights and nearby roads to reduce traffic congestions to an extent. In future this system can be used to inform people about different places traffic condition.

HYPOTHESIS:

In this section, we focus on the use of IR sensor and wireless N/W in traffic control. A lot of ground can be gained in this area, and intelligent traffic control gained interest of several governments and commercial companies. ITS research includes in-car safety systems, simulating effects of infrastructural changes, route planning, optimization of transport, and smart infrastructures. Its main goals are: improving safety, minimizing travel time, and increasing the capacity of infrastructures. Such improvements are beneficial to health, economy, and the environment, and this shows in the allocated budget for ITS. The resistance R1 in the above circuit can vary. It should not be a very high value (~ 1Kohm) as then the current flowing through the diode would be very less and hence the intensity of emitted IR

would be lesser. By increasing the current flowing in the circuit, you can increase the effective distance of your IR sensor. However, there are drawbacks of reducing the resistance. Firstly, it would increase the current consumption of your circuit and hence drain the battery (one of the few 'precious' resources for any embedded system) faster.

Secondly, increasing the current might destroy the Tx. So, the final choice should be a calculated trade-off between these various factors. One can also modulate the IR to achieve better distance and immunity. The receiver diode has a very high resistance, typically of the order of mega Ohms when IR is not incident upon it. However, when IR is incident upon it, the resistance decreases sharply to the order of a few kilo Ohms or even lesser. This feature forms the basis of using IR as a sensor. You will need to connect a resistance of the order of a few mega Ohm in series with the Rx. Then tap the output voltage at the point of connectivity of these two resistors

METHOD:

Development of the complete intelligent traffic light control and monitoring system includes lots of study and implementation work. The implementation work of the complete data logger is divided into points discussed below.

Power Supply: As per the power requirement of the hardware of the intelligent traffic light control and monitoring system, supply of +5V w.r.t GND. The four way junction is developed using Woods, Screws, Light Emitting Diodes, Resistors and 12V light bulbs. This traffic light model will be four lane based traffic system. In order to display the simulation of the traffic light control system, each traffic light lane has a set of traffic light signal "Red, Yellow, and Green" which changes from red to yellow and then yellow to green and then yellow after that back to yellow and then finally red signal. In this duration, all other lanes have red light glowing to allow the vehicles from the lane having green signal to pass through that lane. As soon as the red light get switched on, the yellow light of next lane in order switches on and then its traffic lights changes in the same sequence.

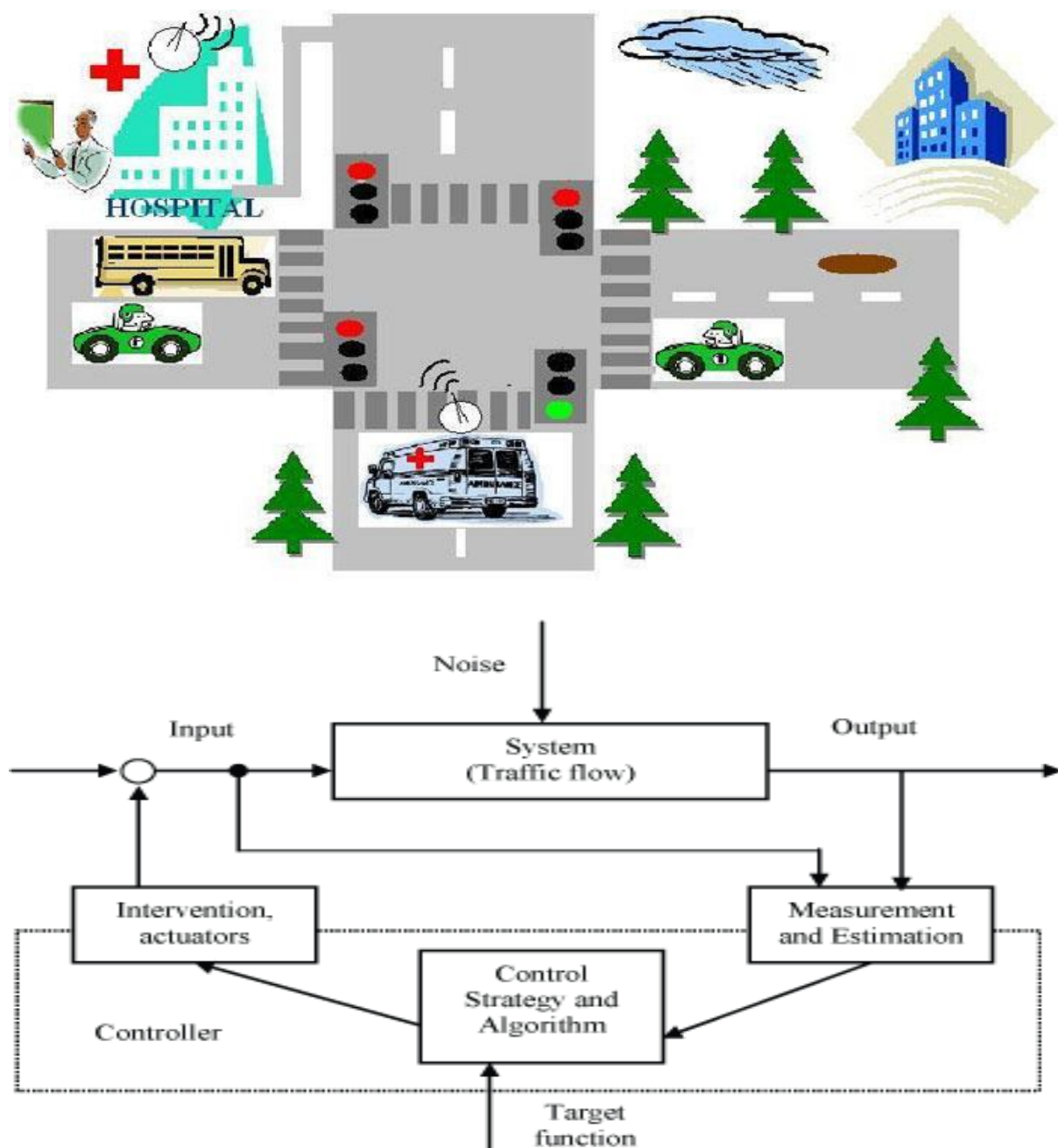
Each lane also has IR sensor on sideway of the road. The sensor used for the design of these traffic light system is an infra-red detector which as an infra-red diode and transistor as a pair. The sensors are placed on each lane to detect and count the number of cars through that lane. Four infra-red sensors (detectors) are placed on 4 lanes coming to a junction, one per lane. The sensor is placed at a distance away from the junction so that it doesn't get disturbed by the vehicles stopping at the signal. These sensors are connected to the PLC, which counts the pulses coming from the sensors. From this combination of sensor, we will know the expected time for green signal on when each lane change to the green signal

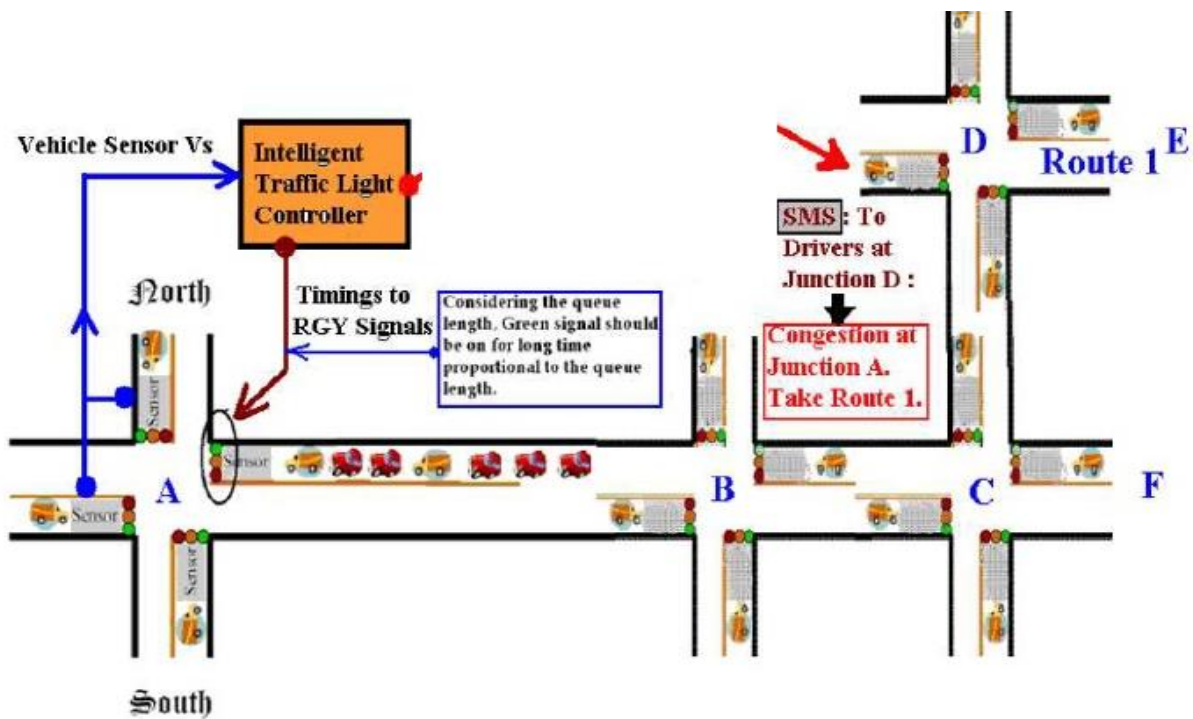
EXPERIMENT:

As we can observe there is a chowk shown in the diagram, consisting of four different lanes. An ambulance is going from lane1. The patient is carried in the cardiac van, whose various parameters are being measured by the sensory units inside the van. These parameters are constantly being sent to the hospital unit via GSM transreceiver, in the form of a message of data (SMS).

The hospital you can see is at the side of road and it is receiving these SMS's via a dedicated mobile phone. The information is shown on the pc connected to this mobile phone via data cable. The s/w used here is a very user friendly and front end s/w, i.e Visual basics. At the same time, ambulance is also making the lane 1's signal green and all other signals as red, due to traffic. This is achieved by RF link via TX 433 and RX 433 pair. Microcontroller timers and counters are used for controlling.

Logical block diagram provides logic behind the project and gives complete overview of project. It shows logical flow behind the project. In this all 3 units that is Ambulance, Hospital and Traffic signal units are shown .Here the driver selects the lane number, and then the particular signal is made Green.





Also we have a junction where three lights (Green, Amber and Red) are arranged on all four sides. We have three pairs of sensors across the roads marking as low, medium and high density zones respectively.

There will be an infrared transmitter and infrared receiver opposite to each other. We will place sensors at some distance apart from another pair. When vehicles are filled and cross the first pair of sensors, then there will be an obstacle between transmitter and receiver and this leads to a digital signal (low or high) and the microcontroller assumes that there is low density traffic.

When the vehicle crosses second sensor then it assumes medium density and for third sensor pair high density traffic respectively. Depending on the above process a digital data is sent to microcontroller whether it's low or high and the microcontroller will allot the time for the traffic to pass on.

For high density traffic there will be more allotment of time and for low density low time respectively. Program written to the microcontroller will make it to do the operation. So the microcontroller will send its timing signal output by comparing with adjacent roads traffic.

SUMMARY:

The proposed Intelligent Traffic Light Controller is more efficient than the conventional controller in respect of less waiting time, more distance travelled by average vehicles and efficient operation during emergency mode. The proposed system has simple architecture, fast response time, user friendliness and scope for further expansion.

4. MICROCONTROLLER BASED MOVING MESSAGE DISPLAY POWERED BY PV SOURCE

COLLEGE: BHOJ REDDY ENGINEERING COLLEGE FOR WOMEN

GUIDE: Y.MASTHANAMMA

SCHOOL STUDENTS: SINDHU 9th CLASS, BHULAXMI 9th CLASS M.H.GUPTHA

COLLEGE STUDENTS: K.VENTAKA MOHANA, K.ANUSHA

ABSTRACT:

The aim of this project is to design a textual display system, based on a Light Emitting Diode (LED) dot matrix array powered by solar energy. The project involves taking the device from an initial concept, through a design phase, to constructing a prototype of the product. The system consists of the display unit, which is powered from a photovoltaic (PV) module and a solar sealed lead acid battery. The self-contained nature of the intended design will allow the display to be mounted almost anywhere it is needed. Therefore, the main purpose of this project is to utilize the solar energy and a rechargeable battery to power a universal self-contained characters display unit. This display unit is useful for creating attention-getting messages, location identifier such as maps and address identification display modules.

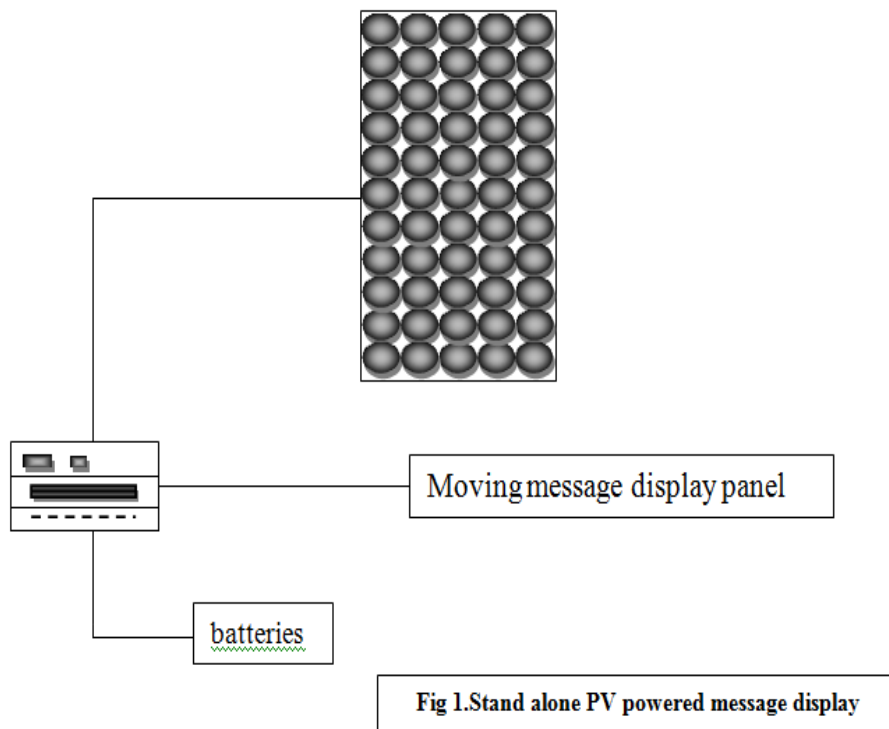
The implementation of a moving message display panel which displays a text containing 8 characters and is powered by a PV module has been achieved. The control of this panel is based on an ATMEL 89S52 Microcontroller. The used Microcontroller is programmed using assembly language. Message to be displayed is stored in I2C EEPROM memory which is configurable through UART. Author has provided software for easy configuration of message display from the PC. A keyboard can also be interfaced with the controller for the user to enter the messages for display. User cannot only set type of message to be displayed on LED display, but also control scrolling speed of message and the directions of display along with the number of times the user wants it to be scrolled. There is software which provides advance features to user with preview, format, delete and editing of message before saving settings to board.

The photovoltaic module charges the battery during the day and the battery continuously feeds the display panel. The system consist of a single PV module that produces 75watt, a rechargeable battery (12V, 7Ah), a charging battery controller with a regulator (that can produce 5V, 1A to feed the display panel and microcontroller) and moving message dot matrix display panel with its rows and columns drivers. The advantages of the designed display system is easy to set up, program and handle, it also allows the outlet to simply and clearly present the scrolled text. Finally, it is found that the designed system is suited to be used for many other applications such as parking, emergency telephones, temporary traffic signs and remote guard posts and signals.

HYPOTHESIS:

As the energy demands around the world increase, the need for alternative energy sources is increased. Therefore, it must exploit new and renewable sources of energy. Solar energy is a renewable energy source that is environmentally friendly, unexhausted and unlike fossil fuels, solar energy is available everywhere on earth and this source of energy is free. Stand-alone photovoltaic (PV) systems are designed to operate, independent of electric utility grid. They are excellent for remote applications where utility grid is inaccessible and in locations where significant connection cost makes grid power prohibitively expensive. Such applications include parking, emergency telephones, temporary traffic signs and remote guard posts and signals. Also, PV systems are generally designed and sized to supply certain DC and/or AC electrical loads. Stand-alone PV system with battery backup can supply power to electrical loads with availability about 100% during all the operating environmental conditions. PV systems are generally designed so that there is a deficit of energy in winter, but a surplus in summer. This deficit and surplus can lead, respectively, to over discharging and overcharging of the batteries, which damage the batteries, shortening their life and increasing maintenance. A battery regulator prevents over discharging and overcharging, and therefore minimizes damage to the batteries and prolongs their life.

METHOD:



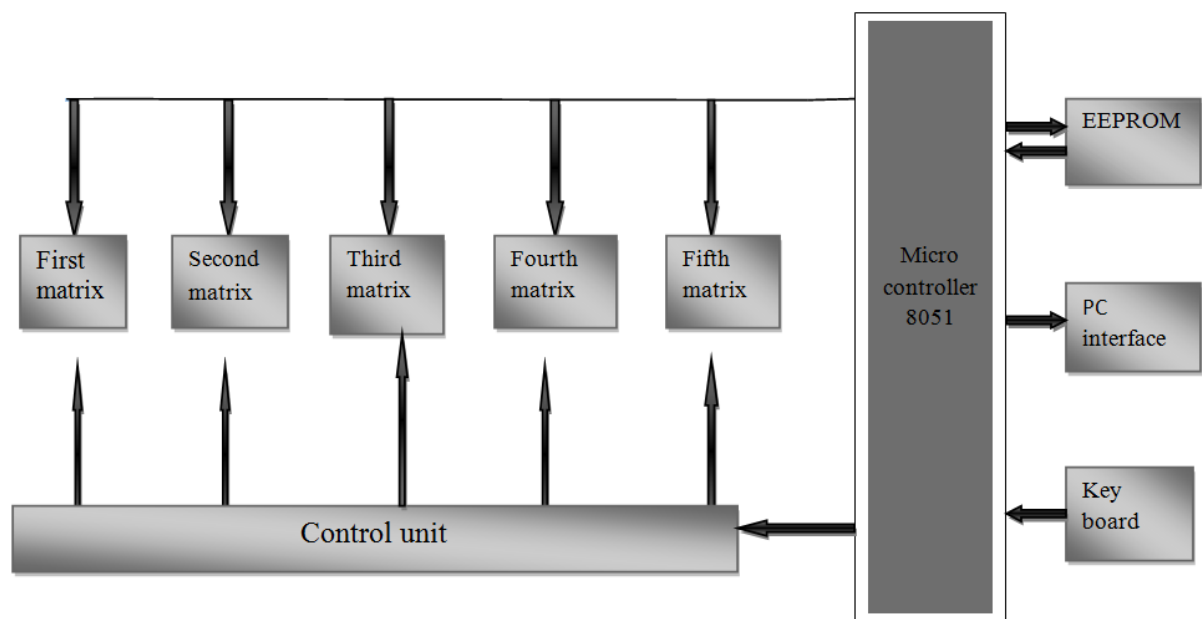


Fig 2.BLOCK DIAGRAM

EXPERIMENT:

Initially, the energy is stored in the Solar Panel. The panel is connected to the transformer which is then connected to a rectifier. The rectifier is connected to the LED panel which is connected to keyboard. To check the LED panel, press Enter key twice which shows rows and columns glow simultaneously. This shows that the LED works. Through MC the working of LED is controlled. Based on the requirement different functions are given to obtain the message.

SUMMARY:

The set goals within this project have been achieved, proving the feasibility of the display. The designed stand-alone PV system is cost-effective. It offers a reliable and a robust energy source which make it suitable for applications in low power demand in remote areas and also decreases wastage of power. As PV cell is used through solar power it is pollution free. These can also be used in railway signals, traffic signals, and Sensex boards. This document details the process used in creating the design, detailing how it functions and suggests future improvements and forms the working specification for the initial prototype and a basis from which a viable product can develop in the future.

5. WIRELESS WATER TANK CONTROL

COLLEGE: B V RAJU INSTITUTE OF TECHNOLOGY

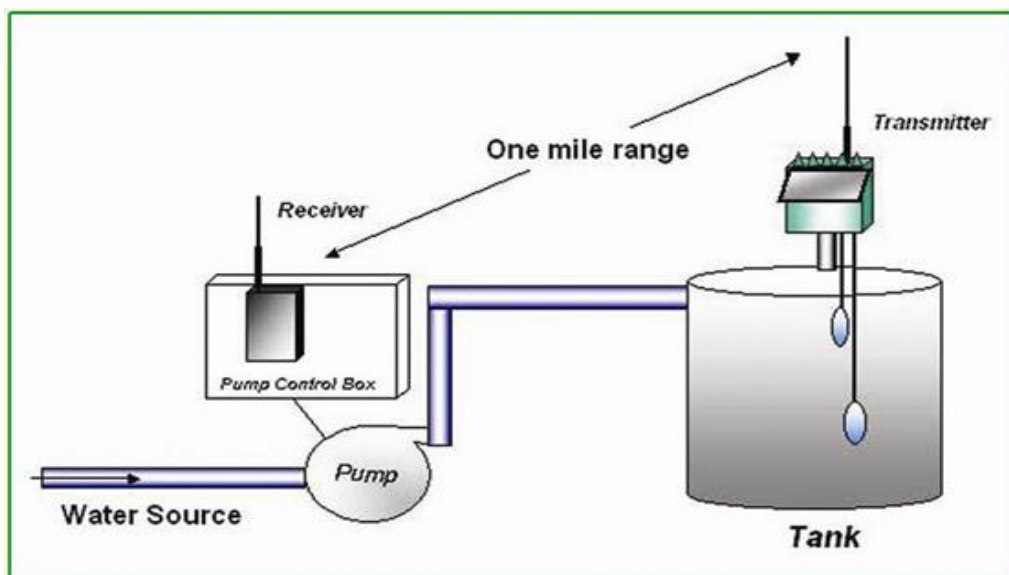
GUIDE: Ms. P. SHIVA SUBHASHINI

SCHOOL STUDENTS: P VIJAY KUMAR 9th CLASS, S PAVITHRA 8th CLASS, TELANGANA MODEL SCHOOL

COLLEGE STUDENTS: SWATHI, MOHAMMED ANWAR KHAN, R PARASHURAM SHOURYA

ABSTRACT:

Water scarcity is a serious issue in major cities. It is a common problem faced by every house owner, when the tank is empty motor should be switched on & switched off when the tank is full. Wireless automatic water level control system doesn't need any attention once it is installed. It is wireless, automatic, cost effective & reliable. It uses two radio frequency transceivers along with a controller each installed at the tank & sump.

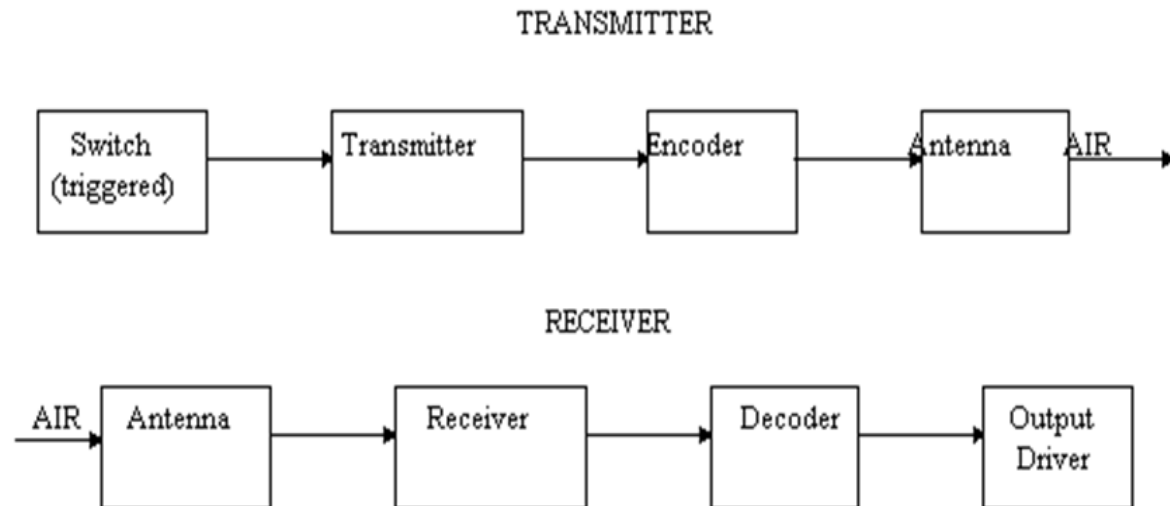


HYPOTHESIS:

A water tank is divided into four different levels. A floating valve with magnet moves along with the water level that closes the reed switches and when it reaches its highest level the transmitter at the tank sends a signal to the receiver at the motor to turn the motor OFF. Similarly when the water level in the tank falls below the lowest the transmitter sends a signal to turn the motor ON thus filling the tank. This does not involve any manual operation and is completely safe for daily usage.

METHOD:

It also happens in our very own household when we are so engrossed in homely chores that it completely skips our mind the motor was turned ON. Eventually when the water overflows with huge noise then one realizes to turn the motor OFF. The immeasurable loss cannot be accounted for and as a human every one of us is responsible towards natural resource management.



EXPERIMENT:

Wireless automatic water level control system doesn't need any attention once it is installed. It is wireless, automatic, cost effective & reliable. It uses two radio frequency transceivers along with a controller each installed at the tank & sump. A water tank is divided into four different levels. A floating valve with magnet moves along with the water level that closes the reed switches and when it reaches its highest level the transmitter at the tank sends a signal to the receiver at the motor to turn the motor OFF. Similarly when the water level in the tank falls below the lowest the transmitter sends a signal to turn the motor ON thus filling the tank. This does not involve any manual operation and is completely safe for daily usage. It also happens in our very own household when we are so engrossed in homely chores that it completely skips our mind the motor was turned ON. Eventually when the water overflows with huge noise then one realizes to turn the motor OFF. The immeasurable loss cannot be accounted for and as a human every one of us is responsible towards natural resource management.

SUMMARY:

Water scarcity is a serious issue in major cities. It is a common problem faced by every house owner, when the tank is empty motor should be switched on & switched off when the tank is full. Wireless automatic water level control system doesn't need any attention once it is installed. It is wireless, automatic, cost effective & reliable. It uses two radio frequency transceivers along with a controller each installed at the tank & sump.

6. SCAN COMMUNICATOR FOR SPEECH IMPAIRED

COLLEGE: B V RAJU INSTITUTE OF TECHNOLOGY

GUIDE: Ms. P. SHIVA SUBHASHINI

SCHOOL STUDENTS: P VIJAY KUMAR 9th CLASS, S PAVITHRA 8th CLASS, TELANGANA MODEL SCHOOL

COLLEGE STUDENTS: SWATHI, MOHAMMED ANWAR KHAN, R PARASHURAM SHOURYA

ABSTRACT:

Speech impairment, paralysis and autism may hinder people from communicating their needs. Scan Communicator is a device that can be used for communication purposes so the caretakers or family members can attend to the user's needs. Various icons are displayed on the device; every icon has an LED beneath it. LEDs glow serially one after another with a short delay. At a given instance only one LED is ON. Whenever the user wants to communicate a need he/she has to press the button switch when the LED beneath is on, this will give a buzzer output and the respective LED is ON until the caretaker attends to the user.

HYPOTHESIS:

The scan communicator is built with simple electronic components- 32bit micro controller, 8051 regulator, buzzer, bicolour LED's, resistors and capacitors. All these components are assembled in a PVC box. Various icons are displayed on the device; every icon has an LED beneath it. A program is prepared and dumped in microcontroller for LEDs to glow serially one after another with a short delay. At a given instance only one LED is ON.

METHOD:

A PVC box of required dimensions is chosen. A program is prepared and dumped in microcontroller for LED's to glow alternatively one after the other with a short delay i.e, at a given instance only one LED is on. Then the simple electronic components- 32bit micro controller, 8051 regulator, buzzer, bicolour LED's, resistors and capacitors are assembled accordingly. Finally a push button is connected to the scan communicator with a jack pin. The final look of the device is shown in the following picture. The number of icons on scan communicator can be altered according to the need of client.



EXPERIMENT:

The scan communicator is built with simple electronic components- 32bit micro controller, 8051 regulator, buzzer, bicolour led's, resistors and capacitors. All these components are assembled in a PVC box. Various icons are displayed on this device. Every icon has an LED beneath it. LEDs glow serially one after another with a short delay. At a given instance only one LED is ON. Whenever the user wants to communicate a need he/she has to press the button switch when the LED beneath is on, this will give a buzzer output and the respective LED is ON until the caretaker attends to the user.

SUMMARY:

Scan communicator is a simple device with a low cost. So this can be used by the people suffering with Speech impairment, paralysis and autism. Speech impairment, paralysis and autism may hinder people from communicating their needs. Scan Communicator is a device that can be used for communication purposes. So with help of this device the caretakers or family members can attend to the user's need.

7. ALPHABET TRAINER FOR THE VISUALLY IMPAIRED

COLLEGE: B V RAJU INSTITUTE OF TECHNOLOGY

GUIDE: Ms. P. SUBHASHINI

SCHOOL STUDENTS: K SUPRIYA 9th CLASS, P AJAY 8th CLASS, TELANGANA MODEL SCHOOL

COLLEGE STUDENTS: B HRUDAYNATH GUPTA, T NAVYA MADHAVI, K.P.S. SURYA NARAYANA, SRIDHAR

ABSTRACT:

Visually impaired kids who are starting their schooling can benefit from this device tremendously. They learn a script called Braille that they can feel with their hands but while learning there should be an instructor with them who can spell the letter for them. To enable self-learning by the visually impaired, Alphabet Trainer is designed where they can feel the alphabet on a button and pressing the button spells out the alphabet. This improves their hand and ear coordination and also makes them practice alphabets. They can learn while playing.

HYPOTHESIS:

We planned this project to do in such a way that it can be easier for the visually impaired. This project can be done by taking a box type of container which can be of about 50 cm of length. On that a cardboard can be placed and can be fitted properly along the length and breadth of the base we have assumed to put on. Alphabets can be arranged in the form of push buttons drilled on the cardboard.

Each push button is fitted with an external button where the alphabet is written on that button in the form of braille script.

Each alphabet is connected to the internal circuit which we design and the circuit connections are given properly. The visually impaired can hear the alphabet after pressing the button as we place two speakers attached to the circuit. So, on pressing the alphabet the person or child can be able to hear the alphabet assigned to that button.

EXPERIMENT:

The circuit for the experiment consists of a main component i.e., APR9600 chip. This chip plays a main role for the entire circuit. This chip contains 8 modules and so each module can be connected to 8 alphabets. Since we have 26 letters we take 4 of the APR9600 chips. So in total we have 32 modules and therefore as our requirement is 26, 6 modules can be left freely. This APR9600 is a chip which has the capability of recording the sound up to certain time limit. The entire circuit consist of the power supply circuit which we designed and the APR9600 chips and also speakers attached to the circuit connection.

These total 26 modules are assigned to 26 letters which are in the form of push buttons on the cardboard. Place the circuit with the PCB in the base and cover it with card board properly

On giving the power supply the alphabetical trainer works. We can make it work through battery also.

SUMMARY:

With this alphabet trainer the children who are visually impaired can learn the alphabets and also hear the letters and the word assigned to each letter (Eg. A for Apple etc). This project meets the requirement of the visually impaired children up to some extent who are in their initial stages of learning.

8. MICROCONTROLLER BASED AUTOMATIC ENGINE LOCKING SYSTEM FOR DRUNKEN DRIVERS

COLLEGE: VAAGESWARI COLLEGE OF ENGINEERING

GUIDE: PRAVEEN REDDY

SCHOOL STUDENTS: SAI KRISHNA-8TH CLASS, ARUN KUMAR-10TH CLASS.MANAKONDOOR

COLLEGE STUDENTS: O.SAIKRISHNA, A.SAIKRISHNA

ABSTRACT:

Most of these days, we hear lot of accidents due to drunken driving. Drunken drivers will not be in stable condition and so the rash driving is the inconvenience for other road users and also question of life and death for the drunken driver and for others.

HYPOTHESIS:

In this project, we are developing an Auto Lock System. The input for the system is from Detection Sensors either from Alcohol Breath or any other mechanism. The controller keeps looking for the output from these sensors. If there are any traces of Alcohol above the set limit, then the system will lock the Engine.

As vehicle automobiles are beyond the scope of this project, we are simulating the process by activating the relay.

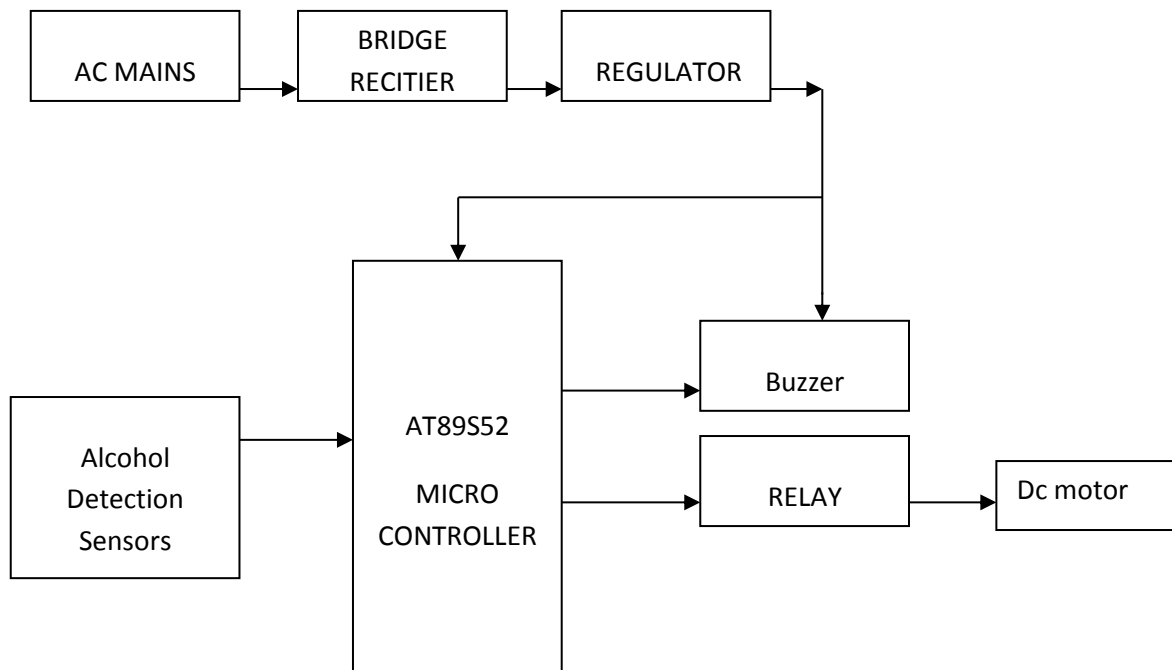
METHOD:

The project "AUTOMATIC ENGINE LOCKING SYSTEM FOR DRUNK AND DRIVE" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

EXPERIMENT:

Software	: Embedded C Language, Keil Compiler, Atmel ISP.
Microcontroller	: AT89S52
Power supply	: +5V, 750mA Regulated Power Supply
Crystal	: 11.0592 MHz
Display	: LED, LCD, Buzzer
Application	: Road Safety, Accident Prevention

BLOCK DIAGRAM:



SUMMARY:

Finally this project is developed for the sake of drunken drivers. Engine is locked by the sensor which senses the alcohol and locks the engine

9. AUTOMATION OF FIELD BY USING SOLAR POWER

COLLEGE:TKR COLLEGE OF ENGG & TECH

GUIDE:M.S.V.PAVAN KUMAR

SCHOOL STUDENTS: VAMSHI CLASS 9th CLASS, SHIVA CLASS 9th CLASS ZPHS MEERPET

COLLEGE STUDENTS: K.VAMSHI KRISH NA, N.AKHIL, M.SHANTHI KIRAN, M.VINAY KUMAR

ABSTRACT:

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.

The project uses an 8051 series microcontroller which is programmed to receive the input signal of varying moisture condition of the soil through the sensing arrangement. Once the controller receives this signal, it generates an output that drives a relay for operating the water pump. An LCD display is also interfaced to the microcontroller to display status of the soil and water pump. The sensing arrangement is made by using two stiff metallic rods inserted into the field at a distance. Connections from the metallic rods are interfaced to the control unit

HYPOTHESIS:

Automation of field by using solar power is to control the irrigation pumps automatically based on the field requirement. Various fields require various amount of water which depends upon field requirements, this can be achieved by using moisture sensors which are placed in fields. The sensor senses the field condition and it sends signals to the microcontroller unit. The microcontroller unit sends the signals to the motor driver unit which switches the motor pump ON/OFF

METHOD:

In this project microcontroller acts as the heart of the whole circuit. Microcontroller receives the signals from the moisture sensors which are placed in the fields. The program is designed in this manner that to get the output when the fields get dry. The driver unit receives the signals from the output of microcontroller and it sends signals to the relay. The relay closes the switch to switch ON the water pump. To drive all these components and circuits 5v dc and 12 v dc supply source is required. In this project we are using the solar power as the source for all these circuits to operate and also as an alternate source we are using the main power supply. The mains give the 230v ac so first we step down the 230v ac in to 12v ac by using step down transformer. Then the output is given to the full wave rectifier. The rectifier eliminates the negative peak voltage of the input voltage. The output of the rectifier is the pulsating dc. The error pulses are eliminated by using capacitor filter. Then the output at the

parallel of the capacitor is the 12v dc. But the Micro Controller is work on 5v dc .To convert the 12v dc into 5v dc a regulator (7805) is used. The output of the regulator is constant irrespective of the input voltage .And another voltage regulator (7812) is used to operate the relay. Driver circuit is generally made by using one transistor and one relay. The driver circuit is mainly operated by the Micro Controller. The Micro controller changes the state of the output pin from the low to high, i.e. from 0 level to the 1 level. The transistor will act as an ON/OFF switch corresponding to the input of the base. If the base current of the transistor is high the transistor is under ON condition else it is in OFF state. These conditions will be used to control the relay. The field condition is detected by the moisture sensor .The sensor will sends the data to the microcontroller .If the output of the sensor is low i.e. The field is in dry condition .Then the microcontroller will sends the signals to the relay unit .The relay unit close the motor switch and the water is sprinkled in the fields which are in dry condition.

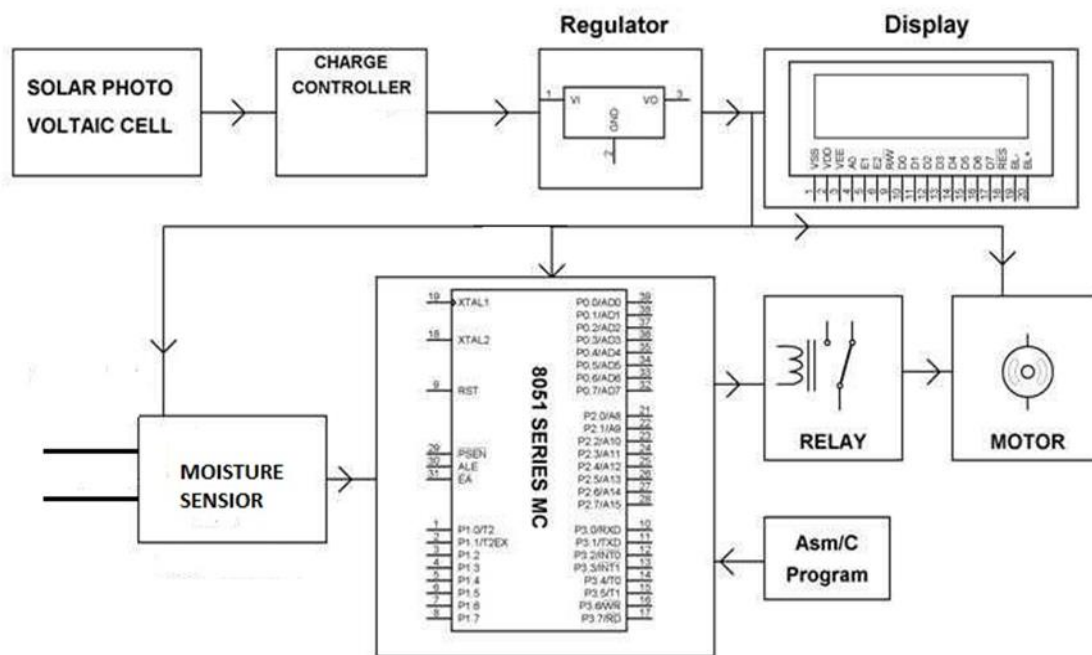


Fig: circuit diagram of Automation of field by using solar power

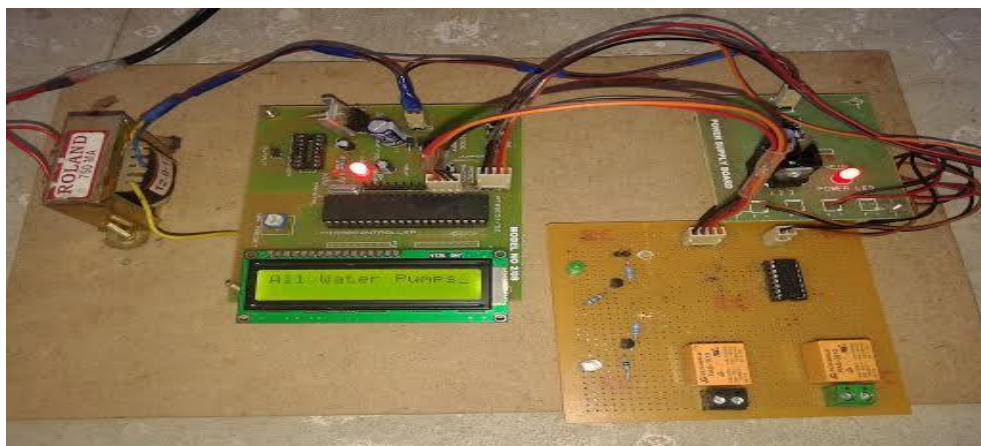


Fig: controller unit

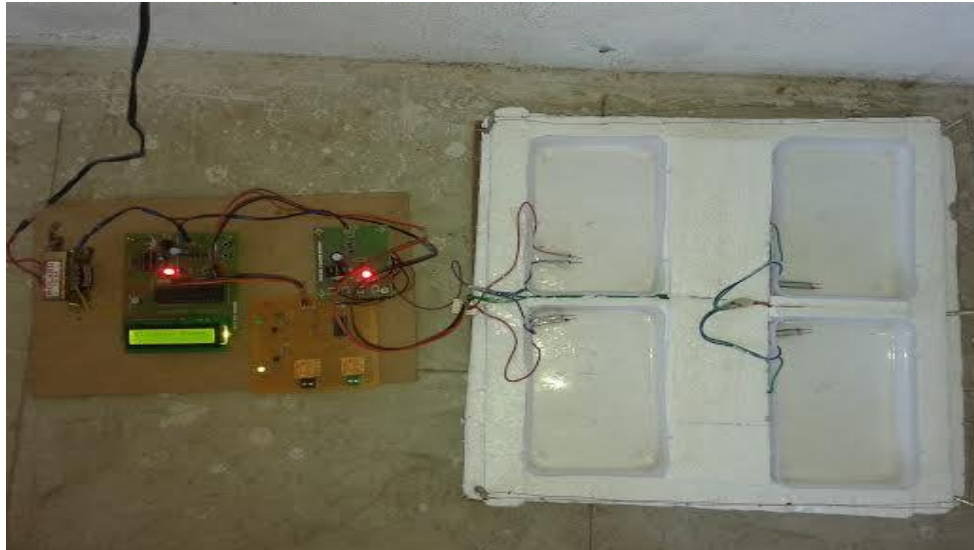


Fig: prototype model of Automation of field by using solar power

EXPERIMENT:

Experimental Test Result:

The test process include testing the circuit and finally we were able to interface the moisture sensor with the microcontroller unit and we have controlled irrigation pump set automatically based on field requirement and by remote control also.

SUMMARY:

Considerable progress has been made in the development of irrigation scheduling methods and there is a gradual increase in the adoption of irrigation scheduling tools by farmers.

The technology level of the farm will determine the choice of the irrigation scheduling method. Industry farms and farms with high value cash crops are more likely to adopt and invest in sophisticated scheduling methods.

The support and collaboration of the expert irrigation adviser will determine the rate of success in the adoption of the irrigation scheduling technology.

10. SMART STICK

COLLEGE: B.V.RAJU INSTITUTE OF TECHNOLOGY

GUIDE: SUBHASHINI P, ASSOCIATE DEAN - ATL & STUDENT PROJECTS

SCHOOL STUDENTS: S. KRISHNA GOUD 9th CLASS, A. JAHNAVI 8th CLASS TELANGANA MODEL SCHOOL

COLLEGE STUDENTS: K. SAI KIRAN (ECE-III), Y. SANJANA (CSE-II)

ABSTRACT:

The basic function of Smart Stick is to detect an obstacle & give a feedback via buzzer to the user. The user here is a visually challenged person or an elderly with poor vision. The Smart Stick is an enhanced version of the walking stick for the blind. Currently work is under progress to detect obstacles above the head and also to identify any elevations and potholes on the road to help the user navigate smoothly.

HYPOTHESIS:

Whenever any obstacle comes in front of the stick it will detect it and give the signal to the user in the form of buzzer. We can specify its range whatever we need for suppose we need to detect the range up to 1 meter then we can set the range to 1 meter. As the work is in progress to know where the obstacle is we can give different types of feedback to the user like if the obstacle is overhead then it will give a beep sound or vibrations which are felt by the visually impaired person.

METHOD:

The main component of this system is the ultrasonic sensor and mercury switch which is used to scan a predetermined area around blind by emitting-reflecting waves and gives particular direction of obstacle. The reflected signals received from the barrier objects are used as inputs to PIC microcontroller. The microcontroller is then used to determine the direction and distance of the objects around the blind in different elevations. The ultrasonic sensors generate high frequency sound wave and evaluate the echo which is received back by the sensor. Once when the obstacle is in front of the stick then the rays from one of the sensor is emitted and reflects back whenever an obstacle comes in between its path , the rays are infrared waves (because it can detect any type of object). The module will be connected to the microcontroller unit at the output end and gives the output for every input when the object is detected. Whenever the input voltage is above 5v then the signals is amplified and then the result is given to the voice module as input which will give a buzzer sound as an output to warn the user that an obstacle is in his/her path.

EXPERIMENT:

Ultrasonic sensors which transverse and receives the signal(IR rays) which works on a principle similar to radar or sonar which evaluate attributes of a target by interpreting the echoes from radio or sound waves respectively. Ultrasonic sensors generate high frequency sound waves and evaluate the echo which is received back by the sensor, measuring the time interval between sending the signal and receiving the echo to determine the distance to an object.

To know the person where the object is placed in three angles the microcontroller was programmed to give different sounds for different angles. This module will be connected to the microcontroller unit at the output end and gives voice outputs for every input when the object is detected. The ultrasonic sensor is connected to Walkman DC motor which rotates in equal speed of clock and anti-clock directions here to detect the object in different angles mercury switches are placed back of the sensor depending on the working and functionality of mercury switch i.e. Only one switch gets ON in one direction others gets OFF. In this way the object gets detected in different angles.

SUMMARY:

As now visually impaired persons and people with poor vision can now be able to move freely without anyone's support. This stick is used to help the blind person to navigate alone safely and avoid obstacles that may be encountered.

11. FIRE EXTINGUISHING ROBOT USING ANDROID MOBILE

COLLEGE: TKR COLLEGE OF ENGG & TECH

GUIDE: M.S.V.PAVAN KUMAR

SCHOOL STUDENTS: PAVAN 9th CLASS, KRISHNA 9th CLASS ZPHS MEERPET

COLLEGE STUDENTS:ANURAAG GOUD KANDIKANTI, K.SAI CHARAN, D.SANKEERTH REDDY, M.DINESH KUMAR GOUD, C.BHANU PRAKASSH

ABSTRACT:

The goal of this project is to develop an intelligent multi sensor based autonomous firefighting robot for facing the fire accidents in daily life. The fire detection system was designed using photodiode sensors and fighting procedure was programmed in the Microcontroller. This Project has a feasibility to operate in semi-automation mode using Bluetooth module for which the instruction can be given using Android Mobile & Voice Commands. It is more advantageous than a smoke detector as it can extinguish the fire at the inception than waiting for an object to burn and produce smoke. When a smoke detector detects fire it, sprays water all over the place, instead of that particular point of source. It voluntarily detects and extinguishes fire without human aid.

HYPOTHESIS:

Fire extinguishers are designed to put out or control small fires. A small fire, if not checked immediately, will soon spread out of control. In fact, most big fires start out as small ones. It is important, therefore, detecting the small fires as soon as possible, but in most cases it's really hard. This made our team to design a robot to detect and put-off the fire by itself. On the other hand there were cases during the big fire extinguishing operation many fire fighters lose their lives, which made us to design the product which can go near the big fire and put it off. For this operation we had decided to control the robot using the Bluetooth enhanced devices like mobile or MEMS sensors. At an outset, on working out we finally decided to design an autonomous or semi- autonomous firefighting. Moreover, hear water was chosen to extinguish as it can combat both Class A and C fires which were very frequent in libraries, schools, and businesses.

METHOD:

Robot uses microcontroller to drive photo diode sensors, and transmit distance range to main controller of the firefighting robot through series interface. To drive the all the components 5v dc and 12 v dc are required. The mains give the 230v ac so first we step down the 230v ac in to 12v ac by using step down transformer. Then the output is given to the full wave rectifier. The rectifier eliminates the negative peek voltage of the input voltage .The output of the rectifier is the pulsating dc. The error pulses are eliminating by using capacitor filter. Then the output at the parallel of the capacitor is the 12v dc. But the Micro Controller is work on 5v dc .To convert the 12v dc into 5v dc a regulator (7805) is used. The output of the regulator is

constant irrespective of the input voltage. The Micro Controller requires the preset logic circuit for protection of the internal program and internal clock in case of power failure. A sudden change in the power may cause data error resulting in the corruption of the internal program. The reset logic circuit contains one capacitor and a resistor. The driver circuit is generally made by using one transistor and one relay. The driver circuit is mainly operated by the Micro Controller. The Micro controller changes the state of the output pin from the low to high, i.e. from 0 level to the 1 level. The transistor will act as an ON/OFF switch corresponding to the input of the base. If the base current of the transistor is high the transistor is under ON condition else it is in OFF state. These conditions will be used to control the relay. The thermal sensors provide the senses the heat from within the room. First sensor will give the data to the micro controller if it finds the heat. The micro controller pin bit will goes low when the fire is present. The micro controller will always scan the input signal of sensors. If the first sensor gives the data about fire to the micro controller, it then finds the movement to reach the fire by calculating the input data. The micro controller can give the output to two motors. One motor is used to move in forward direction to reach the destination point and the other is used to sprinkle the water. After end of fire the robot will go back to the original position.

BLUETOOTH MOBILE COMMANDS ON WHICH IT WORKS:

Up arrow = Forward, Both the wheels move if clockwise direction.

Down arrow=backward, both the wheels move in anti-clockwise direction.

Left arrow=left, left motor will move anticlockwise& right motor in clockwise.

Right arrow=Right, right motor in anticlockwise & left in clockwise direction.

F1=Water pump UP, water pump motor moves in anticlockwise direction.

F2=Water pump DOWN, water pump motor moves in clockwise direction.

F3=Stable fire extinguisher ON

F4=Automation mode, it will respond automatically with the help of sensors.

X mark=Stop



BLUETOOTH VOICE CONTROL:

Up=FORWARD, by spelling UP it moves forward.

DOWN=BACKWORD, by spelling DOWN it moves backward.

LEFT=LEFT SIDE, by spelling left it moves left side.

RIGHT=RIGHT SIDE, by spelling right it moves right side.

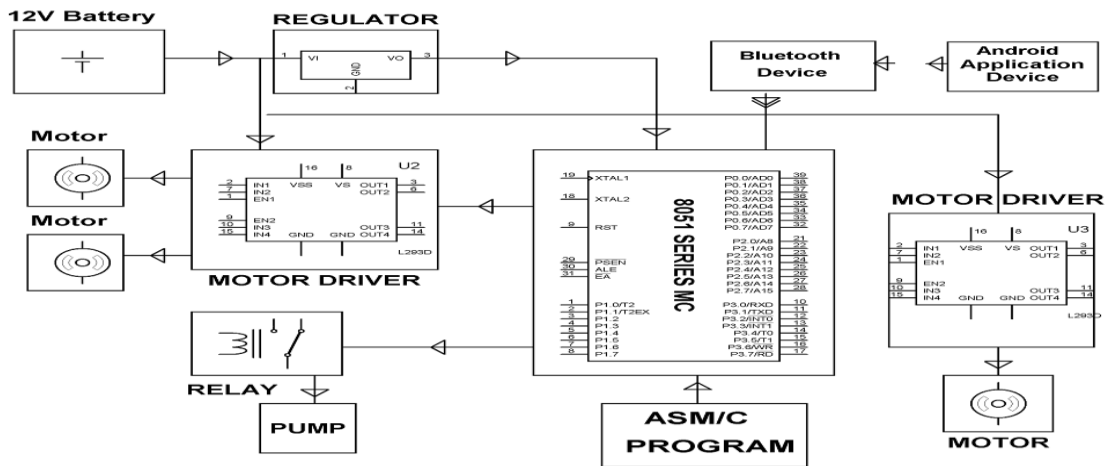


Fig: circuit diagram of fire extinguishing robot

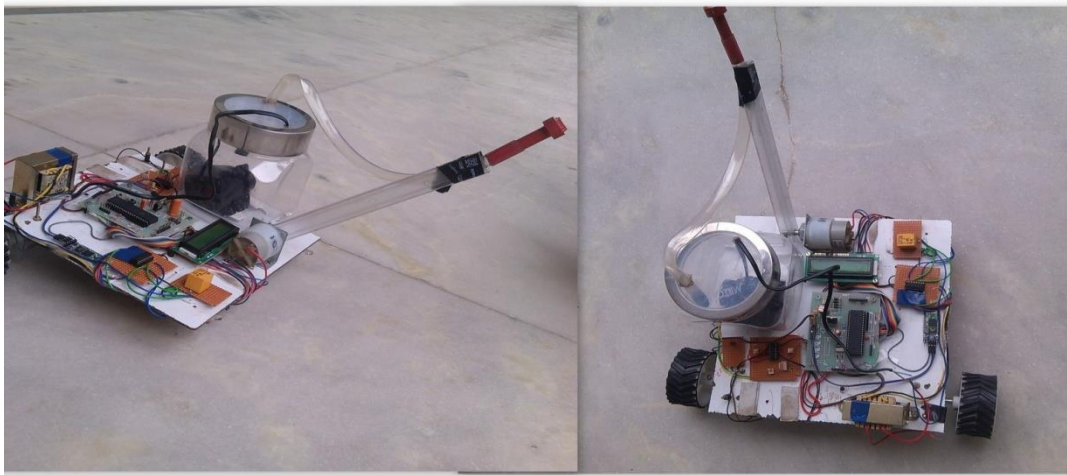


Fig: prototype model of fire extinguishing robot

EXPERIMENT:

Experimental Test Result:

The test process include testing the robot using both modes for the same condition and later recording the time needed to extinguish the candles torch, the time needed to initialize the data been processed and later compare both records from the automated mode and the manual mode. The test been divided to three kind first one include one torch and the second include two torches and the third one include three torches. For each case the test repeated three times and data been recorded. The results showed that:

- It takes about (10-21) seconds to execute in auto-mated mode. And It takes about (27-32) seconds to execute in manual mode.
- It takes about (15-35) seconds to initialize in auto-mated mode. And It takes about (25-42) seconds to initialize in manual mode.
- It takes about (25-57) seconds as total time in auto-mated mode. And It takes about (52-71) seconds as total time in manual mode.

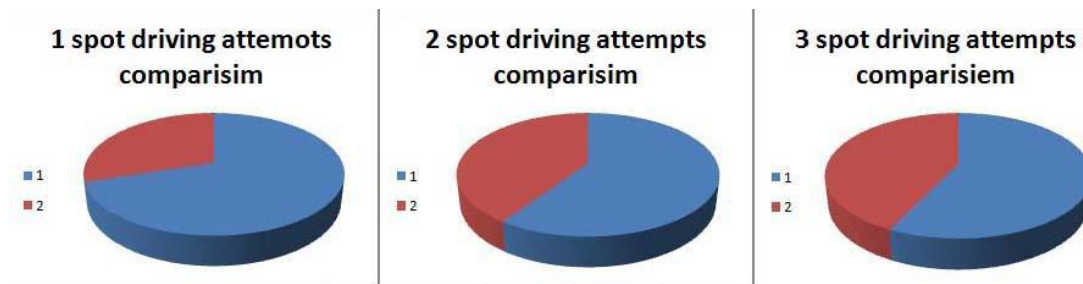


Fig: pie chart comparison of both the methods.

Now by comparing both modes according to how fast they reach the center of the fire it seems that the manual mode takes the largest portion for all the three cases and the automated mode needs fewer attempts to achieve its goal in extinguishing the fire spots.

The accuracy for the system obtained from the error that has been calculated and the calculations show that the accuracy average for the automated mode is equal to (94.89 %) that can be converging to (95 %). While the accuracy average of manual mode is equal to (96.46 %) that also can be converge to (96 %). This shows that the accuracy of the system in both modes are close enough to consider the accuracy is the same in both modes and the slight difference comes from the many factors such as the operator experience and the communications conditions and the response of the computer to the data received.

SUMMARY:

Fact that both the automated and manual mode is required in the fire fight robot is that the fire fight robot is the first version and the control system is not perfect, for this reason some times the operator need to make decision in some situations, in other word the human supervision is required, the difference between both modes are listed below: The automated mode:

1. Detecting the largest heat spot by heat sensors
2. Detection process could be effected during processing
3. Faster in dealing with situation

Controlling the movement is automated

While the manual mode:

1. Detecting the largest heat source depend on opera-tor skill
2. The operation under operator control
3. Takes more time

Directing the arm takes the operator attention and his time

To achieve best result for the fire fight robot both the auto-mated mode and manual mode should be used during any extinguishing mission in order to minimize time required and losses in lives and materials.



GROUP PHOTO WITH OUR PROJECT GUIDE M.S.V.PAVAN KUMAR

12. INTELLIGENT SOLAR WATER PUMP

COLLEGE: VAAGESWARI COLLEGE OF ENGINEERING
GUIDE: PRAVEEN REDDY
SCHOOL STUDENTS: ARUN-10 TH CLASS, SYAD AMEER-10 TH CLASS MANAKONDOOR
COLLEGE STUDENTS: MAHESH, ANIL

ABSTRACT:

The performance of a solar water pumping system is discussed in this paper; the system consists of a photovoltaic (PV) array, a permanent magnet (PM) DC motor and a helical rotor pump. The operation of the PV array is analysed using PSPICE. The efficiency of the system is improved with a maximum power point tracker (MPPT) and a sun-tracker. Simulation and field test results are presented.

HYPOTHESIS:

The objective of the project is to develop a solar water pump in three variants that primarily include DC Surface Pump, AC Submersible Solar Water Pumps with Battery, and AC Submersible Solar Water Pumps without Battery. These solar water pumps show effective results during sunny and dry seasons. They require very low maintenance and work without any without fuel deliveries. The flow rate of solar water pump can be determined by the intensity of sun as photovoltaic panels power them. Their remarkable features have made us stand among the top ranking Solar Water Pumping System Exporters, based in India.

METHOD:

The project "intelligent solar water pump" has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC's and with the help of growing technology the project has been successfully implemented.

EXPERIMENT:

The project basically provides intelligent solar water pump. The project uses a microcontroller from 8051 family. The goal of the project is to develop a system, which uses for irrigation system to reduce the effort of men. Here using solar Panels which having the photovoltaic cells, to generate electrical energy for pump in sufficiently.

BLOCK DIAGRAM:

1.3 BLOCK DIAGRAM:

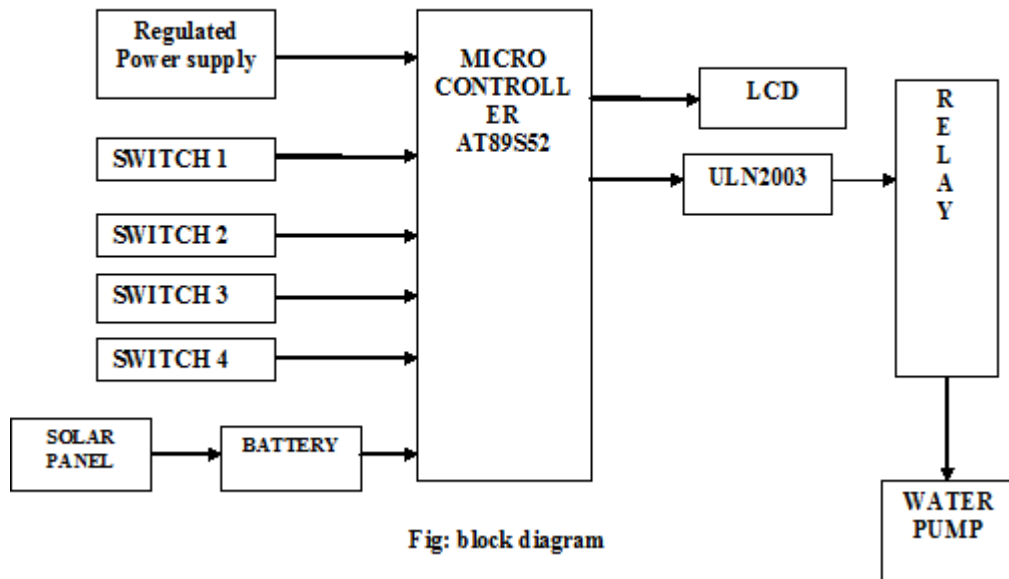


Fig: block diagram

SUMMARY:

A solar electric array generates electricity from the sun's light with no moving or wearing parts. A solar pump is designed to utilize the direct current from the array efficiently, even as the energy production varies throughout the day.

The solar water pumping system is a stand-alone system operating on power generated using solar PV (photovoltaic) Modules. AC Pump can be used with the introduction of Inverter in the system.

The Pump can be used with 220 V, 1 ϕ electricity. The introduction of the modified valve lets an uninterrupted operation of Hand pump in option of Non-availability of power to submersible

13. TRAFFIC PRIORITY FOR AMBULANCE

COLLEGE: VAAGESWARI COLLEGE OF ENGINEERING
GUIDE: PRAVEEN REDDY
SCHOOL STUDENTS: VISWAS RAO-8 TH CLASS,RAVITEJA-10 TH CLASS.MANAKONDOOR
COLLEGE STUDENTS: SAISHEKAR, SAGAR

ABSTRACT:

Now day’s traffic lights are controlled by timing mechanism but there is no priority given for emergency vehicles. According to the survey in India almost 3-lakhs of people died due to not reaching destination in-time.

METHOD:

The project “TRAFFIC PRIORITY FOR AMBULANCE” has been successfully designed and tested. Integrating features of all the hardware components used have developed it. Presence of every module has been reasoned out and placed carefully thus contributing to the best working of the unit. Secondly, using highly advanced IC’s and with the help of growing technology the project has been successfully implemented.

EXPERIMENT:

The project basically provides primary traffic priority for ambulance. The project uses a microcontroller from 8051 family. The goal of the project is to develop a system, which uses RF technology which controls the traffic and gives primary priority for Ambulance. RF is a technology used to eradicate this problem .Here we are having Parts RFTX&RFRX it can control the traffic and given priority for emergency Vehicles.

RFTX is connected to the Ambulance and RFRX is connected at the signal Point when a vehicle coming on a particular road then signal are blocked and given the priority for the emerging vehicles. The power supply consists of a step down transformer 230/12V, which steps down the voltage to 12V AC. This is converted to DC using Bridge rectifier. The ripples are removed using a capacitive filter and it is then regulated to +5V using a voltage regulator 7805 which is required for the operation of the microcontroller and other components.

14. COIN BASED MOBILE CHARGER

COLLEGE:G.NARAYANAMMA INSTITUTE OF TECHNOLOGY AND SCIENCE(WOMENS)

GUIDE:K.RAMESH REDDY

SCHOOL STUDENTS: ANAND 8TH, SHIVA KUMAR CLASS 8TH

COLLEGE STUDENTS: T.SUCHARITHA, S.SAI NIKHITHA REDDY, D.REDDAMMA, P.SAI NIKHITA

ABSTRACT:

The coin-based mobile battery charger in this project is providing a unique service to the rural public and a source of revenue for site providers. The urban population use more sophisticated mobiles with good power batteries lasting for several days, the rural population buy the pre-owned mobile phones that require charging frequently. Many times battery becomes flat in the middle of conversation particularly at inconvenient times when access to a standard charger isn't possible. The coin-based mobile battery chargers are designed to solve this problem. The user has to plug the mobile phone into one of the adapters and insert a coin. The phone will then be given a micro-pulse for charging. The charging capacity of the mobile is designed with the help of pre-defined values. It is, of course, possible to continue charging the mobile by inserting more coins. This compact and lightweight product is designed to cater for the growing number of rural mobile users worldwide. This plays a key role in emergency cases when the mobile phones are completely dead and there is a utter necessity to use the mobile, in such cases the mobile can be charged at these points just by inserting coins.

METHOD:

For the power supply a power supply circuit is built. The voltage that need for the project is 5v or 9v to initially drive the Coin detecting circuit hence placed a step down transformer which steps down the 230v supply to the required voltage i.e. 12v in this cases. For convenience here a 12v bulb is replacing the charger.

This power supply circuit is used to drive more than one circuit as like oscillator circuit, 4060 IC and also various ICs which are used in this project. For the coin detection a TSOP1738 is used which is a receiver, the transmitter is also placed, so by the combination of IR receiver and Transmitter when the coin is passed between then or placed very near to them the obstruction signal is detected and a signal is sent to the 555 timer. The preset in 555 timer is used to drive the relay for the specified duration of time. Hence the signal from the coin detector circuit is given to the 2nd pin of 555timer which is the trigger pin. The output pin of the 555timer is given to the relay which drives the bulb. Furthermore coming to the purpose of 4017 IC, it is a decade counter which is used for the glowing of LEDs in regular intervals consecutively. It takes clock pulses from the clock input, and makes one of the ten outputs come in sequence each time a clock pulse arrives. The purpose of this circuit or the IC is only for indication of charging or the completion of the duration of charging.

Never know the changing tariffs of the electricity hence to face any change which happens in the near future or after a really long period this particular circuit is made dynamic enough by the usage of 4060 adjustable timer. Hence, it is decided to provide initially 5 minutes of charging for an amount of Rs.1. To be dynamic enough for any changes that are provided with four different timings i.e. 5, 6, 7 & 8 minutes. These switches are provided inside the circuit which will be locked in a box so that only the person who is assigned with that work can change the settings rather than any passers-by.

As the output of the coin detector circuit cannot be given to switching of the timer whether it is a 555 oscillator or 4060 adjustable timer, hence provided a Buffer BC 548 in our circuit. The coin detection, the timer section and the indication section are completed.

SUMMARY:

In this work a novel method of charging mobile batteries of different manufacturer has been designed for rural and remote areas or at various places in streets where availability of personal chargers or power banks isn't perennial. Because now days the necessity of communication is very important, so every person having cell phone but every time we cannot carry charger with us. When we are going for long travel we may forget to carry cell phone charger we can use these coin based mobile chargers, which are easily available.

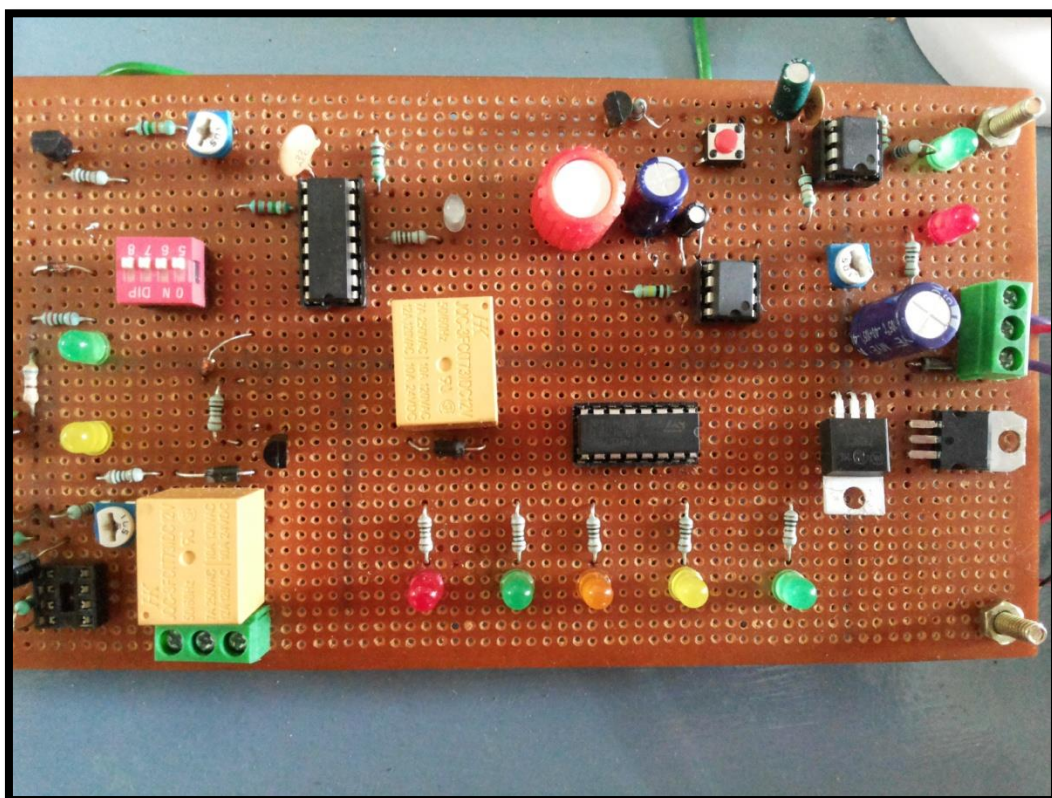


Fig: The circuit of 555timers, relays, counters.

15. WASTE PLASTIC FUEL

COLLEGE: MLR INSTITUTE OF TECHNOLOGY

GUIDE: VAMSHIKRISHNA

SCHOOL STUDENTS: KARAMCHAND, NAGARAJU 8TH. ZPHS MEDCHAL

COLLEGE STUDENTS: NIRANJAN, GHOUSE

ABSTRACT:

The impact of global warming increases day by day due to usage of plastic materials. Recycling of plastic is the major problem we are facing today in all metropolitan cities. So here comes a solution for recycling of plastic waste into energy fuels that can be used to generate power.

EXPERIMENT:

Every day tons and tons of waste plastic is collected by GHMC. This plastic is converted into fuels which are used to run generators so that we can get power source to entire city.

Plastic is burnt at high temperatures using a burner. The plastic changes its chemical property to gases state. The liberated gases collected in container filled with cold water.

Gradually the water changes into crude fuel. From crude fuel we can extract all fuels like gasoline, petrol and diesel.

Through this process 1kg of plastic yields 1 litre of oil. Developing machine in various sizes, for both industrial and home use, can easily transform a kilogram of plastic waste into a litre of oil, using about 1 kWh of electricity but without emitting CO₂ in the process. The machine uses a temperature controlling electric heater instead of flames, processing anything from polyethylene or polystyrene to polypropylene (numbers 2-4). One litre of oil generates 2kw of energy. We followed a different chemical property for very and less consumption of energy.

Figure below shows the method of process



16. ELECTRONIC GUIDE STICK

COLLEGE: MUFFAKHAMJAH COLLEGE OF ENGINEERING AND TECHNOLOGY

GUIDE: DR. KALEEM FATIMA, ARIFUDDIN SOHEL

SCHOOL STUDENTS: MOHAMMED ALEEM-8TH CLASS , MOHAMMED AJMAL IRSHAAD-8TH CLASS-SULTAN UL LOOM SCHOOL

COLLEGE STUDENTS: SANA MUJEEB, MARIA AMREEN, ZAREEN JAHANGEER, ABDUS SALAM RAYEES

ABSTRACT:

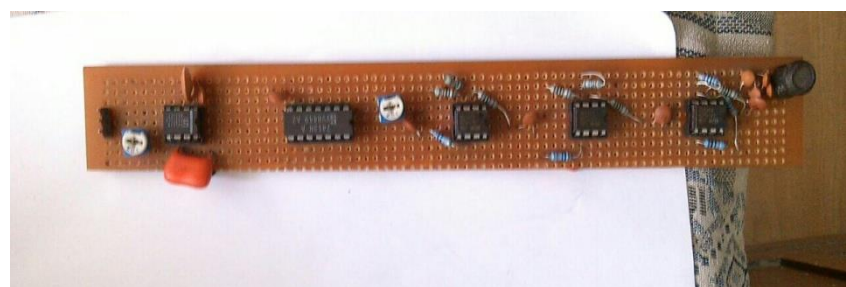
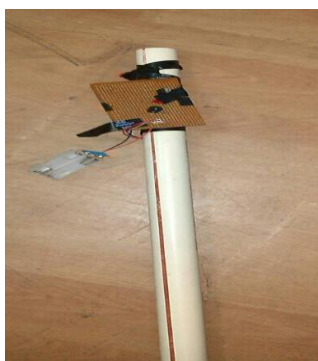
Mobility continues to be a major obstacle for visually handicapped people. In this project we are mainly concerned with a mobility guidance device for the visually handicapped using wire guidance technology.

WIRE GUIDANCE TECHNOLOGY:

As the name implies, wire guidance technology utilizes wires carrying ac signals to serve as guides in various applications. The wires are connected to a power source of alternating currents, generally in the 1 kHz to 50 kHz range. This wire serves as an 'electronic track'. A pick-up and electronic processing circuitry together with batteries fits inside a hollow stick. When the stick is brought close to the wire a beeper operates. Any major deviation from the pre-laid track will cause the beeper to go mute. By waving the stick around, the signal can be picked up again and help to bring back the person on the right path again.

FABRICATION

The electronic guide stick is fabricated using hollow pipe of light weight insulating material (e.g. PVC) of 25mm inside diameter and 950 mm long, with the sensor, electronic signal processing circuit and batteries located inside the pipe. Miniaturizing techniques have to be used here as the width of the printed circuit board is hardly more than 1.5 cm. The piezo buzzer, the power switch and the battery charging socket are located on the pipe below the carrying handle. The electronic circuit consists of:

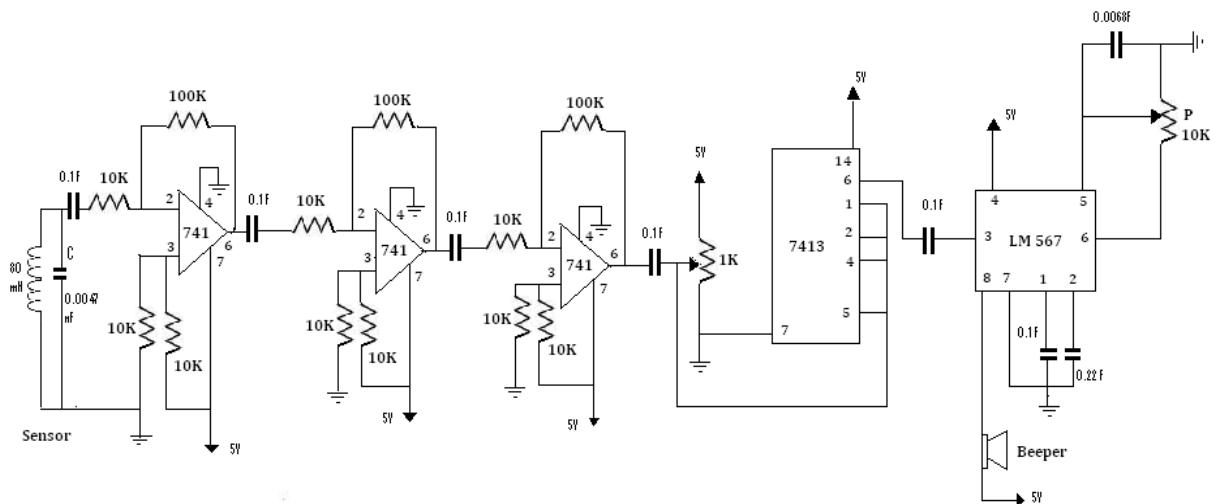


INDUCTION SENSORS

Specially designed and fabricated coil which in conjunction with a capacitor can be tuned to pick up signals in the track wire. The coil is placed at the bottom of the stick.

SIGNAL PROCESSING CIRCUIT ON A PCB

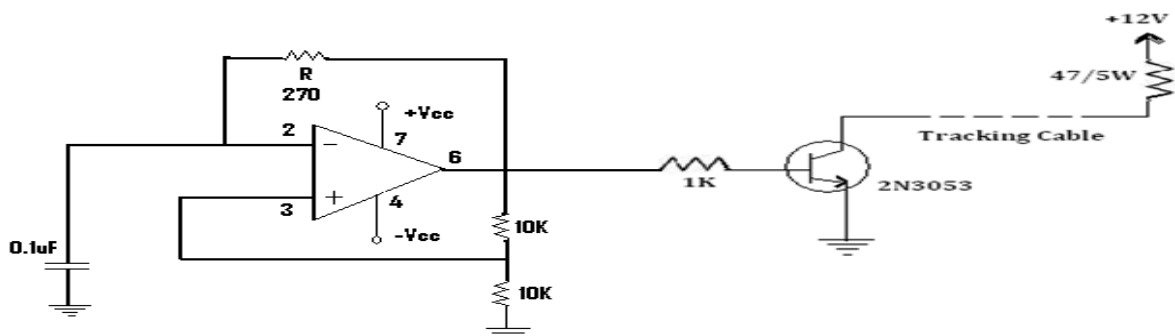
It is necessary that the pickup coil-capacitor combination be tuned to track the frequency. It is easier to vary the frequency of the track oscillator to resonate with the frequency of the pickup sensor.



The signal picked up by the sensor is fed to a three-stage IC type 741 amplifier. The amplifier signal is fed to a 7413 Schmitt trigger which produces clean square waves of the same frequency and in turn triggers a 567 phase-locked loop (PLL) IC. This PLL should be tuned to the same frequency as the track oscillations. When this frequency is detected by the PLL, its output goes low and operates the piezo buzzer connected across its output and the VCC supply.

TRACK OSCILLATOR

A single 741 IC and a single stage transistor amplifier are sufficient. It may be powered by a mains supply or may be battery operated. This is connected to the track wire which is laid on the floor.



OTHER HARDWARE:

The stick operates from a battery of three type aa cells. These fit into a battery holder which is inserted into the guide stick pipe. A separate flasher led is also accommodated to warn the passers-by that a visually handicapped person is using the stick. A beeper is mounted midway on the front of the stick. The power switch is mounted closer to the hand grip. The battery holder is placed for easy access to replace worn out batteries.

CONCLUSION

Electronic technology has influenced all aspects of our lives and is also playing a significant role in improving the lot of the handicapped. In our daily lives, different kinds of problems are encountered. However, if the problems are identified and focused well, possible solutions may emerge from currently available technologies.

17. AUTOMATIC PLANT IRRIGATION SYSTEM

COLLEGE: SRI DEVI WOMEN'S ENGINEERING

GUIDE: K.TULSI RAM

SCHOOL STUDENTS:M.SAI KIRAN,K.CHAITANYA(9TH CLASS)ZPHS SHAIKPET

COLLEGE STUDENTS:T.MADHUMIKA,G.AISHWARYA,A.VANAJA

ABSTRACT:

The motivation for this project came from the countries where economy is based on agriculture and the climatic conditions lead to lack of rains & scarcity of water. The farmers working in the farm lands are solely dependent on the rains and bore wells for irrigation of the land. Even if the farm land has a water-pump, manual intervention by farmers is required to turn the pump on/off whenever needed. The aim of our project is to minimize this manual intervention by the farmer. Automated Irrigation system will serve the following purposes: 1) As there is no un-planned usage of water, a lot of water is saved from being wasted. 2) The irrigation is the only when there is not enough moisture in the soil and the sensors decides when the pump should be turned on/off, saves a lot time for the farmers. This also gives much needed rest to the farmers, as they don't have to go and turn the pump on/off manually.

HYPOTHESIS:

Irrigation is the key to a successful garden. Long gone are the days of manual watering or relying on a friend to water when you are on vacation or away on business. The Project presented here waters your plants regularly when you are out for vocation. The circuit comprises sensor parts built using op-amp IC LM324. Op-amp is configured here as a comparator. Two stiff copper wires are inserted in the soil to sense the whether the Soil is wet or dry. The comparator monitors the sensors and when sensors sense the dry condition then the project will switch on the motor and it will switch off the motor when the sensors are in wet. The comparator does the above job it receives the signals from the sensors. A transistor is used to drive the relay during the soil wet condition. 5V double pole – double through relay is used to control the water pump. LED indication is provided for visual identification of the relay / load status. A switching diode is connected across the relay to neutralize the reverse EMF. This project works with 5V regulated power supply. Power on LED is connected for visual identification of power status. This project uses regulated 5V, 750mA power supply. 7805 three terminal voltage regulator is used for voltage regulation. Bridge type full wave rectifier is used to rectify the ac output of secondary of 230/18V step down transformer.

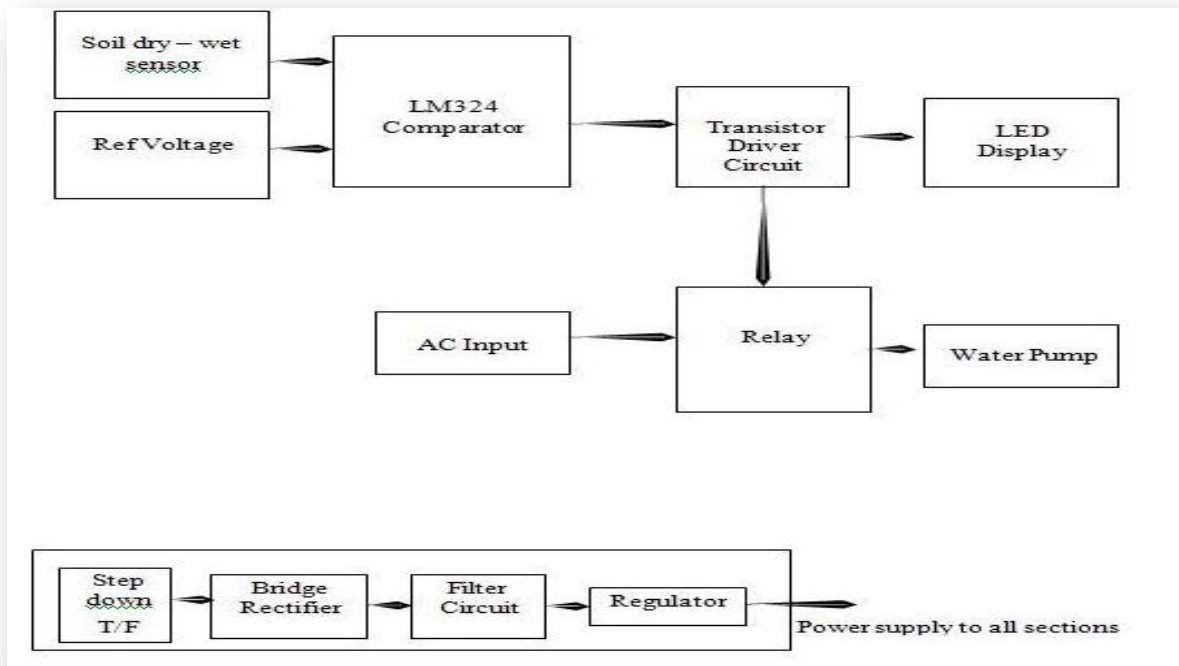
METHOD:

The project is mainly based on IC. In this project sensors are not used, IC only is used as a sensor.

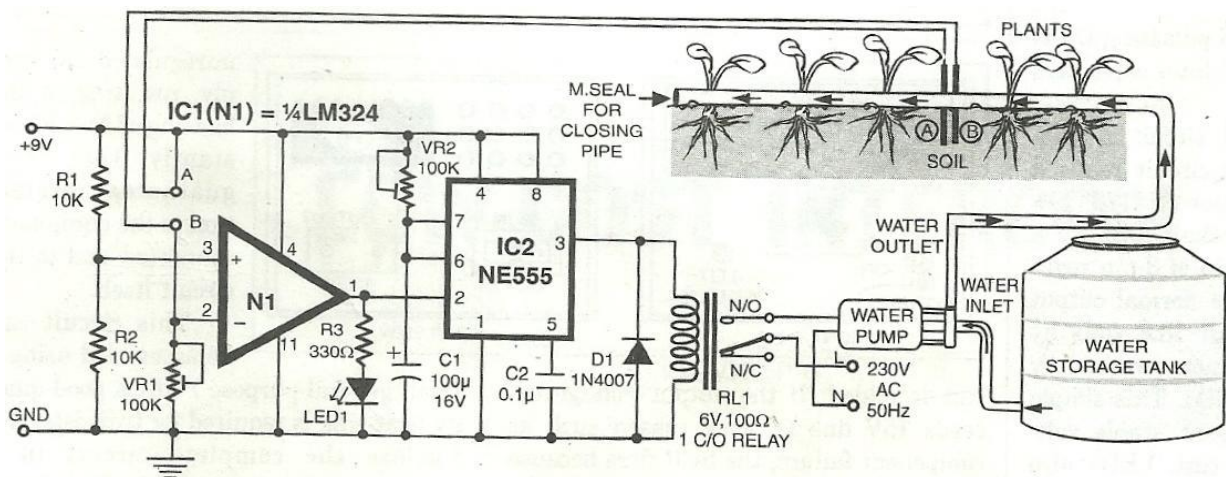
EXPERIMENT:

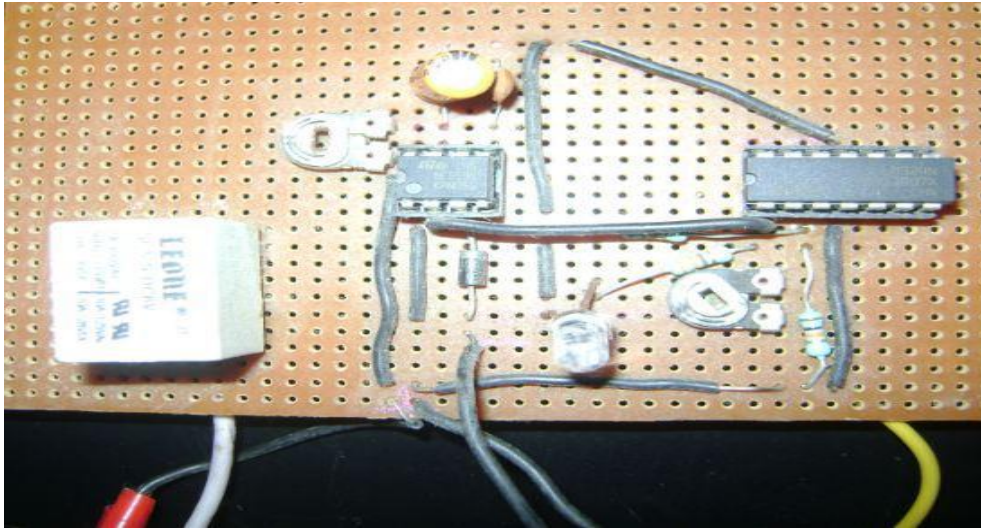
BLOCK DIAGRAM

Timer Based Industrial Liquid Pump Controller with different time slots.



CIRCUIT DIAGRAM





POWER SUPPLY: The input to the circuit is applied from the regulated power supply. The a.c. input i.e., 230V from the mains supply is step down by the transformer to 12V and is fed to a rectifier.

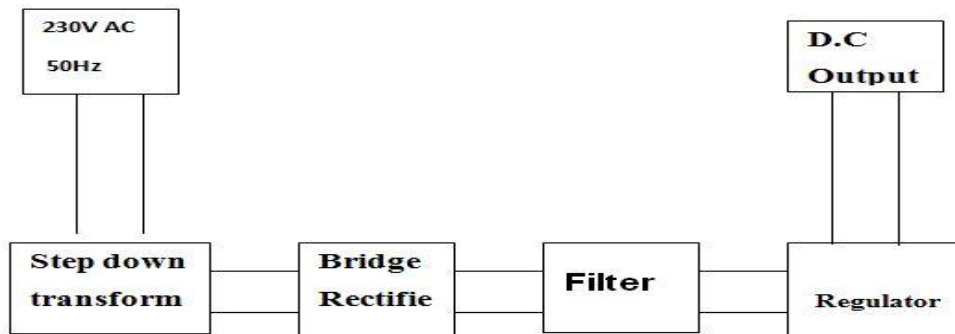
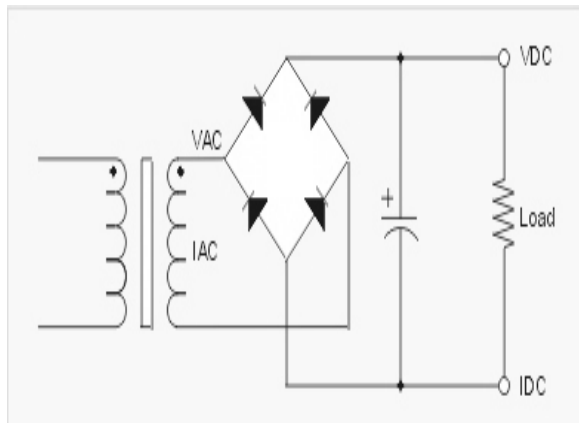


Fig: Power supply

TRANSFORMER: Usually, DC voltages are required to operate various electronic equipment and these voltages are 5V, 9V or 12V. But these voltages cannot be obtained directly. Thus the a.c input available at the mains supply i.e., 230V is to be brought down to the required voltage level. This is done by a transformer. Thus, a step down transformer is employed to decrease the voltage to a required level.



RECTIFIER: The output from the transformer is fed to the rectifier. It converts A.C. into pulsating D.C. The rectifier may be a half wave or a full wave rectifier. In this project, a bridge rectifier is used because of its merits like good stability and full wave rectification



VOLTAGE REGULATOR: As the name itself implies, it regulates the input applied to it. A voltage regulator is an electrical regulator designed to automatically maintain a constant voltage level. In this project, power supply of 5V and 12V are required. In order to obtain these voltage levels, 7805 and 7812 voltage regulators are to be used. The first number 78 represents positive supply and the numbers 05, 12 represent the required output voltage levels. The L78xx series of three-terminal positive regulators is available in TO-220, TO-220FP, TO-3, D2PAK and DPAK packages and several fixed output voltages, making it useful in a wide range of applications.

RELAYS: “A relay is an electrically controllable switch widely used in industrial controls, automobiles and appliances.” The relay allows the isolation of two separate sections of a system with two different voltage sources i.e., a small amount of voltage/current on one side can handle a large amount of voltage/current on the other side but there is no chance that these two voltages mix up.

OPERATION:

When current flows through the coil, a magnetic field is created around the coil i.e., the coil is energized. This causes the armature to be attracted to the coil. The armature's contact acts like a switch and closes or opens the circuit. When the coil is not energized, a spring pulls the armature to its normal state of open or closed. There are all types of relays for all kinds of applications.

Transistors and ICs must be protected from the brief high voltage 'spike' produced when the relay coil is switched off. The above diagram shows how a signal diode (eg 1N4148) is connected across the relay coil to provide this protection. The diode is connected 'backwards' so that it will normally not conduct. Conduction occurs only when the relay coil is switched off, at this moment the current tries to flow continuously through the coil and it is safely diverted through the diode.

ADVANTAGES:

- Highly sensitive

- Works according to the soil condition
- Fit and Forget system
- Low cost and reliable circuit
- Complete elimination of manpower
- Can handle heavy loads up to 7A
- System can be switched into manual mode whenever required

APPLICATIONS:

- Roof Gardens
- Lawns
- Agriculture Lands
- Home Gardens

SUMMARY:

- Mainly we will use in roof gardens, lawns, agriculture lands, home gardens.
- It is highly sensitive, fit and forget system, low cost, reliable circuit, system can be switched into manual mode whenever required.
- The input to the circuit is applied from the regulated power supply. The a.c. input i.e., 230V from the mains supply is step down by the transformer to 12V and is fed to a rectifier.
- It is mostly used in agriculture fields.

18. THIRSTY PLANT

COLLEGE: SRIDEVI WOMEN'S ENGINEERING COLLEGE
GUIDE: : Prof. SURYAKANTH PATIL
SCHOOL STUDENTS: ARUN -- 8 TH CLASS, RAJASHEKAR – 9 TH CLASS ZPHS VATTINAGULAPALLY
COLLEGE STUDENTS: S.SOWMYA, K.THARUNI, G.SAI PRIYA, A.SARANYA

ABSTRACT:

Thirsty Plant is intended to signal when a plant needs water. A flashing LED/BUZZER signals the necessity to water a plant with a very low current consumption circuit. A BUZZER or an LED flashes at a low rate when the ground in the flower pot is too dry, turning off when the moisture level is increasing. Adjusting R2 resistor will allow the user to adapt the sensitivity of the circuit for different grounds, pots, and probe types. The battery in this circuit is charged using a sun tracking solar panel which converts solar energy to electrical energy. Generally, solar panels are stationary and do not follow the movement of the sun. Here is a solar tracker system that tracks the sun's movement across the sky and tries to maintain the solar panel perpendicular to the sun's rays, ensuring that the maximum amount of sunlight is incident on the panel throughout the day. The solar tracker starts following the sun right from dawn, throughout the day till evening, and starts all over again from the dawn next day.

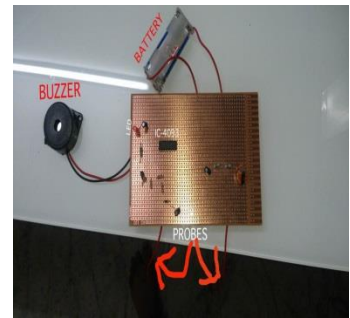
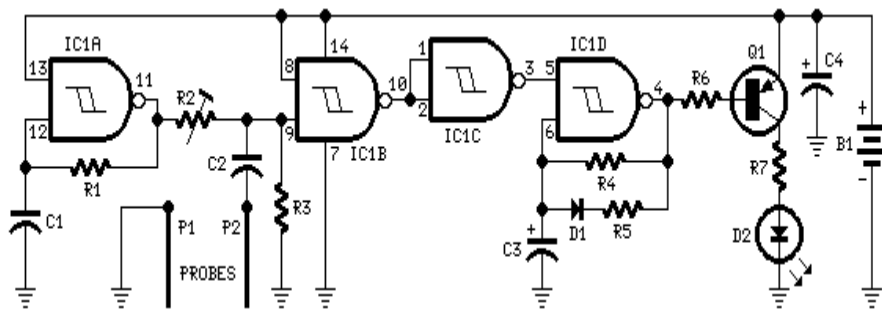
NECESSITY:

In the present generation people have become very busy that they sometimes forget to water their plants. This circuit will help them to remind them to water the plant using a LED / BUZZER according to the user wish. And for the battery we used one circuit with which we can recharge the battery with free of cost using solar energy and making this project a lifetime investment.

OBJECTIVES:

The main objective of this project is to make LED /BUZZER 'ON' whenever the land is dry and make them 'OFF' whenever the land is wet. The next objective is to rotate the solar panel according to the solar rays using LDRS and DC motors [one along X-axis and other along Y-axis].

I --CIRCUIT DIAGRAM:



LIST OF COMPONENTS:

- R1 , R4 Resistors—470Kohms
- R2 Resistor---47Kohms
- R3 Resistor---100Kohm'Ss
- R5 Resistor---3K3
- R6 Resistor---15 Ohm's
- R7 Resistor---47Kohm'Ss
- C1 Capacitor---1nF
- C2 Capacitor---330nF
- C3 , C4 Capacitors---10 μ F
- D1 diode--- 1N4148
- D2 --- 5mm Red LED
- IC1---4093 Quad 2Input Schmitt NAND Gate
- Q1 Transistor --- BC557
- P1,P2 --- Probes
- B1 Battery --- 6volts
- CIRCUIT OPERATION:

CIRCUIT OPERATION:

IC1A and related components R1 and C1 form a 2KHz square wave oscillator feeding one gate input of IC1B through the voltage divider R2/R3 made variable by adjusting the Trimmer R2. If the resistance across the probes is low (as when there is a sufficient quantity of water into the pot) C2 diverts the square wave to ground, IC1B is blocked and its output will go steady high. IC1C inverts the high status to low, thus keeping IC1D blocked: the LED is off.

When the ground in the flower-pot is becoming too dry the resistance across the probes will increase and C2 will be no longer able to divert the square wave to ground.

Therefore, IC1B output begins to transfer the 2 kHz signal to IC1C which, in turn, passes it to the oscillator built around IC1D.

No longer disabled by a low level on its input, the IC1D oscillator slowly pulses Q1 base low causing the LED to flash, signalling the necessity to water the plant.

The short low pulse driving the base of Q1 is actually a burst of 2kHz pulses and therefore the LED flickers about 2,000 times per second - appearing to the human eye as if the LED was steadily on for the entire duration of the pulse.

ADVANTAGES:

- 1) Low power consumption.
- 2) Detects the moisture level of the soil accurately i.e., even if there is low moisture level it won't indicate until the soil is very dry.

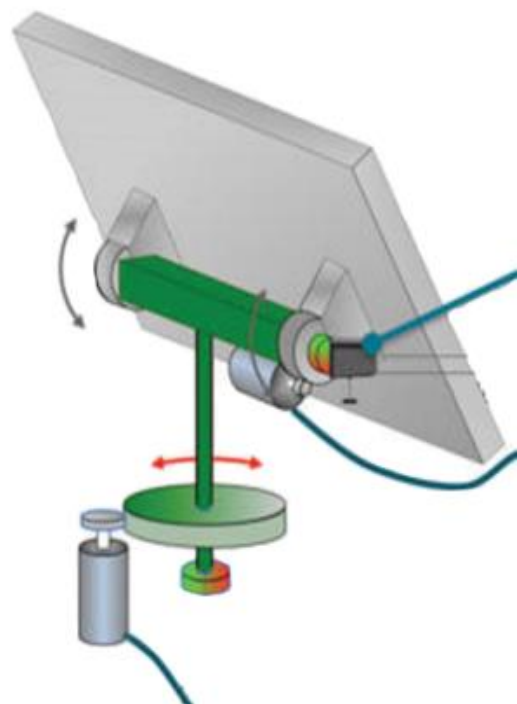
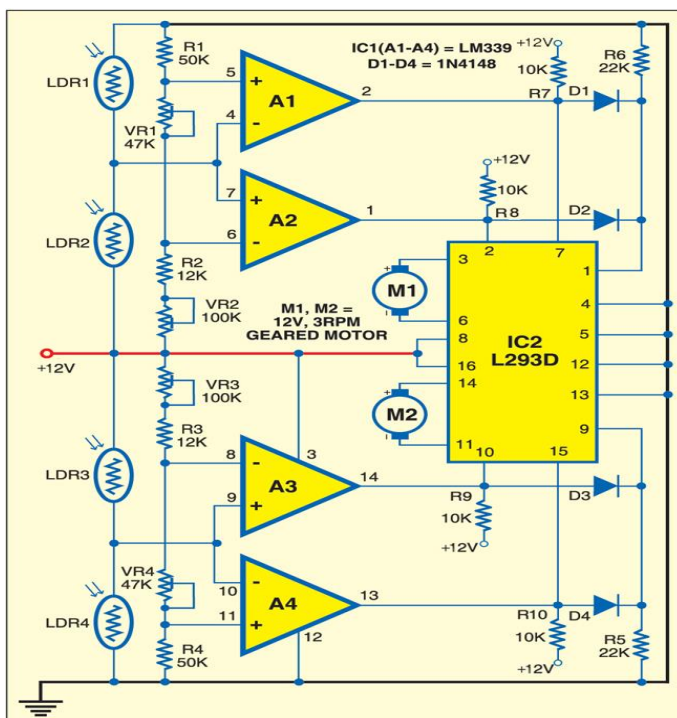
LIMIATIONS:

The main disadvantage of this model is that it does not give exact value of moisture level of soil.

APPLICATIONS:

- It is very useful for farmers for checking crops time to time and watering those with correct amount of watering not like giving over water or low water.
- It can be used by gardeners for supplying different quality of different plants.
- It can be used in any public parks to water them in regular times.

II--CIRCUIT DIAGRAM:



LIST OF COMPONENTS:

- LDRs---4NO's

- IC-LM339---1NO
- DIODE 1N4148 ---4NO's
- IC-L293D----1NO's
- DC MOTORS---12v,3rpm , Geared Motor
- RESISTORS---12Kohms[2 No's] , 50Kohms[2 NO's] , 47kohms[2 NO's] , 100kohms[2 NO's] , 10kohms[4 NO's] , 22kohms[2 NO's]
- BATEERY---12volts

CIRCUIT OPERATION:

The solar tracker comprises comparator IC LM339, H-bridge motor driver IC L293D (IC2) and a few discrete components. Light-dependent resistors LDR1 through LDR4 are used as sensors to detect the panel's position relative to the sun. These provide the signal to motor driver IC2 to move the solar panel in the sun's direction. LDR1 and LDR2 are fixed at the edges of the solar panel along the X axis, and connected to comparators A1 and A2, respectively. Pre-sets VR1 and VR2 are set to get low comparator output at pins 2 and 1 of comparators A1 and A2, respectively, so as to stop motor M1 when the sun's rays are perpendicular to the solar panel.

When LDR2 receives more light than LDR1, it offers lower resistance than LDR1, providing a high input to comparators A1 and A2 at pins 4 and 7, respectively. As a result, output pin 1 of comparator A2 goes high to rotate motor M1 in one direction (say, anti-clockwise) and turn the solar panel.

When LDR1 receives more light than LDR2, it offers lower resistance than LDR2, giving a low input to comparators A1 and A2 at pins 4 and 7, respectively. As the voltage at pin 5 of comparator A1 is now higher than the voltage at its pin 4, its output pin 2 goes high. As a result, motor M1 rotates in the opposite direction (say, clock-wise) and the solar panel turns. Similarly, LDR3 and LDR4 track the sun along Y axis.

ADVANTAGES:

- The solar energy can be reused as it is non-renewable resource.
- This also saves money as there is no need to pay for energy used.

LIMITATIONS:

- Though solar energy can be utilized to maximum extent this may create problems in rainy season.
- Although solar energy can be saved to batteries, they are heavy and occupy more space and required to change time to time.

APPLICATIONS:

1. These panels can be used to power the traffic lights and streetlights
2. These can be used in home to power the appliances using solar power.
3. These can be used in industries as more energy can be saved by rotating the panel.

SUMMARY:

Hence from the above we can say that by using this circuit we can water a plant in regular times for the proper growth of the plants. Even we can avoid excess watering to a plant or forgetting to water a plant. By using solar tracking system we can re-use the battery. So with low cost we can build this circuit and can use this effectively. As the circuit uses very low power we can use the battery for almost 2 months if we charge the battery once using the solar tracking system.

19. TEXT IN TO IMAGE ENCRYPTION

COLLEGE: G. PULLAREDDY ENGINEERING COLLEGE, KURNOOL

GUIDE: K.V.RAMESWARA REDDY

SCHOOL STUDENTS: BALASRI- 9TH CLASS, BINDU- 9TH CLASS- ECM PUBLIC SCHOOL(AIDED)

COLLEGE STUDENTS: M.POORNA CHANDRIKA, M.V.S.BHARASWAJ, S.SOWMYA

ABSTRACT:

Text into image encryption is the method of encrypting the text in such a way which hides the existence of the message. In contrast to encryption with text where the enemy is allowed to detect, intercept and modify messages without being able to violate certain security premises guaranteed by that encryption. My algorithm hides messages inside other media like image by using different algorithm in a way that does not allow any enemy to even detect that there is a second message present.. By using this application, the users can encode the secret message with other media formats like .jpg, .png to provide security for their messages and users can also decode the encoded messages to retrieve the original secret messages. Finally this project provides a mechanism for secured communication which overcomes disadvantages of encrypting with text. The application supports only limited formats of media formats like .png, .jpg and does not support other media formats.

HYPOTHESIS:

Our main objective is to provide more security, so for this we propose a technique of encrypting the text in to an image by increasing its RGB values by ASCII value of the text and storing it and comparing the difference between the two RGB values to obtain the text. This places a difficult task to the hacker by mixing the random values and the RGB values. This algorithm would take years to hack if subjected to brute force attack.

METHOD:

What our Algorithm does?



Changes are made in the copy of key image and the difference between the two images gives the text

EXPERIMENT:

Where to start?

Encryption:

First we need to develop a method to know where to plot the text. For that we need to select a particular location to plot our text value. That is calculated here as my allow value.

Allow = total bytes / length of the text

Now traverse each and every pixel in the copy of the image and plot the text where my count reaches allow value. It is explained In fig (a).

We need to give the receiver this allow value so we cannot directly specify the length so we consider a flag with some value do that the receiver can calculate it very easily. We will intensify the flag pixel based upon the following criteria.

Eg: consider allow=31249

Allow/127= 246. Now split 246 in to three values using math. Random function

That gives a1-59 (red), a2-187(green), a3-6(blue).

Using these intensity we intensify the R, G, B value at the flag pixel whose position is (1,1)

At the decryption side he can calculate allow value using the formula

Allow = red *127+ green *127+ blue.

How is the text pixels intensified?

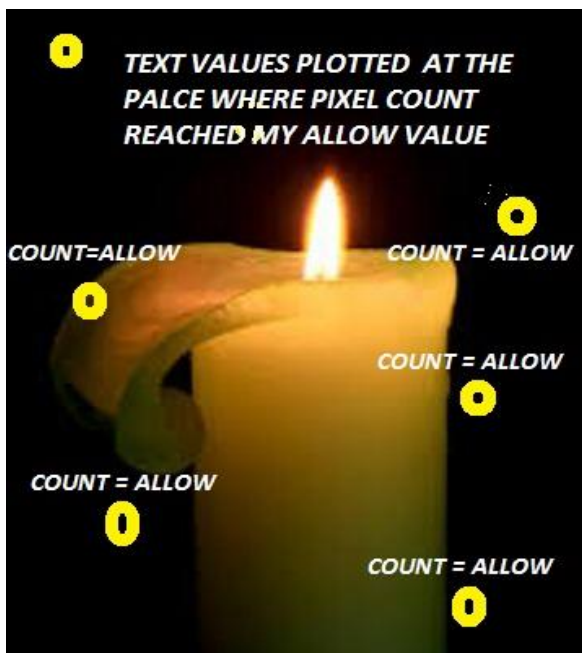


Figure (a)

Extract the RGB values at the particular location where count reaches allow using get RGB () Consider the RGB values as (32, 22, 50) and the ASCII value of the letter to be encrypted as 97, i.e. (a)

Now we split 97 in to three values so that we can change the original RGB values.

$$97 = 25 + 58 + 14$$



This is illustrated in Fig(b), Fig(c)

How are the other pixels intensified?

Other pixels are intensified using some random values it will be better if we choose them to be below 40 so that they are most secure.

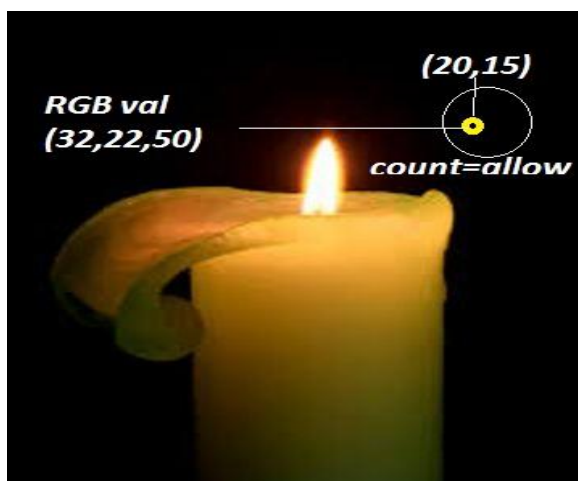


Fig b

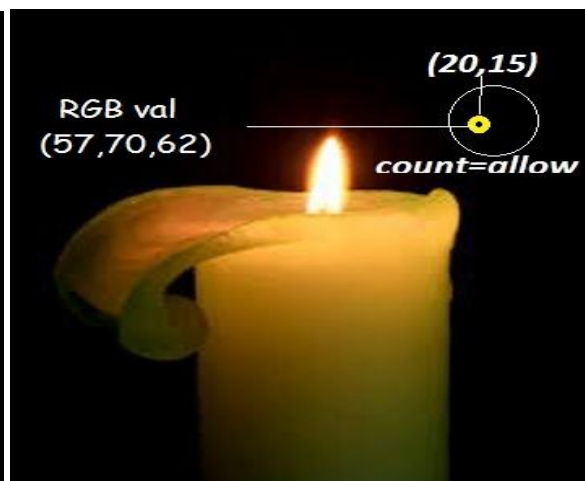


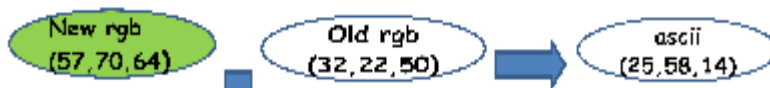
Fig c

Decryption:

Since the decryption can easily calculate the allow value by using the formula

$$\text{Allow} = \text{red} * 127 + \text{green} * 127 + \text{blue}$$

Since he will be having the key image as well as the encrypted image he can just perform the difference between the RGB values of key and the encrypted images.



Now performing the sum of the obtained RGB values we get the ASCII value of the text.

$25 + 58 + 14 = 97$ i.e it is the value of (a)



Encrypted Image



Original Image

SUMMARY:

Our approach for Encryption provides more security than other cryptographic techniques. This approach differs from the steganographic techniques where here we use the key as image. The use of .png images helps the user by hiding the existence of the message better than other formats. We can further develop it to convert the text itself into an image.



20. PASSWORD BASED DOOR LOCK SYSTEM USING 8051 MICROCONTROLLER

COLLEGE: MUFFAKHAM JAH COLLEGE OF ENGINEERING AND TECHNOLOGY

GUIDE: DR KALEEM FATIMA MAM AND MR J K NAG SIR

SCHOOL STUDENTS: AFRAH ASHRAF 8TH STD, RIDA FATIMA 8TH STD, SULTAN-UL-ULOOM PUBLIC SCHOOL

COLLEGE STUDENTS: SHEREEN JAFFER, AYSHA, S SAMREEN AND SHAIK SHAHEEN

ABSTRACT:

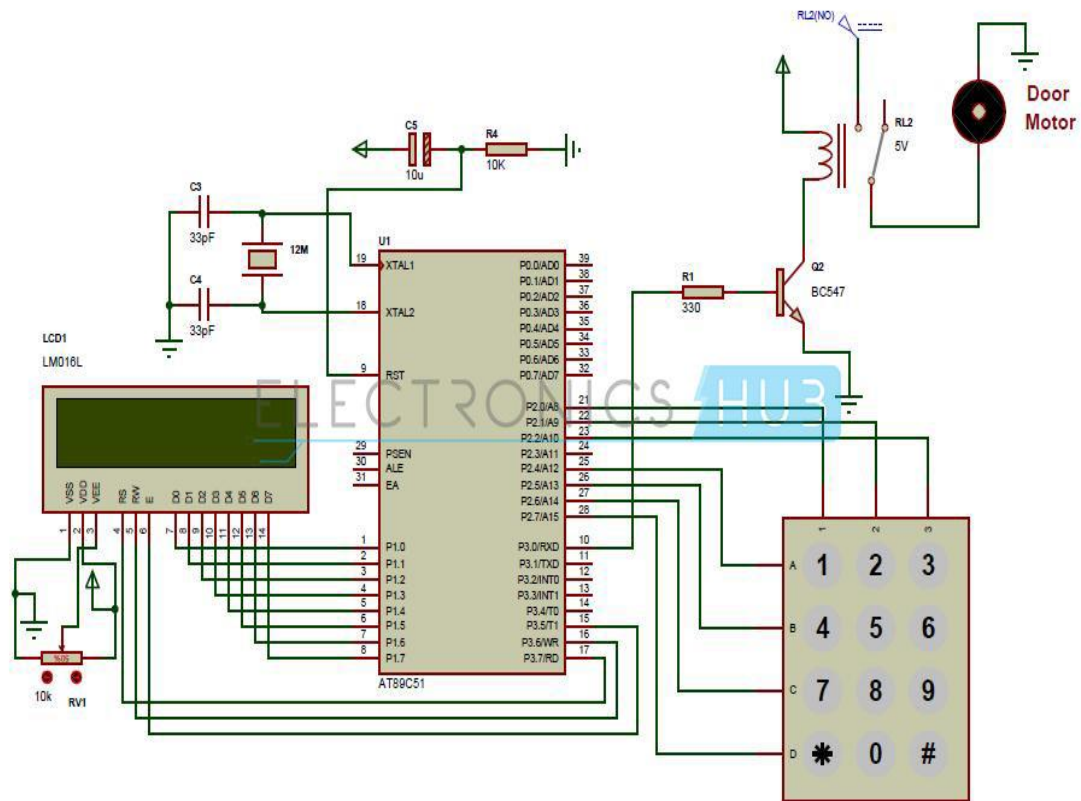
Password Based Door Lock System using 8051 Microcontroller

Traditional lock systems using mechanical lock and key mechanism are being replaced by new advanced techniques of locking system. These techniques are an integration of mechanical and electronic devices and highly intelligent. One of the prominent features of these innovative lock systems is their simplicity and high efficiency. Such an automatic lock system consists of electronic control assembly which controls the output load through a password. This output load can be a motor or a lamp or any other mechanical/electrical load. Here we develop an electronic code lock system using 8051 microcontroller, which provides control to the actuating the load. It is a simple embedded system with input from the keyboard and the output being actuated accordingly. This system demonstrates a password based door lock system wherein once the correct code or password is entered, the door is opened and the concerned person is allowed access to the secured area. Again if another person arrives it will ask to enter the password. If the password is wrong then door would remain closed, denying the access to the person.

Principle behind the Circuit:

The main component in the circuit is 8051 controller. In this project 4x3 keypad is used to enter the password. The password which is entered is compared with the predefined password. If the entered password is correct then the system opens the door by rotating door motor and displays the status of door on LCD. If the password is wrong then door is remain closed and displays "pwd is wrong" on LCD.

Circuit Diagram of Password Based Door Lock System using 8051 Microcontroller:



21. FIRE FIGHTING ROBOT

COLLEGE: KONERU LAKSHMAIAH UNIVERSITY

GUIDE: S.RAMESH

SCHOOL STUDENTS: SAI 9TH CLASS, RAJU 9TH CLASS ZPHS-PATAMATA

COLLEGE STUDENTS: B.AKHIL, Y.S.KARTHIKEYAN, N.GANESH, BVSS.ANIRUDH

ABSTRACT:

Now, a day due to technology lot of disasters are taking place without the notice of mankind.

Firefighting is an important but dangerous occupation. A fire fighter must be able to get to a fire quickly and safely extinguish the fire, preventing further damage and reduce fatalities. Technology has finally bridged the gap between firefighting and machines allowing for a more efficient and effective method of firefighting. Robots designed to find a fire, before it rages out of control, could one day work with fire fighters greatly reducing the risk of injury to victims.

Our team main objective is to build a robot which extinguishes fire using artificial intelligence.

HYPOTHESIS:

At present we are having the water sprinklers and fire extinguishers as safety equipment, but at major accidents only a rescue force can try to solve the problem by keeping their lives in risk. There is no alternate method or technology involved in solving such problems. So this is an idea which would help human life.

METHOD:

Main board consists of microcontroller and motor driver circuit with remaining port expanded for sensor interfacing. Sensor is fire sensor based on light detection which generates the high signal pulse when fire occurs in front of sensor. This high signal pulse is given to micro controller port by which controller decides when to extinguish fire.



EXPERIMENT:

- Switch off all the lights and put robot in dark place.
- For demonstration bring light or match stick fire near robotic fire sensor.
- As it detects fire, it starts drawing Water from tank and tries to extinguish the fire from nozzle.

SUMMARY:

- Our main objective is to save the life of people or forest areas during fire accidents effectively with the help of firefighting robot.
- It will be helpful to the rescue force in such places where they are difficult to enter.

22. THANDA-GARAM

COLLEGE: G.NARAYANAMMA INSTITUTE OF TECHNOLOGY AND SCIENCE

GUIDE: SURYAKANTH PATIL

SCHOOL STUDENTS: G. VENKATESH, K. RAMADEVI 8TH CLASS, ZPHS SHAIKPET, HYDERABAD

COLLEGE STUDENTS: SUMA PATIL, LATIKA MAHAPATRA

ABSTRACT:

Refrigeration processes working on throttling process lead to the dissipation of heat into the environment. Refrigerators transfer heat using condensers, from its interiors to the surroundings round the clock. The objective of this project is to capture and utilize the radiated heat for warming applications. Normally in a refrigeration unit, a copper tube connecting the compressor to the condenser carries a hot(56°C) pressurized(700kPa) refrigerant for heat dissipation. This heat is captured by a specially designed aluminium chamber coiled with the condenser tube. Aluminium being a good conductor absorbs the heat and acts as a warmer. Here the waste radiated heat is diverted automatically by solenoid valves around aluminium chamber which is used as warmer. The heat obtained can be used for maintaining the temperature of food items, defrosting, increasing the rate of curdling process by 40%. This idea can improve the overall efficiency of refrigeration and drying processes in industries. This project aims for a great contribution to minimize the global warming, which is a great threat for globe.

METHOD:

Requirements:

- Refrigerator.
- Galvanized iron compartment
- Copper tubes
- Thermostat
- Solenoid valves

CONSTRUCTION:

Refrigeration processes working on throttling process lead to the dissipation of heat into the environment. Refrigerators transfer heat using condensers, from its interiors to the surroundings round the clock. So the tube running out from the compressor to the condenser is bypassed into an aluminium compartment. The bypassed tube is looped around an aluminium compartment which is insulated from all the sides so that the heat captured in it does not escape. The thermostat is installed in the compartment to sense the temperature in the warming compartment. The solenoid valves are installed one in the beginning of the

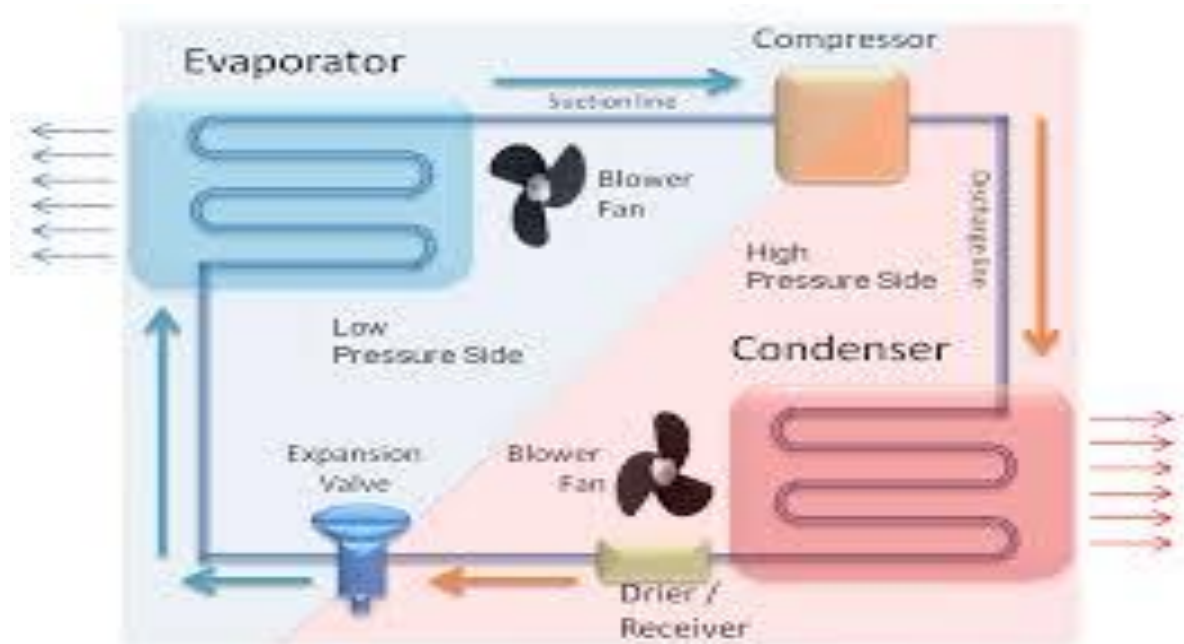
bypass and one before to the condenser. Both the valves are connected to the thermostat and are operated by it.

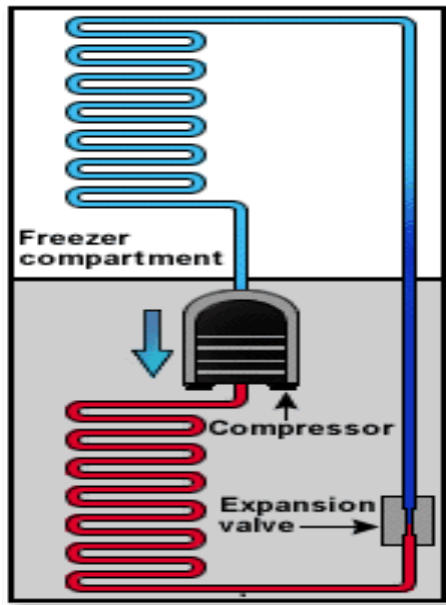


EXPERIMENT:

When the hot(56°C) pressurized(700kPa) refrigerant passes around the aluminium compartment, the heat from the refrigerant is absorbed by the comparatively cooler air in the compartment. So whenever an object is placed in the compartment, it absorbs heat and in turn gets warmer as heat moves from higher concentration to lower concentration.

The thermostat senses the temperature in the compartment and operates the couple of solenoid valves in order to continue the normal functioning of the refrigerator. . One of the solenoid valves opening into the compartment closes and the other valve opens when the temperature in the compartment reaches the set-point in the thermostat.





Unique Features:

- Utilization of freely available continuous heat.
- Useful in speeding up of curd coagulation.
- It can be used to warm the refrigerated food before serving.
- It can be a substitute for an oven up to certain extent.

Applications in various fields

- Food processing industries
- Meat packing industries
- Laboratories
- And all other fields where refrigerators are used.
- Pharmaceuticals
- And all other industries

Future Scope:

This project can be extended and improved to achieve better efficiency for large number of domestic and industrial applications to make cost effective use by reducing the overall power consumption required for particular processes.

The effective implementation for large scale, medium scale, small scale and domestic utilization, the heat radiated by all refrigeration units can be brought down to minimum level, which plays an important role in bringing down the global warming to maximum extent.

SUMMARY:

The heat which is radiated by a refrigerator is efficiently put to use by increasing the overall performance with optimised power consumption and can also be a helping hand for various

applications. Finally reduction in the radiated heat will minimise the effects of Global warming.



23. DENSITY BASED TRAFFIC CONTROL

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: D.VENUMADHAVA CHARY

SCHOOL STUDENTS: SANDHYA CLASS 9, RAJESHWARI CLASS 9

COLLEGE STUDENTS: V.SRAVYA, G.SRI PRAGNA, B.NIREEKSHANA

ABSTRACT:

Conventional traffic light system is based on fixed time concept allotted to each side of the junction which cannot be varied as per varying traffic density. Junction timings allotted are fixed. Sometimes higher traffic density at one side of junction demands longer green time as compared to standard allotted time. The proposed system using a microcontroller of 8051 family are duly interfaced with sensors, changes the junction timing automatically to accommodate movement of vehicles smoothly avoiding unnecessary waiting time at the junction. The sensors used in this project are IR and photodiodes are in line of sight configuration across the loads to detect the density at the traffic signal. The density of vehicles is measured in 3 zones i.e., low, medium, high based on which timings are allotted accordingly.

Further the project can be enhanced by synchronizing all traffic junctions in city by establishing a network among them. The network can be wired or wireless. This synchronization will greatly help in reducing traffic congestion.

HYPOTHESIS:

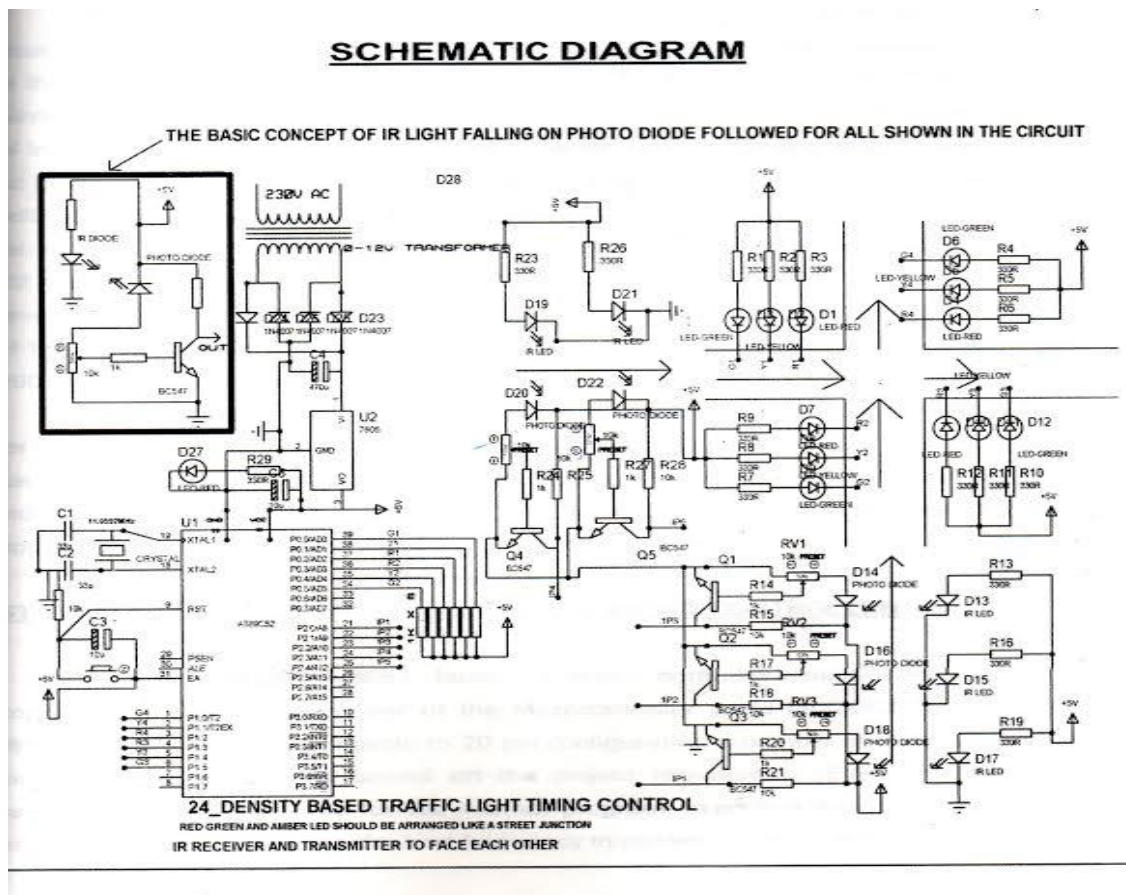
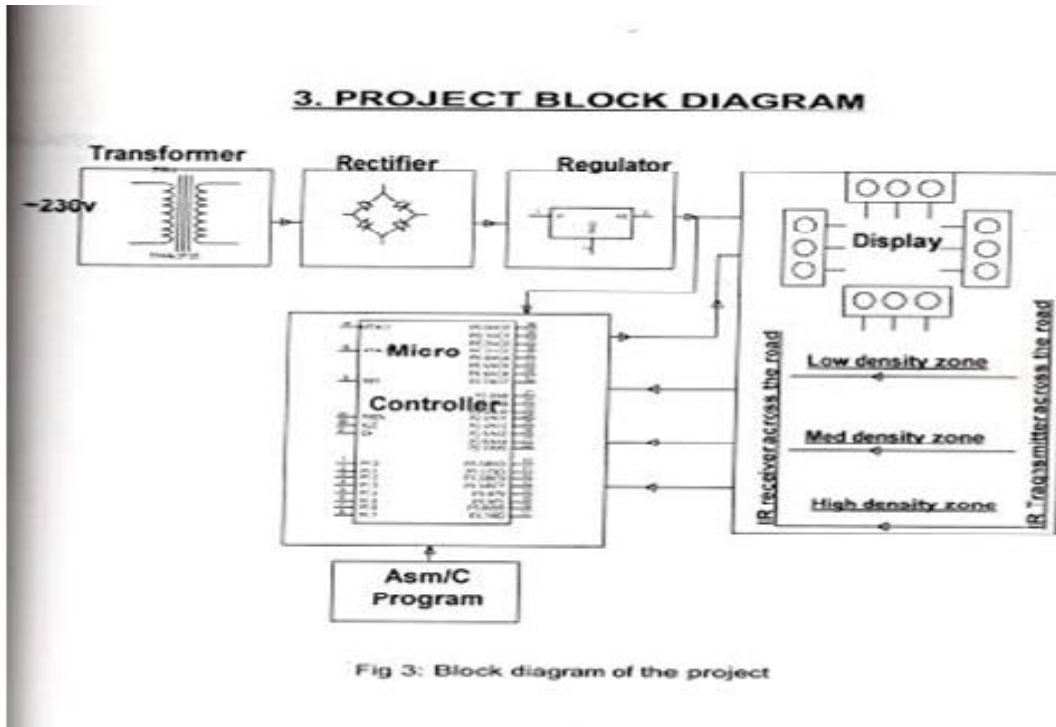
This project uses number of IR diodes facing photo diodes. Thus all transistors Q1, Q2, Q3, Q4, Q5 are in conducting state. As collector of those transistors are connected to corresponding port pins form as input for program to be executed based on change of logic state.

12 LED's representing as signal lights are connected to output of MC in sink mode to port 0, port 1, and port 2. While all input coming from Q1 to Q5 are in logic low state, the output LED's i.e., 3 per junction i.e., Red yellow, green of each side way for 5 traffic junction follow switch ON green timing in fixed intervals in sequential clockwise direction. Thus during low traffic density in one of the way, fixed green timing for each way in junction are provided. While any one of way is blocked with more number of vehicles the IR blocking happens. These are 3 zones with 3 set of IR sensing arrangements. In this project transistor Q1 to Q5 goes high because of IR interruption while the vehicles come in between photo diode & IR diode.

This logic high sensed at MC input changes the green ON time to higher value for allowing more vehicles to pass through. After sometime similarly any other way gets more traffic, the sequential timing gets automatically increased for that way. Each way is divided into 3 active zones, each zone represents some specific length. Based on IR interruption green ON time increase, thus more the vehicle longer will be the green signal time.

METHOD:

In this project the code is written in Embedded C and it is executed in KEIL C compiler.



SUMMARY:

Using this project traffic congestion can be greatly minimized as this is based on density based rather than conventional signal timings.



24. POWER SHARING

COLLEGE: : MVSR ENGINEERING COLLEGE

GUIDE: SARVESHWARAM

SCHOOL STUDENTS: : MANGU DHRUTHI, YANALA MANASA, 9TH CLASS ENGLISH MEDIUM, BADANGPET Z.P SCHOOL

COLLEGE STUDENTS: : M PRASHANTH KUMAR, M PAVAN KUMAR, P RAM KUMAR, A PRAVEEN KUMAR REDDY, G RAKESH KUMAR

ABSTRACT:

Today electrical power has become an integral part of our life and we are facing many problems due to unavailability of storing electrical energy.

To tackle with the instant problems with power i.e., when there is a dire need of energy to a system and we are having an external energy then we can use the concept of POWER SHARING.

Power sharing: Exchange of energy between/among the devices (source and sink)

In our project we deal with the sharing of power between two cell phones i.e., transfer of energy from one cell to another cell, first cell which is at higher voltage deliver power to another cell which is at low voltage .

By using the knowledge of power electronics we are able to design a power sharing device.

Electronics components used: Microcontroller, FET, large inductors and capacitors.

The major technique used is PWM (pulse width modulation).

As per basic knowledge a phone battery voltage varies from 3.7- 4.5v. So we can't use any kind of IC like op-amp because they required a supply of 5v for turn on. So we opt for PWM technique.

HYPOTHESIS:

Now a days many of the phones are with best features but they are lagging at power source (battery), hence this method is useful.

For a case when cell is about to dead and we want to use it then we can use power sharing device and we can charge our phone and use it, not only from a phone but from any external battery source we can share the energy. So this technique is useful in sharing the energy.

The major concept used is PWM: **Pulse-width modulation (PWM)**, or pulse-duration modulation (PDM), is a modulation technique used in communications systems to encode the amplitude of a signal into the width of the pulse (duration) of another signal.

Frequency = (1/T)

Duty Cycle = (Thigh/T)

In ATmega 8 default clock frequency is near about 1 Mega Hz.

$$T_{\text{system-clk}} = 1 / (1 \text{ M Hz}) = 1 \mu\text{s}$$

To get desire frequency you need to change clocking of timer that is done by prescaler so to implement PWM these variables are required:

TOP= Number of clock cycles for one time period of PWM

$$N_t = T / T_{\text{clk}}$$

OCR = Number of clock cycles for On Time of PWM

OCR (output compare register)

$$\text{OCR} = T_{\text{on}} / T_{\text{clk}}$$

Timer_value= It is value of timer, that counts from **TOP** to zero and Zero to **TOP** in each cycle

- TOP

We adjust both variables to get desired time period by changing some control bits in control registers.

Here in this tutorial we will set **TOP=255**

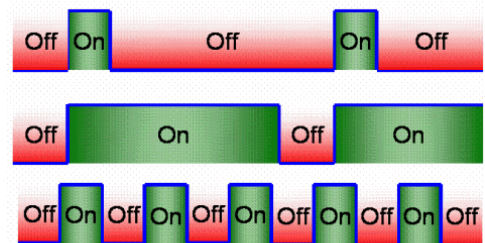
Duty cycle is decided by only one variable OCR

$$\text{Duty cycle} = (\text{OCR} / \text{TOP})$$

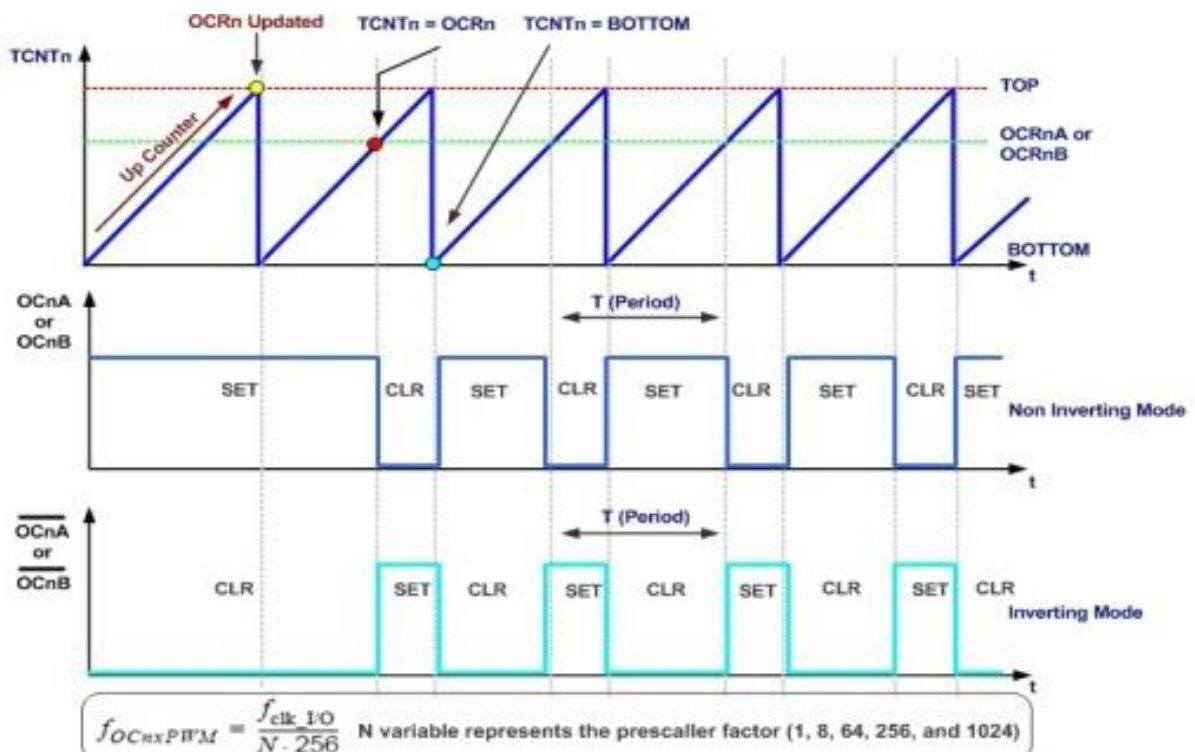
$$T = T_{\text{clk}} * \text{TOP}$$

When if **Timer_value** ≥ **OCR** then **PWM Output= Low**

And if **Timer_value** < **OCR** then **PWM Output= High**



You must be wondering how this square wave will be produced. In avr microcontroller there are certain PWM pins where these waves can be produced. Like in ATmega8 PIN 15, 16 and 17. Now suppose you want to generate a square wave that has 50% duty cycle at pin 5(OC1A) Then how your code will look like



```

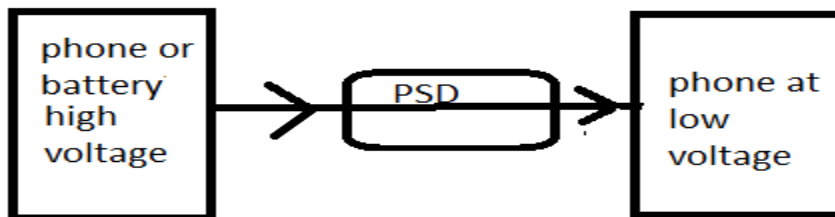
Int main()
{
Step 1 Set PB1 (OC1A) as output pin;
Step 2 Enable PWM;
Step 3 Select Phase correct PWM mode and TOP value;
Step 4 Set OCR value TOP/2;
Step 5 Set prescaler value and clock source ;
Step 6 Start PWM;
While(1)
{
//do any job here
}
Return 0;
}

```

EXPERIMENT:

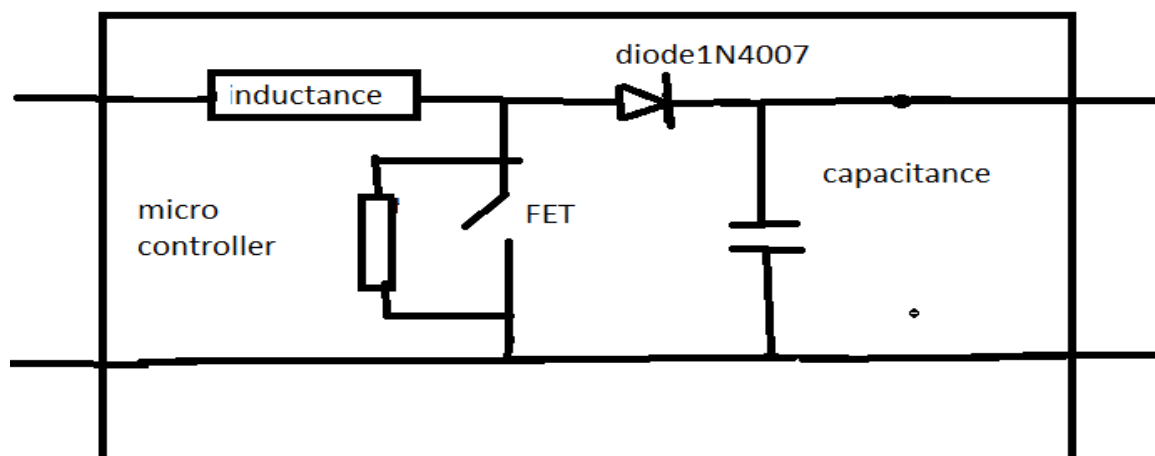
Basic law of electricity current flows from higher potential to lower potential.

Block diagram of power sharing



psd=power sharing device
or
energy transferring
device

POWER TRANSFERING DEVICE



FUNCTIONING

Microcontroller controls the switching action of FET accordingly the output is varied by following the basic of electronics

SUMMARY

By choosing a proper power sharing we can increase the efficiency and losses can be decreased. And thus by using this device we can be able to solve the problem during low power (dead time) of an electronic device.

25. FEILD FAILURE PROTECTION OF A D.C. MOTOR

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: D.VENUMADHAVA CHARY

SCHOOL STUDENTS: ADHI AKHILA, TALARI VENKATESH, 9TH CLASS (EM), SHISUMANDHIR SCHOOL, BADANGPET , NADERGUL

COLLEGE STUDENTS: K. JOSEPH DANIEL, M. SHYAM SUNDER, T. JEEVAN REDDY, R. VIJAY NAIK

ABSTRACT

The main objective of our project is to protect the D.C. Motor from sudden field Failure. In this Project, We have designed a Field failure protection using an Electromagnetic Relay and contactor with its associated circuit. Rheostat and its limit switch are used for starting the motor which will eliminate the need for a 4 - Point starter. By modifying few connections this methodology can be applied to any other DC Machine.

HYPOTHESIS

In many industries, D.C. Shunt and Compound motors are used, Usage of D.C. Motors are increasing due to wide range of speed control, Excellent operating characteristics. These motors should be protected from field failure.

In this project, new method of starting the D.C. motor is used. It eliminates the necessity of 3 – Point (or) 4 – Point starter. Highlights of this project are to protect the D.C. Shunt motor from field failure and start the motor without using the starters.

METHOD:

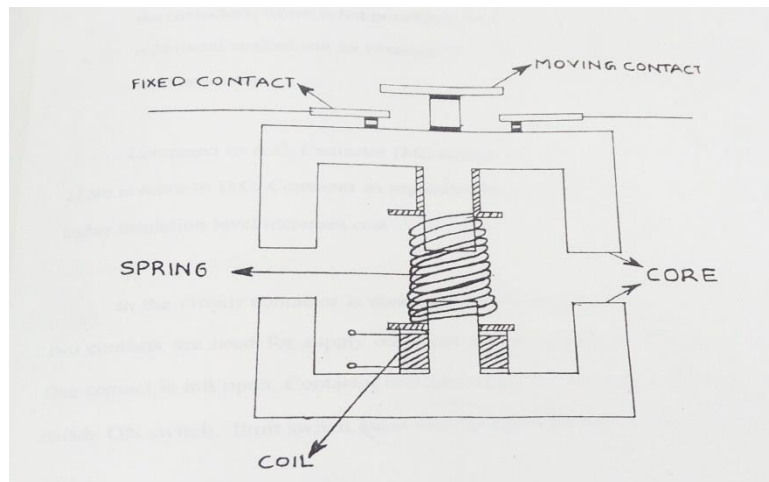
This project uses simple method for protection i.e. when the failure of field occurs in the motor, using contactor and relay we disconnect the supply to the motor due to Low field currents.

EXPERIMENT

The main components used in this experiment is Contactor and Relay

Contactor - A contactor performs the main power switching operation. A Contactor has main contact, auxiliary contact and coil terminals. The coil is wound on E – Shaped iron core. The coil is kept at the centre limb of E – Shaped core. Just above this iron core, there is another E – Shaped iron core with air gap separating them. When the coil is energized by a proper supply, the magnetic flux tries to attain the least reluctance path hence the core is attracted downwards to complete the magnetic circuit. When the coil is de – energized a spring will pull the upper core back to its original position. When the coil is energized, main contacts gets

closed and if de – energized the contacts are opened because of restraining force produced by the spring.

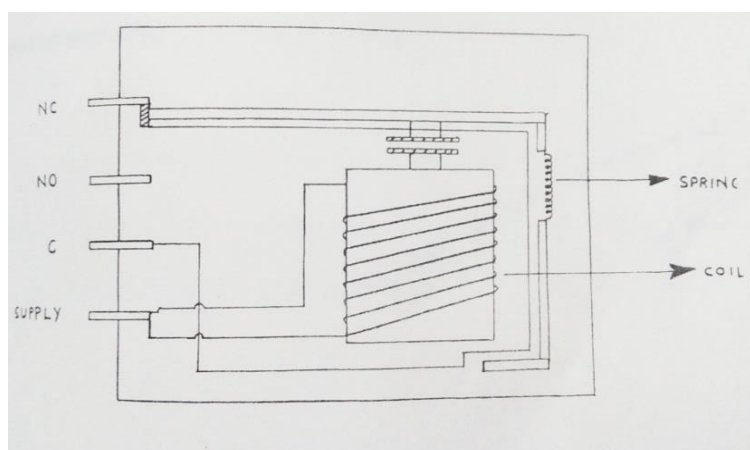


Depending on the rating of the contactor, main contact terminals are selected. Another important feature of contactor is auxiliary contactor. It is nothing but an additional mounting, which can be attached to the main contactor as per the requirement. The actuating mechanism in the main contactor also actuates the auxiliary contacts simultaneously.

In the present project these auxiliary contactors are used for inter-locking purposes. Inter-locking in general ensures that the two circuits controlled by the auxiliary contacts are in opposite or same modes i.e. one is OFF and other is ON (or) both are ON (or) both are OFF.

RELAY

It has a coil and two contacts named, normally opened (NO) and normally Closed (NC). When the coil is energized, NC contacts are changed to NO; due to this change the circuit is closed.



EXPERIMENT

In the experiment the components used are Contactor, Relay, Limit Switch and Rheostat. In control circuit, two push button switches are used, one ON switch (NO) type and one OFF

26. SELF ENERGY GENERATING SHIP

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: D.VENUMADHAVA CHARY

SCHOOL STUDENTS: SHIVA AND SHASHANK, 10TH CLASS, SIDABAD GOVT. SCHOOL

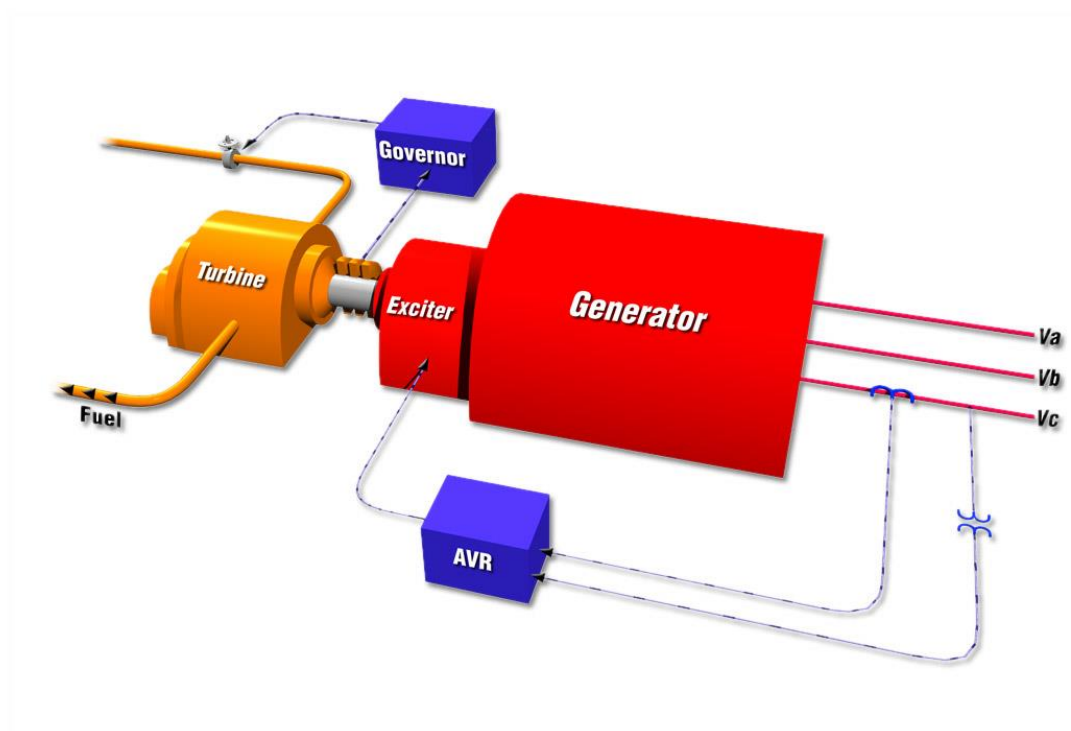
COLLEGE STUDENTS: SREEDUTT, SRINIVAS, DEEKSHIT, NARASIMA

METHOD

Water present in the sea is pumped into the machine with high speed, with which the turbine rotates. From this turbine electrical energy is generated through shaft. With this energy the ship functions. For extra power we use solar panels.

SUMMARY:

Eco-friendly ship



27. ELECTROMAGNETIC BRAKING

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: Y.L. NARASIMHA RAO

SCHOOL STUDENTS: Ch. INDRANI 8th, G. TIRUPATHI 9th CLASS

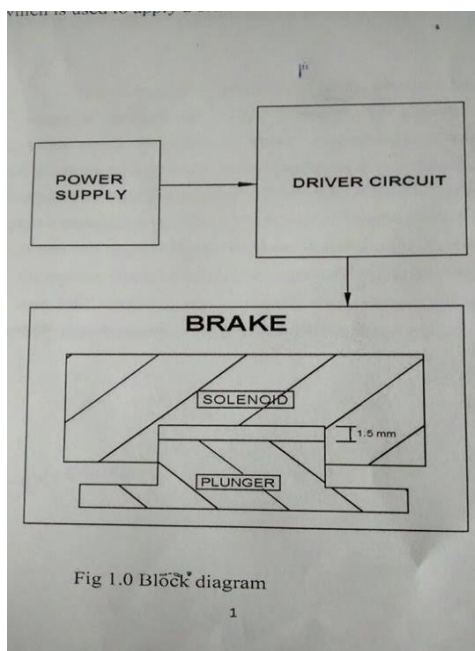
COLLEGE STUDENTS: R PRASHANTH, P PRASHANTH

ABSTRACT:

The electromagnetic brake is used to apply brake to the actuation of aerospace vehicles. The actuation system is used to control the attitude of aerospace vehicle. The electro-magnet should work with high response. The present project deals brake with response time order of 80msec which is used to apply a brake to the actuators with very high force.

HYPOTHESIS:

Now a day the vehicles like aerospace vehicles, levitation trains using electricity for the purpose of breaking because these vehicles are very fast as well as heavy or huge. In this the mechanical breaking is not possible. The electric breaking is more accurate, reliable, and has a fast response. In upcoming days it may be possible to have all electric for all the medium and heavy vehicles.



METHOD: The main components used for these:

1. Solenoid
2. Plunger
3. Power supply
4. Patch chords
5. Driver circuit

Initially a minimum air gap of 0.15mm is maintained between these solenoid and plunger. Solenoid is an electro-magnet in which a magnetic wire of appropriate SWG (standard wire gauge) is inserted. Plunger is an iron piece. The electro-magnetic flux so established in solenoid by exciting it, pulls the plunger towards it.

EXPERIMENT:

ELECTRO-MAGNETIC BRAKE:- The two main parts are: a) solenoid b) plunger. Solenoid is an electro-magnet whereas the plunger is an iron piece. The minimum air gap maintained between the solenoid and plunger is 1.5mm. The electro-magnetic flux is established in solenoid by exciting the coil and path of flux in the solenoid pulls the plunger, as shown in the figure. By the brake is applied. These all works on the basic principle of attraction force.

Force= energy density * area. In this a driver circuit is used. The main function of the driver circuit is to control power MOSFET. As we already know the power MOSFET function.

The major components of driver circuit are:

- a) IC MC33035 b) 555 Timer c) operational amplifier

Need of driver circuit - It can be observed that the air gap reluctance varies with the closing of plunger because of which the force generated due to brake varies with air gap. Initially the force developed by brake required more MMF and the plunger closing the MMF required will come down and when plunger fully closes the MMF required is very less. To optimise the thermal performance of the brake a driver circuit is designed by which the MMF is controlled which will be maximum during pull in and minimum during hold. This control is done by using PMW technique.

CONCLUSION - By giving the power supply to the solenoid through driver circuit (the operation of brake is controlled by driver circuit) the solenoid attract the plunger (metallic peace) with a required force.

SUMMARY: As the response of these braking system is more fast we can use in fast response applications such as:- In aerospace vehicles, in levitation trains, in high speed vehicles etc.,.

28. BLUETOOTH ROVER

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: TVVG CHARY

SCHOOL STUDENTS: T. SAI VAMSHI, 9th CLASS, M. RADHIKA 8th CLASS SRI SARASWATHI SHISHU MANDIR

COLLEGE STUDENTS: K. AKHIL KUMAR, T. SAIRAM, B. PRASHANTH REDDY

ABSTRACT:

The idea is to make a smart phone controlled bot which can be used for exploration and surveillance purposes. This report covers all the details regarding the bot including its construction. The main feature of the bot is that a live video feedback, which can be viewed through the smart phone screen. Bluetooth is used for the connectivity between the bot and the smart phone (in this case, it acts like a controller).

HYPOTHESIS:

Now a day almost everyone use smart phones and they are easily available to anyone. It all started when we came across an idea to make a bot which can control by using a smart phone. In this bot we use both the fast the reliable connectivity's of a smart phone which are Wi-Fi, Bluetooth. Bluetooth will be used for controlling the actions of the bot while Wi-Fi is used for video feedback which can be viewed through the smart phone screen. The main purpose/uses of a rover include Exploration, Surveillance and it can also be used to operate at the places where it is difficult for human beings to reach and work (this can be done by adding arm features to the bot), they can also be operated in issues like bomb diffusing, caves exploration etc.

METHOD:

The main components used for making this bot include,

- 1) Acrylic sheet for chassis (tough and light in weight when compared to any other metal).
- 2) 4 geared motors of 300RPM each and 4 tires (for wheels).
- 3) Li-Po battery as power source (Lithium polymer batteries are lighter in weight and compact in size when compared to other batteries).
- 4) Arduino UNO R3 (microcontroller for motor control).
- 5) LM 293D IC (motor driver IC to amplify the signals from micro controller).
- 6) HC-05 Bluetooth module (to connect to smart phone).
- 7) IC 7809 (to protect micro controller).
- 8) Miscellaneous

The design is similar to that of a wheeler off road car. The bot has 4 wheels with 4 motors. All the above mentioned components are neatly placed in a thermocol which is mounted firmly to the acrylic chassis. Here thermocol is used to reduce the weight of the bot. All the components are placed in thermocol with well and neatly cut chambers and care is taken regarding the centre of gravity of bot while placing the heavy components like battery.

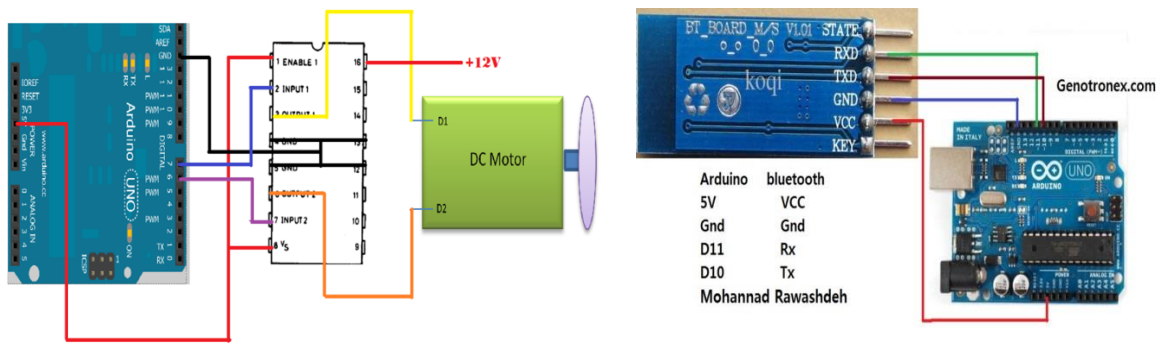
EXPERIMENT:

The bot is basically controlled using an android smartphone through an app which is specially made and designed for this bot. It includes control touch buttons for forward, backward, right, left and two special movements like U turn right and U turn left. The app also consists of video monitoring screen (used to view the video through this chamber). Coming to the working of video feedback, it mainly works on the principle of IP camera. The bot needs 2 smart phones in which one is used for controlling purpose and other is used to stream the video in front of the bot to the controller smart phone. So one of the smart phones is placed on the bot while working. The prerequisite for the smart phones is that one smart should be loaded with an app named "IP camera" (available on google play store for free) and other with the one we made and is named as "rover BT control". The smart phone on the bot and the controller smart phone are connected through Wi-Fi (to make the use of IP CAMERA) and it streams the video through the network to the controller.

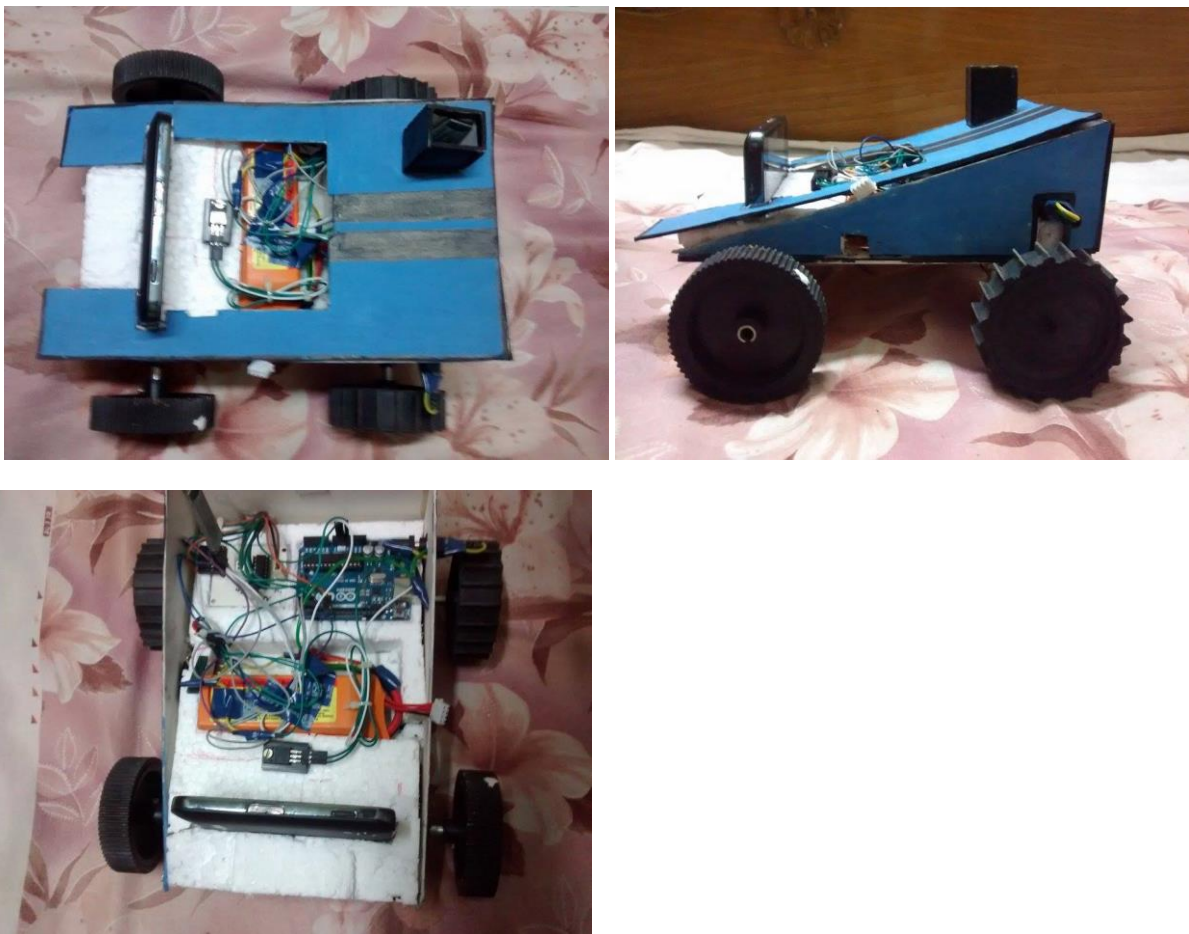
The controller smart phone is connected to the bot's HC-05 module through Bluetooth which receives the commands from the controller smart phone and sends them to the microcontroller board Arduino UNO R3. The microcontroller receives the power supply from a 2.2mah/12V lithium polymer battery and supplies necessary power to the Bluetooth module as shown in the circuit diagram below. In between the power supply and the microcontroller, a regulator IC 7809 is used to protect the microcontroller from voltage fluctuations. The microcontroller processes the signals and sends the commands to the motor driver circuit for the amplification of the signals as the direct signals from microcontroller are not sufficient to drive the motors. LM 293D IC is used as motor driver which amplifies the signals from microcontroller and supplies them to 4 motors which are connected in parallel combination so that maximum current is supplied to the motors. 4 300RPM geared motors are used to provide sufficient power and speed for the bot to move in almost any terrain (tested in sand, gravel, wet and smooth terrains). 4 3inch tires are mounted to the motors which are responsible for them movement of the bot.

The microcontroller is fed with suitable C program to interpret the data from the Bluetooth module and transmit the output signals. The app named rover BT control is designed using eclipse software in PC by using Java. Necessary wiring, taping, disclosing etc are done to the bot to make it look compact and work correctly. A switch is also provided to turn on and turn off the bot when not in use which directly stops the supply from the battery when not in use.

CIRCUIT DIAGRAM



REAL MODEL



The above pictures show the top view, side view, front view and other views etc. The last one shows the screenshot of the app with a video streaming window in the middle.

ADDONS

The bot can be added with an extra feature of robotic arm, which can be useful for performing many operations with the bot like repairs in internal parts of a machine, bomb

diffusing etc. We are currently working on this part of the bot and will be added in near future.

SUMMARY:

Thus a Bluetooth rover can be used for monitoring and surveillance purposes and has wide range of applications in many sectors. It operates with the help of Bluetooth and Wi-Fi for controlling and video streaming respectively. Bot requires 2 mobile phones, one for video recording and transmitting and other for controlling the bot. It can be easily operated from any smart phone with help of the app programmed by us named "rover BT control". The bot mainly uses a Lipo battery for its power needs and works wirelessly at a maximum tested distance of 30-40 metres with an unobstructed video feedback. The bot uses Arduino UNO r3, LM 293D, 7809 chips for its functioning. It can be operated for a tested 2 hours of continuous monitoring and takes about half an hour to get completely charged.

29. POWER GENERATION AND STORAGE THROUGH BICYCLE PEDALING

COLLEGE: MVSR ENGINEERING COLLEGE

GUIDE: D.VENUMADHAVA CHARY

SCHOOL STUDENTS: SUNIL 9TH-C, SAI KUMAR 9TH-C ZPHS HIGH SCHOOL, JILLALGUDA

COLLEGE STUDENTS: M. SHARATH CHANDRA, P. SHASHANK, N. BHUJENDHAR, J. AKSHAY

ABSTRACT

As energy usage across the world continues to rise, there is a strong need to develop new methods for energy Conservation and power generation, particularly approaches that has less environmental impacts. Although human power is not ideal in terms of life cycle costs [1], there are promising application areas for human power in emerging regions where electric power is either not available or not affordable. This paper will also address the social benefits of human power generation technology in the gym.

HYPOTHESIS

In this mechanical work is converted into electrical energy. We mechanically rotate the rim of the bicycle wheel by which we rotate the pulley of the motor which provides the power.

METHOD

Using the rim of the wheel available on the bicycle we run the dc motor by rotating the motor with a pulley which is attached to the motor. A 'V-belt' is used as an interface between the motor pulley and the cycle rim to do rotation i.e. mechanical work. We connect the multi-meter to see the readings. To get constant voltage we use choppers or regulators. After achieving required voltage we should connect the motors connections to the battery to store the energy that is acquired. By watching the reading of the multi-meter for 10min we can estimate the power generated per hour.

EXPERIMENT

Power Generation and Storage through Bicycle Pedalling

SUMMARY

This project is very eco-friendly to generate and store the energy. By using the mechanical power of the bicycle we are generating the power. It can be used in home appliances for tube lights, cell phone charging etc. Just like generator it converts mechanical energy into electrical energy but this is eco-friendly and no need of any fuel.



30. ORNITHOPTER-A SPY BIRD

COLLEGE: M.V.S.R. ENGINEERING COLLEGE

GUIDE: DR.D.VENU MADHAVA CHARY

SCHOOL STUDENTS: M.BALAJI, M.ASHWIN CLASS 9TH SARASWATI SHISHUMANDIR, BADANGPET

COLLEGE STUDENTS: D.SRIVALLI, B.PRASHANTHI, D.MADHURI

ABSTRACT:

An Ornithopter is a spy bird. The basic idea of Ornithopter have taken from a freely flying bird which can do miracles that can't be achieved by a human being. An Ornithopter (from Greek ornithos "bird" and pteron "wing") is an aircraft that flies by flapping its wings. Though machines may differ in form, they are usually built on the same scales as these flying creatures. The machines are of two general types: those with engines and those powered by the muscles of the pilot. The first ornithopters capable of flight were constructed in France. Jobert in 1871 used a rubber band to power a small model bird. The earliest of those to experiment with flapping wing devices are often referred to by aviation historians as "Tower Jumpers".



HYPOTHESIS:

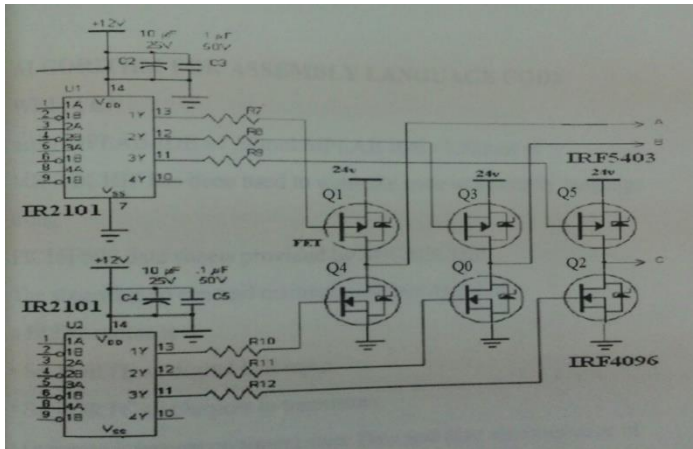
Natural fliers like birds have captivated the minds of human inventors through history. The ease with which they take to air vastly surpasses the state of art in aircraft and their control systems. The basic idea to create an ornithopter is to create a simple, small flying machine for a variety of tasks including system monitoring and surveillance where a swarm of tiny agents would be unobtrusive and have better access to confined areas than larger flying vehicles.

METHOD:

The proposed control for BLDC motor control is done using PIC microcontroller of MICROCHIP. PIC16F series microcontroller which is used for this project is a 40 pin device, 8 bit CMOS Microcontroller which belongs to the MICROCHIP family of controllers. It has 10 bit Analog to digital converter (ADC) and here 8 bits is used for control so that the speed can be controlled in 255 steps. Timer 1 is operated in external oscillator mode with an external crystal oscillator

of 20 MHz connected to the microcontroller device. An external potentiometer is connected to the ADC pin which provides the required speed range.

An algorithm has been developed and tested for running and maintaining constant speed of BLDC motor, for clockwise rotation of the motor based on Hall signal.



EXPERIMENT:

Components used in the design of ornithopter:

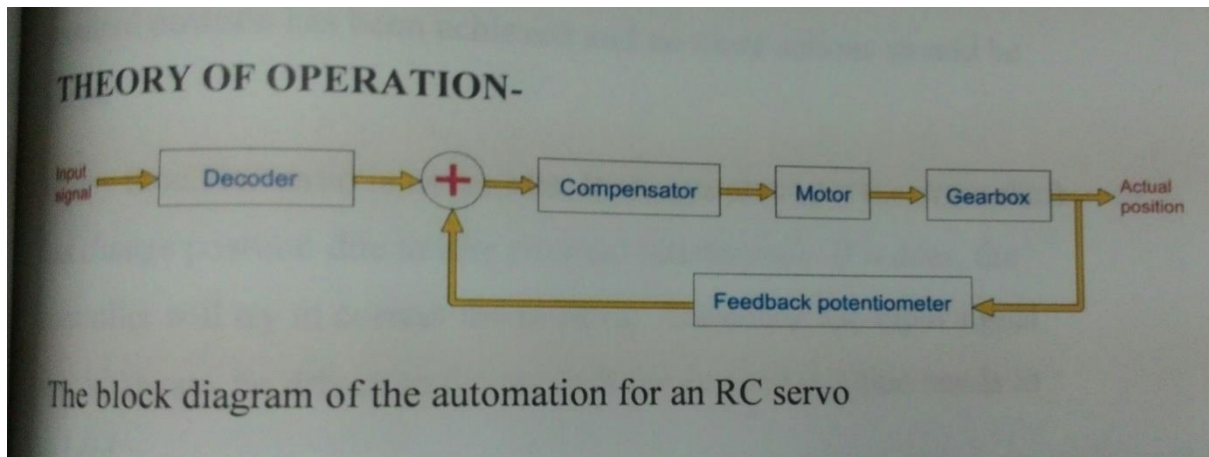
Electrical components:

- **Lithium polymer batteries (LIPO):** They are usually composed of several identical secondary cells in parallel to increase the discharge current capability.
- **Electronic speed controller:** It is an electronic circuit with the purpose to vary the speed, direction of electric motor and also as a dynamic brake.
- **Brushless out runner motor:** Brushless electric motors are synchronous motors that are powered by a DC electric source via an integrated inverter. They produce an AC electric signal to drive the motor and additional sensors and electronics control the inverter output amplitude and frequency.
- **Transmitter-receiver set:** The transmitter is a hand-held unit which takes control output from the user and converts it to radio signals which the model's on board electronics interpret as motion via servos. Receiver has a set value of frequency when the frequency generated by the transmitter matches the set value in the receiver, circuit starts functioning.

Servo mechanism:

Blocks of servo mechanism-

- **The controller circuit:** It reads the user's input signal and translates into a motor revolution so that the drive shaft will be rotated to the desired position.
- **The feedback potentiometer:** By the reading of potentiometer's resistance, the controller is able to know the exact angle of the drive shaft as the shafts of potentiometer and are servo are attached.
- **Motor:** This is usually a small high speed DC motor controlled by H-bridge circuit attached to the servo's controller.
- **The gear box:** The gearbox will drive the motor's revolution to the drive shaft .Also, the rpm will be significantly reduced and the torque will be increased.



Mechanical components:

- **Fuselage:** The fuselage is ornithopter's main body which carries BLDC motor, cam mechanism, tail servos and hooks.
- **Wings:** The thrust generated by wings while flapping propels the bird in forward direction and the lift which is produced perpendicular to the direction of flight keeps the aircraft airborne.
- **Tail:** It is made up of Dacron and helps the bird with some lift, speed of flight and also with direction.

Mechanism (cam mechanism): The transformation of rotation into any other motion is achieved by cam mechanism. A cam mechanism usually consists of two moving elements, the cam and the follower, mounted on a fixed frame. Cam devices are versatile and almost any arbitrarily specified motion can be obtained. They offer the simplest and most compact way to transform motion. The cam mechanism in ornithopter is used to transform rotatory motion to oscillatory motion for the flapping of the wings.



SUMMARY:

The ornithopter was designed from the ground up with the needs of research in mind. All the components have been designed to be as lightweight and high performance as possible so as to maximize the payload capacity and are intended to fail in predicable ways. In addition to this, all parts of the ornithopter are simple and inexpensive to fabricate and assemble. Manual and initial autonomous flight tests have been conducted and show that the ornithopter is capable of sustained flight with a full load of electronics and can be stabilized by simple controllers in common use in aircraft.

31. STYROFOAM CUTTING DEVICE

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GUIDE: Prof. R. RAMALAKSHMI

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COLLEGE STUDENTS: A. CHENNAKESAVA, M. CHALAPATHI, P. LAKSHMI PRASANNA KUMARA

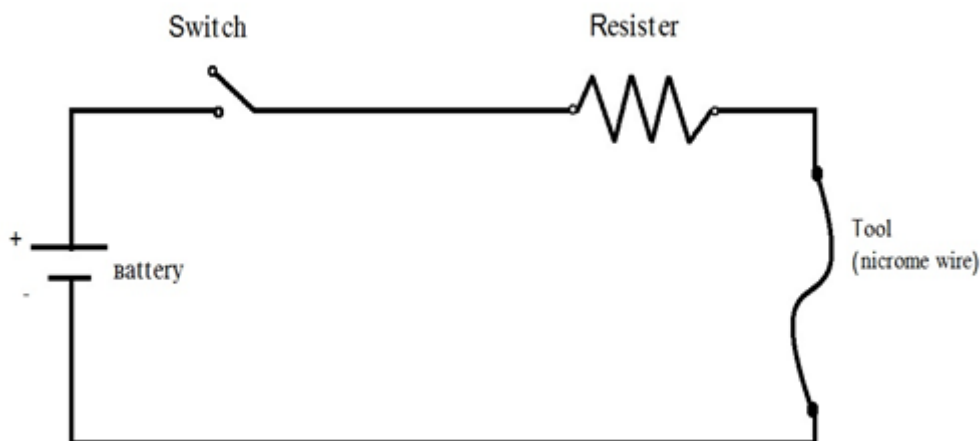
ABSTRACT

By using a circuit to cut the Styrofoam with less wastage and lower production cost and of different shapes

HYPOTHESIS

Producing heat through nichrome wire by connecting it to 12 volts 7.5 A battery (D.C) with this heat cutting action takes in the material.

METHOD



About components

Battery - required capacity of the battery is 12 v and 7.5 A

Nichrome wire (tool) - Nichrome is a combination of two materials that is nickel(Ni) and chromium(Cr).

Nichrome is a non –magnetic alloy of nickel and chromium used as resistance wire. The common alloy is 80% of nickel and 20% of chromium by mass. It is silver grey in color

It has high corrosion resistance and high melting point of 1400°C (2500°F). It is most widely used as electrical heating element.

Nichrome can be used as an alternative for platinum wire

The density of material is 8400kg/m^3

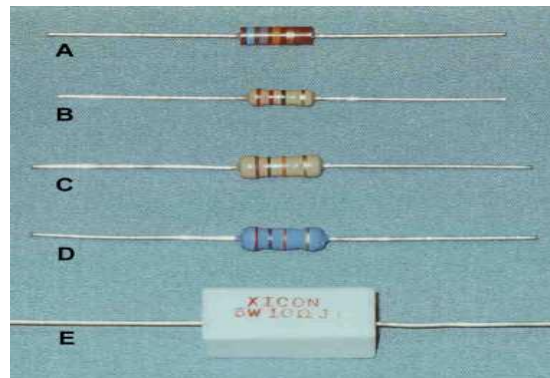
Melting point is 1400°C

The alloy is highly expansive because of high nickel content.

It is available in different diameters and shapes.

Resistor – Resistor is a passive two terminal electrical component that implies electrical resistance as a circuit element. The resistor acts to reduce lower voltage levels and reduces current flow in the circuit. The behaviour of ideal resistor is shown by ohms law.

$$V=IR$$



For an example: if a 300ohm resistor is attached across the terminals of 12V battery. Then current of $12/300=0.04\text{Amp}$ flows through the resistor. Some resistors also have some inductance and capacitance which will also affect the relation between voltage and current in circuit.

EXPERIMENT: With the help of heat produced the cutting action takes place i.e. when the material (Styrofoam) is passed over the heating element, we can cut the Styrofoam into required shape

SUMMARY:

- Battery used is 12v and 7.5amp
- Tool used is nichrome wire
- Temperature developed is around 30 to 45°
- Resistor used is 20ohms 10wattage

32. FABRICATION OF PROTO TYPE MINE DETECTING HOVERCRAFT WITH GSM SYSTEM

COLLEGE: CHADALAVADA RAMANA

GUIDE: N.HARINDRA

SCHOOL STUDENTS: E.SAI BHARGAV, G.VENU MADHAV

COLLEGE STUDENTS: N.ANANAD KUMAR, D.UPENDRA, T.JEEVAN KUMAR

ABSTARCT:

In normal practice, the conventional method used for the detection of mines is by sending a human being into the minefield that carries with him the mine detector. Keeping in view the significance of human life, technology can be used to sense the mines, thus minimizing the causality rate to zero percent. Due to the advancement in satellite tracking systems, an integrated system employing latest tracking techniques incorporated with an aerospace vehicle, can be used to detect the precise location of mine in the mine field. The aerospace vehicle is controlled by radio frequency transmitter. The idea of detecting mines by integrating the above mentioned cutting edge technologies is implemented on a hovercraft using Global Positioning System and RF communication is presented in this project. Hovercrafts, as we know are vehicles capable of flying few inches above the ground irrespective of nature of surface on which it is hovering. The surface can be land or sea or river. Placing a mine detector over it can help us to locate the mine by creating an RF link between the vehicle and base station. Integration of mine detector with GPS receiver thorough embedded system can help us to transmit the exact location of mines through this RF link. At the same time the aerospace vehicle is controlled by a wireless controller. This technique minimizes the presence of humans in the mine field. The present work addresses the finding the position of mine through the integration of aerospace vehicle with embedded systems, mine detector, RF link and tracking software used on PC. The system we proposed is prototype and can be easily upgraded on the need basis. Every module is logically dependent but physically independent so upgrades requirements can be easily fulfilled.

METHOD:

Hovercraft, with their low pressure cushion design, will operate over mines with impunity in deep or shallow water or even land, since they produce virtually no pressure, acoustic or magnetic signatures. The light weight hovercraft is one which has less operating cost and can be used effectively by military for land mine detection, which is our point of discussion. The daily lives of more than 22 million people are directly affected by abandoned landmines. In India Maoists are planting land mines in their agitation against the governmental bodies to show their anti-governmental vengeance which results in the killing of several policeman, civilians and wild animals. Which hoists the necessity of our work in which we have fabricated a hovercraft with a mine detecting provision which can sense and respond to mines by travelling over them without causing any possible danger. We have optimized a suitable

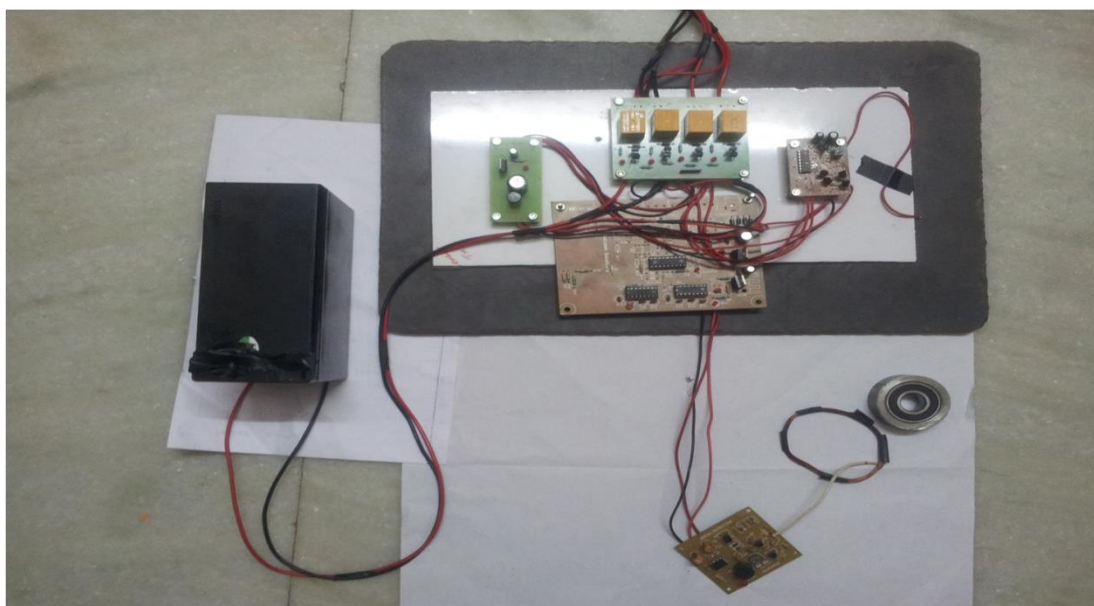
hovercraft design after thoroughly analysing several available designs. We have noticed that rather than going for the heavy budget demining techniques our method will be affordable, price worthy & safety.

SUMMARY:

PROBLEMS IN MINE DETECTION



Various detection technologies are currently used, each with limits or flaws. Dogs and other "sniffers" have high ongoing expenses, are subject to fatigue, and can be fooled by masked scents. Metal detectors are sensitive to metal mines and firing pins but cannot reliably find plastic mines. Infrared detectors effectively detect recently placed mines, but they are expensive and limited to certain temperature conditions. Thermal neutron activation detectors are accurate but are large for field use, slow, and expensive. In early attempts, ground-penetrating radar was sensitive to large mines, had good coverage rate at a distance and with signal processing, and could discriminate antitank mines from clutter such as rocks beneath the ground surface. This type of radar, however, remains expensive, cannot detect antipersonnel mines because its resolution is too low, and frequently records false alarms from clutter sources





TEAM MEMBERS



33. TRANSMISSION LINE INSPECTO ROBO

COLLEGE: KAMALA INSTITUTE OF TECHNOLOGY AND SCIENCES

GUIDE: YOGESH YASHWANTH PUNDALIK, KRISHNA PRASAD

SCHOOL STUDENTS: SRIVANI 9TH CLASS ,NEHA TABBASUM 9TH CLASS GOVERNMENT HIGH SCHOOL HUZRABAD

COLLEGE STUDENTS: M. AKSHAY KUMAR, J. GOWRY, G.HARSHITHA, N.JANSI

ABSTRACT:

Fault in a transmission line is common. It is very difficult to identify the faults in the remote control areas; our objective is to detect faults in the transmission line by a micro controller based remote control robot. From this robot we can get information about the location where the fault has occurred with the help of the sensors used in the mechanism of robot.

HYPOTHESIS:

INTRODUCTION

Transmission line - A transmission line is a material medium or structure that forms a path for directing the transmission of energy from one place to another, such as electromagnetic waves or acoustic waves, as well as electric power transmission line.



Fig:1 Schematic showing how a wave flows down a lossless transmission

Red color indicates high voltage, and blue indicates low voltage. Black dots represent electrons. The line is terminated at an impedance-matched load resistor (box on right), which fully absorbs the wave.

Problems in transmission lines due to

1. Temperature: Temperature rise will increase precipitation. In winter, an increase in 'maximum snow precipitation' is to be expected. This would lead to more severe snow and ice deposition on power line structures.
2. Temperature rise results in an increase in thunder storms and consequently lighting strikes on power lines.
3. Periods with unfrozen ground will increase. This has the positive effect that it facilitates working at underground lines during a longer period of the year. However, it will increase the

frequency of weather conditions combining high wind speeds, snow, and unfrozen ground. Such a combination bears a high risk of falling trees, possibly damaging power lines.

4. An increase of days with temperatures of 30°C and more. Distribution transformers are calculated for an ambient temperature of 20°C corresponding with a transformer hot spot of 98°C. Ambient temperatures of above 30°C leading to hot spots of more than 110°C would seriously affect the life expectancy of those transformers.

5. Sag is also an effect due to the increase in temperature, sag is the vertical distance between ground to the transmission line as the temperature increases the conductors gets expanded which changes the sag leading to loss in the power transmission

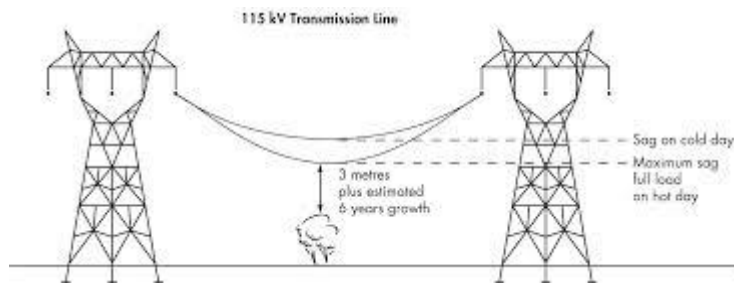


Fig: 2 sag due to change in temperature

Damage in conductors:

Due to the natural calamities like heavy wind, storm, lightning and due to long usage of the conductor and due to fault location of poles there may be damage in conductor due to these damages the conductor may break which leads to a great disaster to the human life

METHOD:

Inspecting methods and problems faced while inspecting

Aerial Inspections Visual patrols from a helicopter or fixed-wing airplane, especially manufactured for this type of operation with a lineman observer, are normally completed on all-high-voltage electric transmission lines several times a year

Manual inspection lines by the trucks, jeeps, manually and used to inspect the lines

Inspection and repairing of the transmission lines is the 7th most dangerous job in the world, performing the inspection with helicopters is costly, needs stabilized platform, and is boring for operators because of manually tracking of lines. Furthermore, with introduction of fiber-optic overhead ground wires (OPGW) as a high quality data transmission line, precise inspection is required but aerial inspection by helicopter does not provide such a degree of precision. In case of using Unmanned Aerial Vehicles (UAVs) the cost is high as well, and the project is very complex

EXPERIMENT:

Aims to design a robot

The ideal power network can be approached through minimizing maintenance cost and maximizing the service life and reliability of existing power networks Mobile monitoring

involves the development of a robotic platform carrying a sensor array. This continuously patrols the power cable network, locates incipient failures and estimates the aging status of electrical insulation. Monitoring of electric power systems in real time for reliability, aging status and presence of incipient faults requires distributed and centralized processing of large amounts of data from distributed sensor networks. To solve this task, cohesive multidisciplinary efforts are needed from such fields as sensing, signal processing, control, communications and robotics. In the robotic platform, non-destructive miniature sensors capable of determining the status of power cable systems are developed and integrated into a monitoring system including a video sensor for visual inspection, an infrared thermal sensor for detection of hot spots, an acoustic sensor for identifying partial discharge activities and a fringing electric field sensor for determining aging status of electrical insulation. Among failure phenomena, the most important one is the partial discharge activity

Specifications of hardware and software components in robot

a. Hardware components:

1. Arduino
2. Dc motor
3. LANC remote
4. Sensors
 - a. Infrared thermal sensor
 - b. IR distance sensor
 - c. GPS sensor
5. Bluetooth slave

b. Software programming:

Software programming for the robot is done by downloading a software which can support the arduino microcontroller the below steps gives a detail description to download the software

SUMMARY: A mobile robotic platform able to cross most of the obstacles found on transmission lines has been presented. Several features of the technology make it distinct with respect to the previous attempts to incorporate robotic into field of power utilities. Among them is the reasonable payload it can carry its versatility to adapt to unforeseen sequence of obstacle the intuitive tele operation type of control, its reliability and capacity to add sensors and tool in modular way.



34. STERLING ENGINE FOR PRODUCING ELECTRICITY

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GUIDE: N.HEMALATHA, K.B.V RAO

SCHOOL STUDENTS: PRAVEEN, CHARAN, 9TH CLASS, ZPHS MALKAJGIRI

COLLEGE STUDENTS: AMIT PANDEY, ARAVIND SUNDARAM

ABSTRACT:

Our project began with researching the history and design of existing Stirling engines. We built a small-scale engine to examine the principles of Stirling engine construction and operation. This engine uses Acetone and Ethanol as the heat source. One of our goals was to keep the engine easily modifiable, while still maintaining good dimensional tolerances and component compatibility. We researched several renewable solutions for providing the heat to our engine.

The aim of this project was to build and test a Stirling engine capable of generating between 200-500 watts of electricity. Several designs were studied before designing this Stirling engine. The heater, cooler, dynamo, and the fly wheel were designed, constructed and analyzed. Several tests were performed on the engine in order to improve its running efficiency. Today, the engine is receiving renewed interest as a means of generating electricity. Emphasis on sustainable energy has brought attention to the engine's ability to convert a wide variety of heat sources such as focused sunlight and waste heat to mechanical work which in turn produces the electricity. A Stirling engine is a reversible system, given mechanical energy; it can function as a heat pump. Since Stirling engine relies only on the input of mechanical energy to supply a temperature gradient, it is a highly competitive method of cooling in a cryogenic market. Stirling engine have also been proposed for the use in space applications. Their simple construction and high degree of versatility make them ideal for long-term use on deep space probes. Additionally they do not produce any exhaust or waste which would disrupt a satellite's flight.

Stirling engines exhibit the same processes as any heat engine: heating, expansion, cooling, compression. Stirling engines operate on a closed regenerative thermodynamic cycle. Since the Stirling engine works on a temperature differential, any heat source can be used to power the engine. The size of the Stirling engine can be adjusted to optimize the energy recovered from the heat source. A Stirling engine requires an electric generator to convert its mechanical output into electricity. Generators ranging from low to high voltage outputs, alternating or direct current are available.

EXPERIMENT:

We made a working model of a sterling engine, which works completely on the basis of temperature difference. The steps involve:

1. To provide a heat input: Heat is provided into the engine by means of Ethyl alcohol.
2. To check the temperature: Temperature of the apparatus is checked.
3. To give mechanical input: Once there is a considerable temperature increase, a mechanical input is given to the flywheel.
4. To take required output: Once the engine is set to rotation, the output can be obtained.

This is the working of our sterling engine.

SUMMARY:

As a sterling engine working completely on the temperature difference, it is pollution free. Also, a sterling engine is phase of the future generation as the fossil fuels are on the verge of extinction.



HIGHLIGHTS OF ANVESHANA 2014

Anveshana 2014 (21st & 22nd Jan 2014) – held in Hyderabad:

- 100 colleges registered for the competition
- 50 ideas were generated
- 25 were shortlisted and 21 actually participated in the final competition at Hyderabad
- 100 engineering students mentored 100 school children
- 61 engineering students with 44 school students showcased their projects in the competition
- Over 5000 students and teachers from 15 schools visited Anveshana'14 in two days.
- 100 engineering students and professors from various engineering colleges visited the fair



Winners on the stage with dignitaries at Hyderabad (we can see Mr. Marty Michael, Senior Director, Technical support & Training, Synopsis, Dr. G. Vani Mohan, IAS, Commissioner and Director of School Education AP, Mr. Uno V Nellore, Synopsis with the winners)