AGASTYA INTERNATIONAL FOUNDATION
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Anveshana
BUILDING BRIDGES TO DISCOVER

Student Projects Technical Record

Released on the occasion of

Science & Engineering Fair of Selected Projects

At

Virtual platform

On

26th & 27th March 2021

Organized by

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FOREWORD

Science and Technology are the engines that drive the development and progress of a country. Science is culture of a society and mostly curiosity driven. Technology, especially science driven technology, is the one which produces wealth for a country. In the present interconnected world and globalized economy, country which can educate its younger population to invent and innovate has a greater chance of success in capturing the market by providing services and products that others are willing to pay to acquire the same.

Dr. Michael Mumford, a distinguished professor of Psychology at the University of Oklahoma, says “Over the course of last couple of decades we seem to have reached a general agreement that creativity involves the production of novel, useful products”. The question, therefore, is how to create creativity. Clearly education is an essential ingredient. Arousing curiosity and building self- confidence to think unconventionally are other necessary attributes.

Over the last couple decades Agastya International Foundation has experimented successfully in science education, kindling curiosity, and in building self-confidence among primary and secondary school children. Among the many innovative ideas implemented by Agastya, Anveshana is a novel one in which the school children are coupled with science and engineering undergraduates to design and demonstrate simple S&T projects. This innovative experiment has led to bidirectional learning of the children and the undergraduates. The themes selected – ecology, environment, energy, water resources, robotics etc. – besides being topical have generated many creative ideas some of which are even implement table as products.

Over the last few years the initial success of Anveshana held in Bangalore has led to its implementation in a few other cities across India. I feel that the spread of this idea is going to challenge the spread of wild forest fire.

I wish Anveshana 2015-16 all the success. I would soon like to see it all the cities in India.

Dr. V.K. Aatre
Scientist and Former Head of DRDO

ABOUT AGASTYA INTERNATIONAL FOUNDATION

Email: agastyaadmin@gmail.com | phone: +91-80-2354 5054 / 4112 4132

Introduction

Founded in April 1999, Agastya is a charitable education trust that runs the world's largest mobile hands-on science education program for economically disadvantaged children and teachers. By making practical, hands-on science education accessible to rural government schools, Agastya aims to transform and stimulate the thinking of underprivileged children and teachers.

Agastya Vision:

Creatively skilled rural India..
Entrepreneurially-enabled..
Improving the environment to..
Sustain it for future Generations....

Mission of Agastya

Infuse and propagate a creative tempter in disadvantaged rural children and teachers through:

- **Experiential, hands-on science education**
- **Teacher training and education**
- **Scalable, sustainable and environment-friendly methods**
- **Art and Ecology**

Agastya's mission to unlock the creative potential of poor children and teachers across India is being achieved through:

- 100 + Mobile Labs which take hand-on science education and digital literacy to the village doorstep.
- 45 Science Centers catering as science resource hubs for surrounding schools and communities.
- 105 + Lab in a Box sets which nurtures a high impact and participatory learning experience for students and teachers.
- 245 Operation Vasantha Centres, community run program to provide remedial classes for students and drop-outs.
- 172- Acre Creativity Lab campus in Andhra Pradesh (2 hours from Bangalore) which houses science, art, astronomy

Agastya has reached over 5 million children and 200,000 teachers in 14 states, and is supported by scientists and educators In the country.

The Prime Minister's National Knowledge Commission (has recommended the Agastya model for nationwide dissemination, http://knowledgecommission.gov.in/downloads/recommendations/PMLetterM&S.pdf) and the Clinton Global Initiative has commended Agastya for its long term "commitment to action."

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How Agastya International Foundation has positively affected the lives of disadvantaged children:

Rote-based, didactic and uninspiring education in India has deprived over 250 million disadvantaged children of the tools to overcome poverty. Instead, it has produced education apathy, a high dropout rate and youth that lack skills and confidence, creative-thinking and problem-solving abilities. Most schools do not have labs. Opportunities for participative, hands-on learning that sparks curiosity, and stimulates and empowers children and teachers are almost non-existent. Teacher training is divorced from the realities of the school classroom. Seeing little value in education, rural parents prefer to send their children to work in farms, thus perpetuating a cycle of poverty.

Operating one of the largest hands-on science education programs in the world, Agastya offers disadvantaged children access to dynamic hands-on education that makes learning fun, awakens curiosity, encourages questioning, enhances understanding, and fosters creative-thinking, problem-solving and communication skills.

Agastya's vision of 'a creative India' - 'tinkerers, creators, and solution-seekers ...humane, anchored and connected' – is being achieved through its mission to spark the creative temper among millions of disadvantaged children. Using experiential and hands-on, child-centric learning, teacher education and scalable methods, Agastya aims to bring about a shift in five vital behaviors - 'Yes to Why,' 'Looking to Observing,' 'Passiveness to Exploring,' 'Text-book to Hands-on,' and 'Fear to Confidence'

Agastya Creativity Lab at Gudivanka Village, Kuppam, Andhra Pradesh, India

Agastya's unique 172 acre 'Creativity Lab' is at Gudivanka Village, Kuppam, Andhra Pradesh, India. The Campus or "factory of ideas", boasts several labs dedicated to hands-on learning activities in science, maths, ecology, media and art. Over the years, the Campus has played host to esteemed educators, scholars, researchers, academicians and dignitaries from various domains. In addition to subject specific labs, the Campus houses a Discovery Center which houses life size interactive models, Center for Creative Teaching (CCT) which prepares Agastya instructors and rural Govt. Teachers, an Art Lab, a Media Lab, an open air Ecolab and a Robotics Lab. The latest developments include 'Guru-Gruha' Astronomy center, VisionWorks' model-making workshop, Library and IT Centre, Performing Arts Centre and an Innovation Hub.

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Third Party Impact Studies:

MHRD study on 2048 children from 256 schools

- 70% + children and teachers welcome Agastya &demand increase in interventions
- Enriches and fills gap in the curriculum
- Increases interest in Science; Gives insight into
- Scientific methods
- Promotes concept retention and development
- Increase in Creativity, Problem-solving and
- Leadership skills among Young Instructor Leaders (YIL's)

Best Practices Foundation study of 1348 children in Karnataka

- Provides professional development for teachers
- 100% increase in Awareness of alternative learning methods
- 100% increase in Motivation to study science
- 50% to 100% leap in Curiosity

Achievements and Recognitions

- Received humanitarian prize money from former President of India, Dr. A.P.J. Abdul Kalam.
- Agastya partners with Dr. Kalam in Darbhanga, Bihar through the Mobile Lab program
- Featured on "Amazing Indians", Times Now News Channel
- Agastya wins Google Impact Awards in India for the revolutionary TechLaBike project.
- Agastya's 'commitment to action' was recognized by the Clinton Global Initiative in 2008
- The Prime Minister's National Knowledge Commission recommended the Agastya model for India-wide scale-up
- Agastya nominated to list of 100 Global Innovators in April, 2013 by Rockefeller Foundation

Looking Forward…

Increase in college admissions, participation in science projects and competitions; demand for school labs and hands-on learning, and national interest in Agastya programs indicate that Agastya is positively impacting the lives of disadvantaged children.

"The lesson we derive out of the Agastya experience is that innovative and student friendly solutions are needed to enable scientific learning in the youth, especially those in rural and remote regions of the nations of the world."

– Former President of India, Dr. Abdul Kalam

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By clicking on the following links you can

Watch the Agastya Mobile Lab in action: http://www.youtube.com/watch?v=v7B0tf61jFc

Like us on FaceBook – https://www.facebook.com/Agastya.Foundation

Follow us on Twitter – www.twitter.com/AgastyaSparks

ABOUT SYNOPSYS

Corporate Background

Synopsys, Inc. (NASDAQ:SNPS) provides products and services that accelerate innovation in the global electronics market. As a leader in electronic design automation (EDA) and semiconductor intellectual property (IP), Synopsys' comprehensive integrated portfolio of system-level, IP, implementation, verification, manufacturing, optical and field-programmable gate array (FPGA) solutions help address the key challenges designers face such as power and yield management, system-to-silicon verification and time-to-results. These technology leading solutions help give Synopsys customers a competitive edge in quickly bringing the best products to market while reducing costs and schedule risk. For more than 25 years, Synopsys has been at the heart of accelerating electronics innovation with engineers around the world having used Synopsys technology to successfully design and create billions of chips and systems. The company is headquartered in Mountain View, California, and has approximately 90 offices located throughout North America, Europe, Japan, Asia and India.

- See more at: http://www.synopsys.com/Company/AboutSynopsys/Pages/About.aspx#sthash.GSEbLS7b.dp uf

ABOUT ANVESHANA

Anveshana Program is structured around the concept of **mentoring,** "catch them young" and
"Facilitate the inquisitive minds".

"Mentoring is a process for the informal transmission of knowledge, social capital, and the psychosocial support perceived by the recipient as relevant to work, career, or professional development; mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé)" (source: http://en.wikipedia.org/wiki/Mentorship).

The program looks at Involving school students to provide an opportunity to work with engineering students to find solutions for the encountered social problems.

The program envisaged to bring together students from various underprivileged schools and Engineering colleges in respective locations in and around Delhi NCR – in a collaborative platform (Anveshana).

Engineering colleges will participate as teams with 2 members. The teams will select 2 students from nearby underprivileged schools (Govt. and Govt. aided schools) to **mentor** them to design and build models or projects around an identified social problem. In the process school children would directly get the opportunity to work together with more qualified under-graduates, and a chance to 'learn' the basic principles (along with hands-on skills on diverse products and interesting processes). The interaction with Juries and dignitaries would be a life-time experience for them to cherish. The school students thus will be exposed to entire planning, designing and building process of the models and in turn will get educated in the scientific and engineering concepts behind the models in Anveshana-2016**. (www.anveshana.org)**

Process of Anveshana (Engineering Fair & Competition):

- Initial Screening of Engineering College Teams: Concept synopsis based on social problems and related Engineering solutions are invited from engineering college teams for prescreening by the jury.
- Screening, selection of Synopsis and identifying mentees: Once selected the teams are asked to contact local schools with underprivileged status and to form school student teams to plan, design and make the models, while collaborating and mentoring the high school students.
- Model Creation and Quality Check by Agastya team: Students will create knowledge networks between them, their peers and with external resource persons to create conceptual and methodological framework to create the models. Here, Agastya teams along with assigned senior resource persons (senior educators, engineers etc.) will visit

the colleges to assist the teams conceptually and in the making of the models while providing inputs including scientific and technological inputs. One of the main reasons for these visits is to assure the quality of the collaboration and teaching-mentoring-learning outcomes.

- Conceptual- Technological advice from Agastya: Agastya will also help the teams to establish links between prominent institutions like Indian Institute of Science, Institution of Engineers, Indian Institute Technology etc. –in case they need any technological or conceptual inputs.
- Anveshana Fair begins: The models thus made will be exhibited in Anveshana Engineering fair where the teams would be presenting the same in front of an expert Jury for Judgment. During the fair, students display their research projects, working models and present their findings orally and through written journals to the Jury (mostly a team of scientists and educators). The judging process involves series of interactions on the concepts, methodology and objectives of the projects done by the students.
- Delegates attending the fair: After the judging process students from various schools and delegates representing various institutions are also expected to attend the fair. Delegates attending the event will include scientists and educators from large number of institutions across Hyderabad.
- Valedictory: Prizes will be awarded at a valedictory function –towards the end of the fair.

ANVESHANA MILESTONES

PROJECT SCREENING COMMITTEE

MG Subramanian

MG Subramanian is an Advisor to Agastya International Foundation. He enjoys going around project sites-namely colleges where Anveshana projects are in progress interacting with young mentors and younger mentees pointing out the immense opportunities to teach and learn, to wonder and innovate.

He is an engineer from IIT Madras and a PGDM from IIM Calcutta with a long experience in manufacturing, product, business development and Human resources development. He acknowledges the value of a mentorship and attributes all his successes in life to his mentors .He says Anveshana success is inevitable!

Dr. H. G. Nagendra

Dr. H. G. Nagendra is Professor and Head at the Department of Biotechnology, Sir MVIT, Bangalore. He holds a doctorate degree in Biophysics from IISc, Bangalore, and was a recipient of the BOYSCAST Post-doctoral Fellowship (DST) from Cambridge University, UK. He has 16 years of teaching and 20 years of research experience, and has authored 26 international publications in various journals. His research interests include protein bioinformatics and structural biology of neurodegenerative peptides. He has made more than 54 presentations at various conferences / seminars as an invited speaker, and has conducted more than 32 conferences / seminars / workshops.

Dr. M Govindappa

Name:	Dr M Govindappa
Qualification	MSc, MPhil, PhD, PDF (USA)
Research Publications	06 National 52 International
PhD guidance	03 students awarded (6 students pursuing)
Guided for	BE, M.Tech and MSc students for their academic project work
Membership	For various biotechnology bodies
Reviewers	For various journals
Editor for	International Journal of Multidisciplinary Research

PROJECTS EXHIBITED DURING EVENT			
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1. AGRI INCUBATORS

COLLEGE	B.V. RAJU INSTITUTE OF TECHNOLOGY
GUIDE	PANDURANG MIRAJKAR
COLLEGE STUDENTS	M MANOJ, T SAI SUNANDA, Y. VARSHA, TEJA VENKATA SAI, DHRISHIKA RAI, S. KARTHIK
SCHOOL STUDENTS	S SPOORTHI, S POOJITHA, TELANGANA MODEL SCHOOL, JAKKAPALLI, NARSAPUR

ABSTRACT:
Agriculture is the broadest economic sector and plays an important role in the overall economic development of a nation. In this project we proposed a novel methodology for smart farming by linking a smart sensing system and smart irrigation system. Our system focuses on the measurement of physical parameters such as motor and water control to the fields and also helps to control the bio-shed to control according to the temperature. Different types of plants can be grown by implementing operational sheds so that the farmers may not have to wait for a particular season to cultivate particular plant. This project mainly comprises of some electrical components and efficient mechanical constructions to make it happen.

HYPOTHESIS:
This project aims in creating a suitable environment for the growth of plant which differs by plant to plant. The aspects for creating such environment are as following,

1. Introducing an agriculture bio-shed at which desired atmospheric conditions are obtained.
2. Sensors capable of detecting the temperature, relays with relay drives, alarm signalling devices.
3. A sprinkler system consists of pipeline located at the ceiling of the shed.
4. The humidity of the plant and temperature of the plant are also precisely controlled.

METHOD:
The prototype consists of three printed boards, first board says about the temperature sensors, relays and power supply where second board shows proximity sensor and HT12 encoder and the third board shows the seven-segment display and the decoder. The bio-shed will be operated according to the atmospheric conditions, whenever the temperature is normal the shed will be opening to give the plant normal condition. When the temperature goes high the heat sensor will detect and the shed will be activated.

Heat sensor will be detected and it will be interfaced to the sequential switching ICLM3914 for future control system. Water pump will be operated according to the temperature, LM3014 is used in this circuit to control the whole system.

BLOCK DIAGRAM:

The block diagram of the hardware implementation of the entire system is shown below.

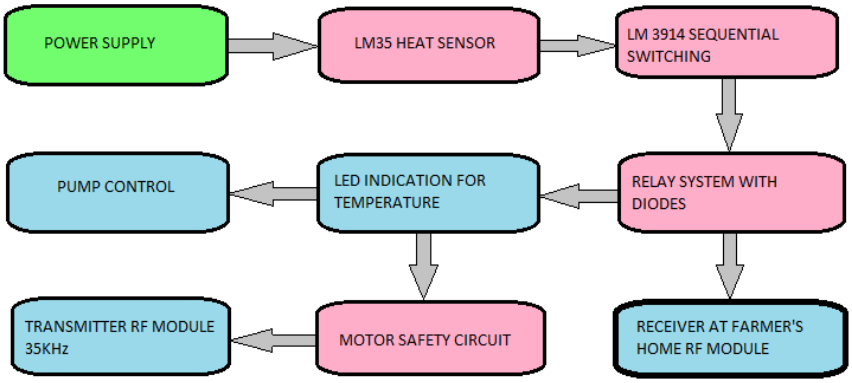


Fig: Hardware implementation

COMPONENTS:

The list of main components used for the prototype as shown below.

S.No	Apparatus used	Quantity
1	Temperature sensor	1
2	LM3914, H-bridge (L293D)	1
3	12v step-down transformer	1
4	Relays, PCB	Required
5	9v motor pump	1
6	Buzzer, Proximity sensor, Motor	Set
7	LED's, Resistors, Diodes, Transistor	Set

Crops for Profit:

1. Kiwi
2. Nuts and Almonds
3. Raspberries
4. Avocado
5. Strawberries
6. Grapes etc.,

Experiment:

1. The model has a high-end heat sensor to detect the temperature difference in the atmosphere to allow the blowers, shed, water sprinklers to get into action.
2. It has proximity sensor at the field boundaries to give signal to the owner and a siren to the

passing animals which are a bit close.

3. It has control system, pump, motors and other accessories over the field.
4. The model has a output module which can be observed by the owner of the field or the person who are near the control system module.
5. The model uses RF module (Radio Frequency) for data transmission to the owner of what happening over the field.
6. So, through this there is a chance of growing large varieties of plants at any season. Also, practically there is will be better use of this model with a bunch of attachments.

Circuit:

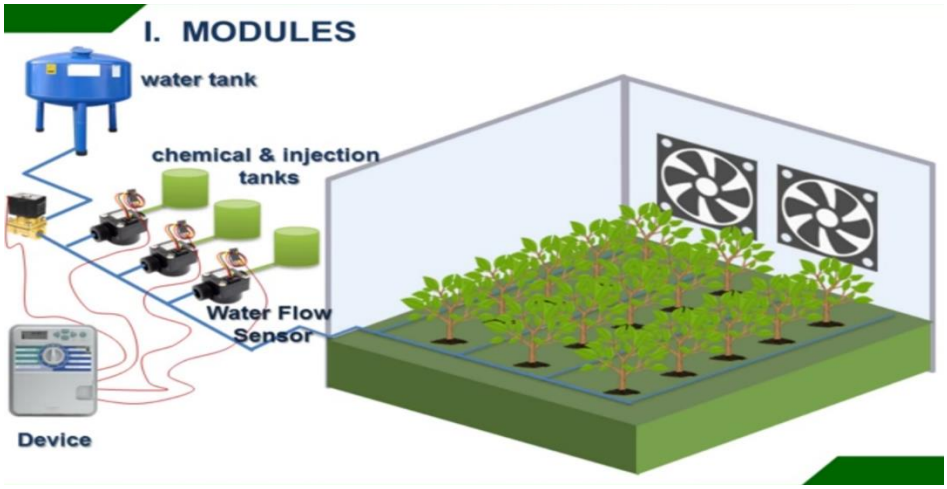


Fig: Total system maintenance

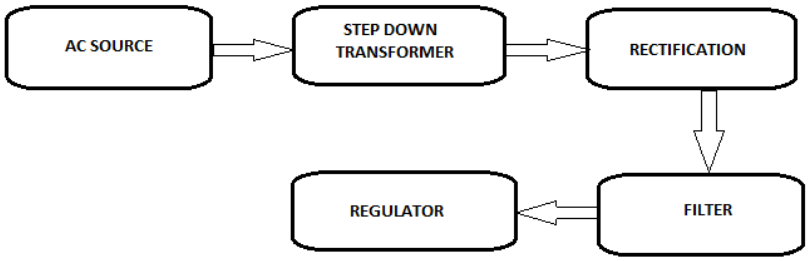


Fig: Power supply flow

FUTURE WORK AND SUMMARY:

For future developments it can be enhanced by developing this system for large acres of land. Also, the system can be integrated to check the quality of the soil and the growth of crop in each soil. The sensors and integrated circuits are successfully interfaced and wireless communication is achieved between various nodes. All observations and experimental tests prove that this project is a complete

solution to field activities and irrigation problems. Implementation of such a system in the field can definitely help to improve the yield of the crops and overall production.

ESTIMATED COST: Selection of material is done based on parameters such as cost, durable, low weight.

The cost analysis is done on every single material used in this prototype. So, the cost estimation is Rs 2500/- only.

2. CORDIAL GREETER

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDARY
COLLEGE STUDENTS	CHIMATA CHIRANJEEVI MANIKANTA, S.JAYA KUMAR REDDY
SCHOOL STUDENTS	SATISH, ZPHS GADIPALLY T.SUNNY, ZPHS BOYS SCHOOL, SURYAPET

ABSTRACT:
In the office or elsewhere, greetings are a perfect way to inspire people around you, and a simple 'hello' or 'good morning' routine will help create a happier atmosphere and community in the workplace. But most of the occasions when people enter an office or hotel or anywhere else, greetings or wishes are not declared or designated.
We are going ahead in negotiating this issue by implementing an electronic system called Cordial Greeter to wish the individuals it senses through Ultrasonic sensor.

HYPOTHESIS:
The primary objective of this project is to include the following criteria.

- To greet or deliver wishes to everyone when they entered anywhere.
- Can be a centre of attraction to the place where it has been positioned.

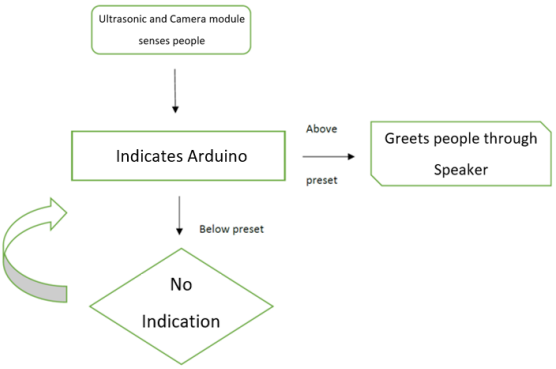
The major intention of this project is to convey wishes to all the people who are expecting it and to maintain positivity in appropriate venues.

METHOD:
The device Cordial greeter works with the help of Microcontroller and sensors like Ultrasonic, Camera Module and a speaker.

Where the Microcontroller acts as the brain and when the Ultrasonic sensor signals that the values are above the threshold level (means someone is there) then according to the time, location and circumstance, it will wish the person or group of individuals through speaker with acceptable greetings. With the camera module, we can extend the system and by detecting whether interferences are because of a person or not, it will be more accurate in greeting people.

Ultrasonic sensor:
Ultrasonic sensors emit short, high-frequency sound pulses at regular intervals. If they strike an object, then they are reflected back as echo signals to the sensor, which itself computes the distance to the target based on the time-span between emitting the signal and receiving the echo.
Ultrasonic sensors transmit the ultrasonic sound (of 40 kHz frequencies.) and it get bounced back when it hits any object and the receiver those sound waves. Then it calculates the time taken by the received the signal.

BLOCK DIAGRAM:



Arduino Uno:

Arduino UNO is a microcontroller board based on the ATmega328P (datasheet). It has 14 digital input/output pins (of which 6 can be used as PWM outputs), 6 analog inputs, a 16 MHz ceramic resonator (CSTCE16M0V53-R0), a USB connection, a power jack, an ICSP header and a reset button. It contains everything needed to support the microcontroller; simply connect it to a computer with a USB cable or power it with an AC-to-DC adapter or battery to get started.

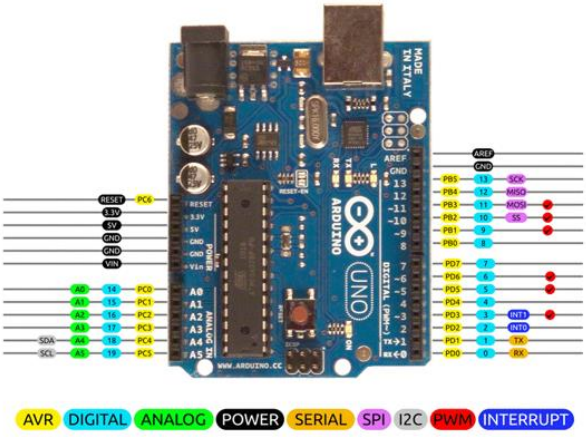
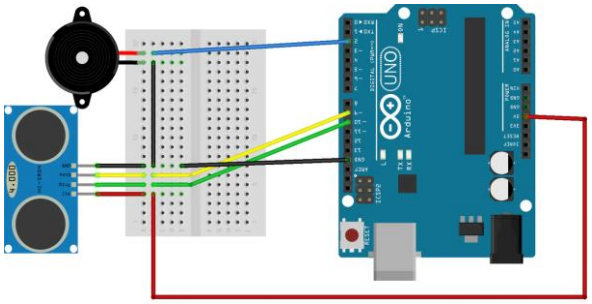


Fig. 4. Pin Diagram of Arduino UNO

Experiment:

Circuit:



1. An ultrasonic wave is transmitted by the ultrasonic transmitter, and this pulse collides

with the target and reflects the signal. The reflected signal will be received by the ultrasonic receiver and sent to the microcontroller.

2. The microcontroller which functions as brain will receive the signals and read the necessary greetings via the speaker module in its database.
3. Multiple areas of engineering use ultrasonic sensors. “No-contact” distance measuring is very useful in automation, robotics, and instrumentation.
4. The camera module can be implemented here and it can detect the disruptions are because of humans and wish more accurately.
5. If a set of faces are fixed in a location, they can be stored in the Arduino database and the camera will detect and attempt to match the face within the database whenever a person enters that location.
6. If the face has matched it’ll wish that person by his name, if not it’ll read default wish.

SUMMARY:

The Cordial greeter device is a prototype which is an artificial greeter. Many sites have been introducing their artificial chat bots, and we're still finding our queries responses. In the same way, according to the circumstances and occasions, we can offer a lot of greetings. This is a low-cost and sustainable project that can be introduced, adopted and used by each venue. To make it an attraction, it can be inserted into any wall or fixed to any cut-out, etc. It is only a version of a prototype, but can be upgraded and implemented.

Estimated cost:

S.No	Component Name	Cost
1	Arduino Uno	250
2	Ultrasonic Sensor	50
3	Camera Module	150
4	Speaker Module	150
		Total = 600/-

3. DOOR LOCK SYSTEM

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDARY
COLLEGE STUDENTS	NARRA PUGITHA, DANGETI JAHNAVI
SCHOOL STUDENTS	B.YAMUNA, P.SINDHU, SVLN GHS GOPALAPATANAM

ABSTRACT:

No matter how cautious we are, Accidents happen regularly when a vehicle door is opened all of a sudden and is crashed by an approaching vehicle.

The vision at night times would be unclear to detect the vehicle, no matter how careful we are, someone may open the car door in front of us at the last minute, leaving us no option but to hit the car door, and in that situation, the blame would be simply on the person who opened the door.

It's necessary to design a device that can rescue us from this kind of situation.

HYPOTHESIS:

The main vision (or) Motto of the project is to provide following parameters

- To prevent from occurring road accidents.
- To add an extra feature to the vehicle which will increase marketing scope.
- It will also prevent children from opening the doors as the doors are locked automatically.
- This device also saves the lives of people who are at risk.

METHOD:

The present invention discloses the method and apparatus to detect the approaching vehicle and prevent the driver from opening the door by sending alert notifications. The laser sensor which is used to read this distance of vehicle is interfaced with a buzzer and operated by microcontroller and has door lock actuator to lock the doors automatically to rescue from accidents. The Lasor continuously reads the distance between other vehicles and if distance less than pre-set/threshold value an alarm is generated and buzzer alerts and holds the door actuator from opening. The system is fed with rechargeable battery to supply the power to the unit.

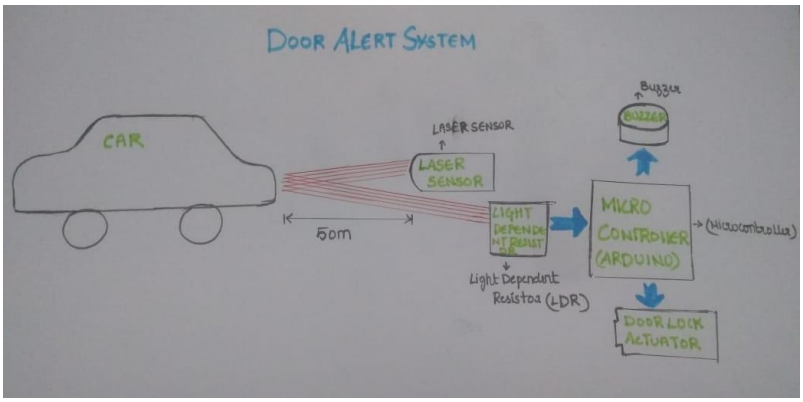
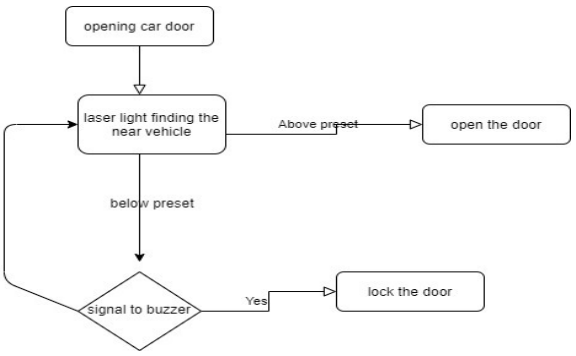
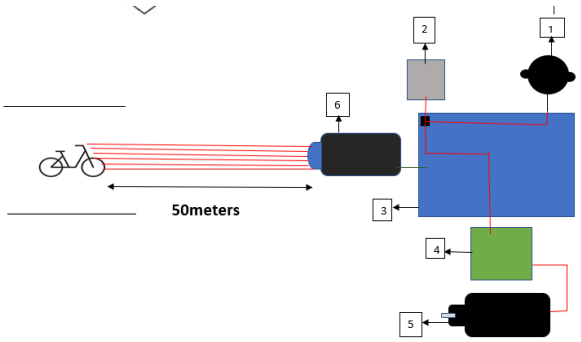


Fig 1: Basic Working of Door Lock Alert System

BLOCK DIAGRAM:



Experiment Circuit:

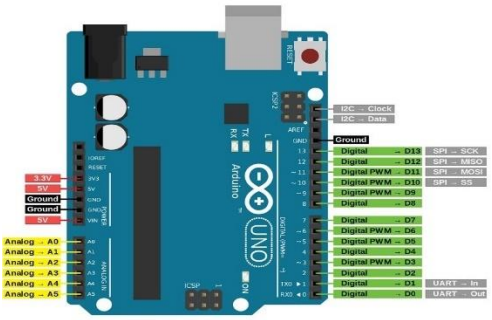


Design Details:

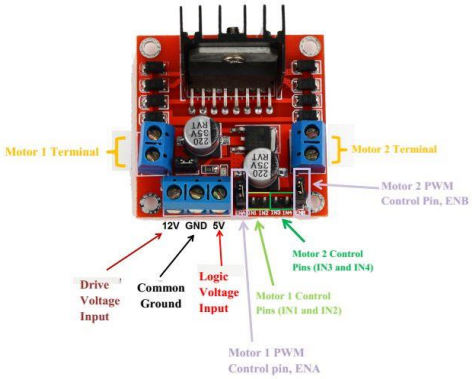
1	Buzzer
2	Power
3	Microcontroller
4	Motor Driver
5	Door Lock Actuator
6	Laser sensor

The major components used in the above circuit are as follows:

1. Arduino Uno



2. Motor Driver



3. Recognition Laser

4. Door Lock Actuator

1. Arduino acts as a brain for the whole process it is been programed in such a way that when a vehicle is closer to the Car it alerts the person with the help of busser and locks the door automatically.

2. Motor Driver drives the door lock actuator to close the door automatically when a vehicle approach.

3. Recognition laser is used to detect the vehicle which is in the range of 50meters and sends the signal to the microcontroller to close the door.

4. Door lock actuator locks the door when received the signals from microcontroller.

SUMMARY:

Accidents are a common facet of the human experience and result in injury or permanent disability, or loss of life, to large numbers of people worldwide every year. The present invention deals in overcoming the problem by developing a device to detect the vehicle in range of 50 meters and indicating its approach. This invention is to alert the driver and prevent him from opening the car door when a vehicle is approaching the car. In this the total cost factor is very low so that any common man can afford it and this will also add an extra safety feature to the vehicle. As it is still a prototype version which can be upgraded in later on fully assembled model.

Estimated Cost:

1500/- only

4. HEALTHY AGRICULTURAL FARMING PRACTICES

COLLEGE	SIDDHARTHA INSTITUTE OF TECHNOLOGY AND SCIENCE
GUIDE	VENKAT
COLLEGE STUDENTS	KANDLAPALLY KAVYA SREE, CHAVAN PUSHPA AND ANKITH VARMA
SCHOOL STUDENTS	CHAVAN SRUTHI, GHS VENGAL RAO NAGAR RASTHAPURAM USHA RANI, TELANGANA MODEL SCHOOL, GUNDALA

ABSTRACT:
Most of the farmers are facing some issues like problems of overusing fertilizers, biocides, soil erosion and manure availability is less. To avoid those problems, we are improving nutrient management practices by applying nutrients in right amount, at right time of year with right method. The main agenda of our project is to help farmers with modern techniques.

HYPOTHESIS:
The main vision (or) Motto of the project is to provide following parameters

- To provide manure on field itself
- To provide soil health enhancement
- Cost-effective implementation of organic farming
- To avoid fertilizers as much as possible

The main focus of this project is to contribute to the growth of nutritious and healthy food by following healthy practice methods.

SUMMARY:
We are going to facilitate the farmers for implementing new farming techniques and building confidence in farmers moreover, preparing technical standards and guidelines to support technical assistance in an ongoing, manner, providing training program for cost-effective implementation of the strategy for organic farming.

Overall, it includes existing and simple new techniques for the benefit of the farmer and the society at large scale. Thus, favoring public health.

Estimated cost:
Rs.500/- only

5. ON GO SOIL SENSING AND MAPPING

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDHURY
COLLEGE STUDENTS	DACHEPALLI SRI MAHIDHAR, N D B RUDRA PRASADA RAO
SCHOOL STUDENTS	SHIRISHA, ASHWINI, UDBHAV RBL SCHOOL

ABSTRACT:
Today's agricultures crisis in India made food quality low which reduced the value of the product. This made the farmers income low and this led to the suicides of the farmers. This dis-heartened us and then we had put a step ahead to solve this problem.
The whole idea revolves around upgradation of drastically degrading soil fertility in India due to immature use of fertilizers and Choosing right crop for a certain land that gives maximum productivity. The project also concentrates on making data analysis easy by making it geo-referenced.

HYPOTHESIS:
The main vision (or) Motto of the project is to provide following parameters

- To provide a Low-Cost Soil Sensing Device with required Precision.
- To provide a model without any Human interaction with the device.

The major intention of this project is to provide a how much number of fertilizers/pesticides and suitable crops used for a particular soil.

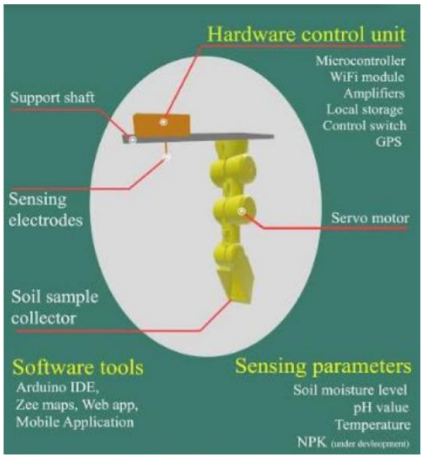
METHOD:
On Go Soil sensing and Mapping device works with the help with a Microcontroller and few sensors as input are Ph and Moisture sensor, thermistor, Wi-Fi module and GPS module.
Where Microcontroller acts a brain of the device 2 degree of freedom robotic arm with bowl as an end effector collects the soil. The collected soil moves to the place where the moisture and Ph sensors are located and waits there for some time then soil can be sensed, and data can be extracted with the help of microcontroller and Then this whole data based on network ability either gets stored into the SD card or Google sheets. Then with the help of GPS Module we will get an exact location from where data precured of along with some parameters like Moisture, Ph and temperature. All the data collected is stored and then machine learning algorithms are implemented to predict productive crops.

ADVANTAGES:

- Low-Cost Soil Sensing Device with required Precision
- No data is lost without mapping.
- It is also use full for the people who are studying about the soil.

After analyzing the data people will get to know which crop is suitable for particular land.

DESIGN:



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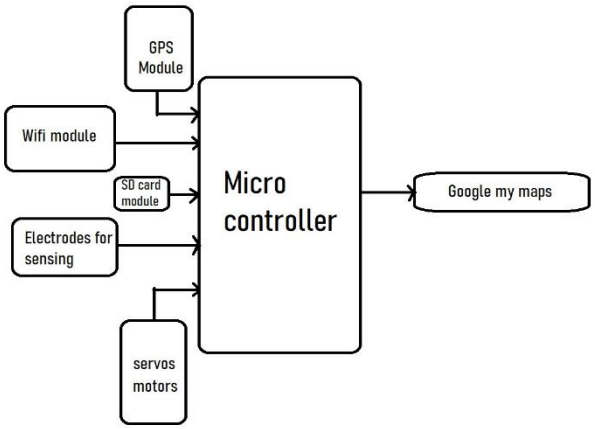


SUMMARY:

On Go Soil Sensing and Mapping is a device is capable to sample the soil from a moving vehicle in the field, especially to tractor's plough attached to moving tractor without any human interaction with the help of servo motors where we made a freedom robotic arm so that the different layers of soils get mixed and the correct measure is obtained. The device is capable of sensing temperature, moisture, pH of the soil. This helps Farmers to get the data at any time so they can use the limited number of Pesticides and Suitable crop to the particular Soil with this Farmers will get best price for their Crop. This device is economical and affordable. Since it is a prototype which can be upgraded later to a fully upgraded or assembled Model/Device.

EXPECTED PRICE:

Rs. 3500/- Only

6. ORGANIC COLD STORAGE

COLLEGE	B.V. RAJU INSTITUTE OF TECHNOLOGY
GUIDE	PREM KUMAR M
COLLEGE STUDENTS	SIDOLLA ANIL KUMAR, PAIDI DIVYA REDDY, R.RAM, P DEEKSHA, S DWIJA SHARMA
SCHOOL STUDENTS	S SPOORTHI, S POOJITHA, TELANGANA MODEL SCHOOL, JAKKAPALLI, NARSAPUR

ABSTRACT:
India is one of the largest producers of agricultural products having diverse agro-climate zones across the country with vast range of agricultural products. Due to lack of cold storages farmers are unable to hold the produced and sell them for better price. In old days farmers used to have a traditional way of storage of limited capacity and less efficient. We came with an idea of recreation of system with in-built embedded systems and better efficient. This helps small scale farmers to store their produced at their own place.
The main focus of our project is SUSTAINABLE AGRICULTURE-POST HARVESTING in that we go with storage that is 'COLD STORAGE SYSTEM'.

HYPOTHESIS:

The main vision of the project is to provide following parameters:

- Promote organic ways of storing products.
- cheaper and enables farmers to sell the products at an affordable price.
- Design for future advancement.
- Cold storage at their own place

The main intension of our project is to bring down the food wastage and help farmers to sell their produced at affordable prices, with the help of modern technology.

METHOD:

Organic cold storage system works on the evaporative cooling system and Fourier's law. The temperature and humidity is controlled by microcontroller and with input and output devices like temperature sensor. Design consists of two walls. The outer wall is thicker than the inner wall.
The inner wall is made up of material which has good thermal conductivity like lime, clay, concrete.

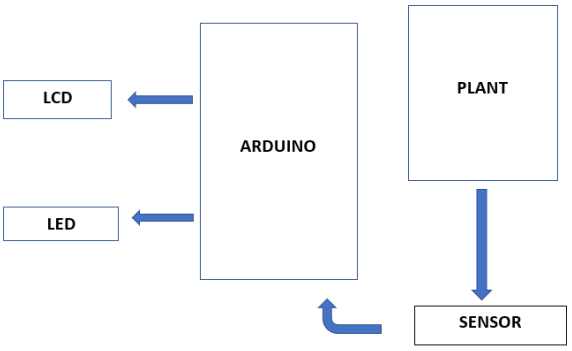
Based on the Fourier's law the inner wall thickness is are obtained.

	T1	T2	K	L(m)	r2	r1	Q
	313	286	1.28	0.3	0.11	0.1	-683.149
CLAY	313	286	1.28	0.3	0.11	0.105	-1399.63
	313	286	1.28	0.3	0.11	0.095	-444.13
	313	286	1.28	0.3	0.11	0.09	-324.467
	313	286	1.29	0.3	0.11	0.1	-691.55
LIME STONE	313	286	1.29	0.3	0.11	0.105	-1416.04
	313	286	1.29	0.3	0.11	0.095	-449.33
	313	286	1.6	0.3	0.11	0.1	-8530.93
	313	286	1.6	0.3	0.11	0.105	-1749.54
CONCRETE	313	286	1.6	0.3	0.11	0.095	-555.16
	313	286	1.6	0.3	0.11	0.09	-405.58

Novelty:

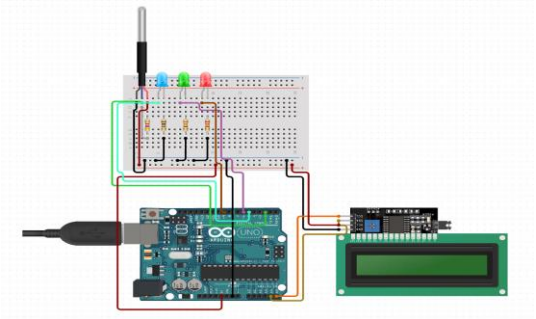
- Design for future advancement
- Usage of cocopeat and corncob
- Embedded systems

BLOCK DIAGRAM:



EXPERIMENT:

CIRCUIT:



ARDUINO UNO:

- The Arduino Uno is an open-source microcontroller board developed by Arduino.cc.
- The board is equipped with sets of digital and analog input/output (I/O) pins that may be interfaced to various expansion boards (shields) and other circuits.
- It is easy-to-use hardware and software.

TEMPERATURE SENSOR (DS18B20):

- DS18B20 is a digital temperature sensor which follows 1-wire protocol and can measure temperature from -55 o C to +125 o C (-67 o F to +257 o F) with an accuracy of +-5%.
- Data received from the single wire is in the ranges of 9-bit to 12-bit.
- It is a waterproof sensor

LCD DISPLAY:

An LCD is an electronic display module that uses liquid crystal to produce a visible image. The 16×2 LCD display is a very basic module commonly used in circuits.

- Its display consists of two rows of display with each row consisting of 16 characters.

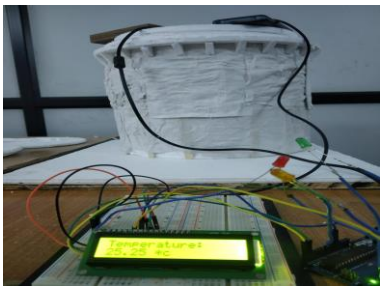
BATTERY:

- A Battery is an energy storage device.
- It is a device consisting of one or more electrochemical cells with external connections for powering electrical devices such as flashlights, mobile phones, and electric devices.

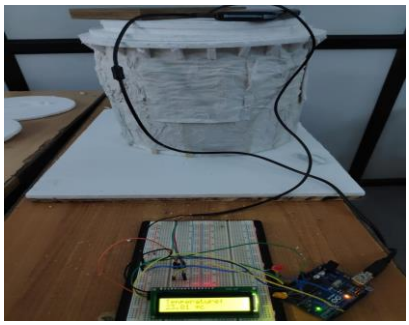
LED:

- A light-emitting diode (LED) is a semiconductor device that emits visible light when a current pass through it.
- The light is not particularly bright, but in most LED s it is monochromatic, occurring at a single wavelength.

OBSERVATION OF PROTOTYPE:



*Temperature inside the system: 25.25*C*



*Temperature inside the system: 23.81*C*

SUMMARY:

This encourages farmers to do the value addition process and reduce the wastage of agricultural products and improves sustainability in agriculture. Efficient handling, storage and maintenance of the produce for a longer period of time. This makes farmers to have their own cold storage system.

Some Salient features

- Optimization in system
- Design for future advancement
- 40% Efficiency
- Produce can be stored for 1 Week
- It is still at a prototype model

Estimated Cost (Prototype):

S.No	Component	Cost
1.	Corncob	300/-
2.	Temperature Sensor (DS18B20)	200/-
3.	Thermocol boards	500/-
4.	Cement and lime	300/-
5.	Arduino	350/-
	Total (Approx.)	1650/-

In real implementation of the system/plant the dimensions and capacity depend on cultivation and harvesting in that region.

SELECTED CROP: GREEN CHILLY
EXTENDED LAND: 1 ACRE
HARVESTING:

- It is a 4months crop. chillies can be cultivated in both Rabi and Kharif season and other times depending on the seed sowing months.
- On availability of seed variety, climate conditions and water facilities the yield varies from 20-25 quintals (20000-25000 KG) per acre.
- The harvesting is done 5-6 times with time-interval, depending on plant flowering and fertility of soil.

So, per one harvesting it is estimated that nearly 20 quintals (2000KG).

VOLUME NEEDED FOR PLANT BUILDING:

On practical information from farmers and estimated space needed for plant construction for storing of Chillies for every harvesting is in **L×B×H (mˆ3) = 2.5×2.5×1.5mˆ3**

= 9.37mˆ3

BILL OF MATERIALS:

S. No	Components	Cost
1.	Water pump	2000/-
2.	Solar plate	2500/-
3.	Temperature Sensor (DS18B20)	500/-
4.	Corncob	2000/-
5.	Bricks (800*5/-)	4000/-
6.	Cement (4 bags)	1200/-
7.	Arduino	750/-
8.	Labour	3000/-
	TOTAL	15950/-

INVESTMENT RETURNS:

- Firstly, it helps in creation of jobs(technicians).
- Secondly, farmers get benefited and will learn in engaging with modern technology.
- Finally, if the rate per KG is 10/- today. Suppose the rate is increased on the other day the increased amount will be his returns.

Example.,

Rs 10/- (Today)

Rs 15/- (The next day)

Profit=15-10=5/-

Rs 5/-

Rs -2.5/- (estimated for transportation)

The remaining amount is Rs 2.5/-.This amount is the return.

(All the money are per KG)

For every harvesting 2.5*2000=Rs5000/-

This is only the estimated report on information gathered from rural farmers.

REFERENCE:

Chilli Cultivation Guide: Discover How to Start a Green Chilli Plantation (farmingindia.in)

7. PLASTIC SHREDDER

COLLEGE	MLR INSTITUTE OF TECHNOLOGY
GUIDE	K.SHIVA SHANKAR
COLLEGE STUDENTS	MUSKAAN PRASAD, M.HARI KRISHNA SAI
SCHOOL STUDENTS	B.MANEESHA, B.SHREYA, ZPHS MEDCHAL

ABSTRACT:
In this 21st century plastic pollution has become a global issue that is lagging for a solution. Even though there are industries that are dedicated to recycling plastic are facing a great trouble in collecting the plastic waste from the primary sources of waste. Lacking a perfect system to collect plastic waste most of waste is directly disposed into the environment.

On the way to save Nature from this plastic waste and to help the industries, Plastic Shredder will be a great milestone. The produced waste from the basic sources can be collected and reduce the entry into the environment.

HYPOTHESIS:
Major outcomes of this project are:

- Accomplishing the task of collecting plastic waste from the basic sources of it.
- Creating a better device for markets that involve plastic waste management.
- Reducing the direct disposal of plastic waste.

The main theme of this project is to save time in recycling the plastic waste and to reduce the expenditure of industries that is spent for collecting the plastic waste.

METHOD:
The main mechanism in the shredder is designed with shaft and blade. The main shaft is connected to gears that helps in rotating two other shafts. The inner shafts have blades attached to them and they complete the task of shedding the Plastic.

The Features of the machine are

- The RPM can be controlled according to the type of plastic.
- The cutting blades will be sharp and friction free.
- The size of the machine varies according to the place of Usage.
- If needed, Arduino/Raspberry pi is used to manage the RPM based on the type of plastic.
- The Outer cover is well designed that none of the shredded plastic is leaked from the machine.

Students Involved in the Project:



SUMMARY:

The main vision and mission of this PLASTIC shredder is to reduce the direct disposal of plastic into the environment for that we designed a machine that is compact and budget friendly in all possible cases and to make it work efficiently we will use a few emerging technologies such as CNC, Machine Learning etc.,

Estimated cost:

Rs.4000/-

8. REVERSIBLE PARCHING BENCH

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDHURY
COLLEGE STUDENTS	KARRI N RAVITEJA SAI RAMLINGESHWARA REDDY, BANKA RAKESH PATRUDU
SCHOOL STUDENTS	M DIVYA SRI, LIKITHA, ZPHS PEDAMUSHIDIVADA BANKA JAIDEEP, Dr.KKR'S GOWTHAM SCHOOL KOMMURU NIKHITH, JAWAHARA NAVODAYA VIDHYALAYA

ABSTRACT:
Users observe that the benches were filled up with stock water due to rainfall or the surface getting wetted(mist) due to fog or dust on the surfaces of the bench. This will not allow users to sit on these benches in parks, home gardens, public gardens, and farmhouses. To get rid of such a problem we require a tool to wipe the water and dust or eliminate through a cloth or any other practices. This Invention discloses that a system can automatically dry the bench surface for eliminating the rainwater or mist or dust on it by using the renewable source of energy.

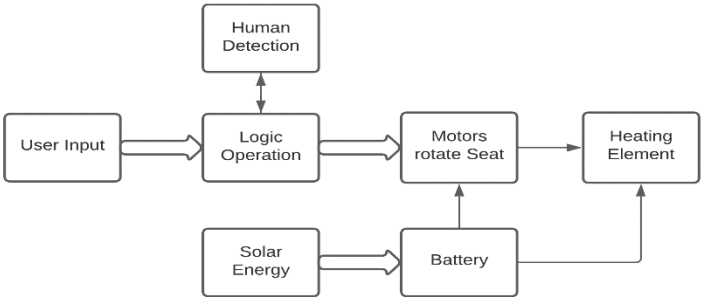
HYPOTHESIS:

- The system helps to dry the bench containing rainwater, mist, and clean dust.
- The dust and rainwater flow down by a quick reversing technique.
- The Wetted seat can be dried instantly by using the Peltier effect.
- User may not face falling situation due to one rotation axis by ratchet gear.
- The system uses renewable energy source which is preferable and eco-friendly (i.e., Solar energy).
- The Rotation and drying process takes less time. Thus, we can sit instantly.
- The system is compatible and easy to use.

METHOD:
The present invention discloses an efficient method of clearing the stock rainwater, mist, and dust on the surface of the benches. The basic material or methodology used in this work is to dry or clean the bench. The present invention is autonomous which is equipped with a gear mechanism containing a pair of Ratchet gears each at the sides of the sitting surface and The Peltier effect.

The present invention is disposed of by storing the solar energy in a battery to fed the Ratchet gears, heating element, and human detection sensor.

BLOCK DIAGRAM:



(fig. 1 block diagram)

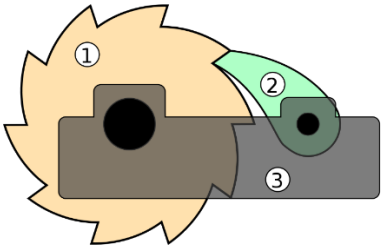
EXPERIMENT:

(fig. 2 Reversible Parching Bench model)

1	Solar panel
2	Resting surface
3	Sitting surface
4	Axle
5	Ratchet gear

RACHET GEAR:

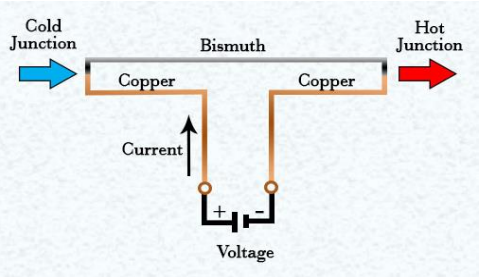
Ratchets are mechanisms that serve to limit either rotary or linear motion to only one direction. Ratchet designs vary but the basic composition of parts is fairly universal. A ratchet is composed of three main parts: a round gear, a pawl, and a base.



(fig.3 ratchet gear)

PELTIER EFFECT:

The Peltier effect states that, when an electric current flow through a circuit comprising dissimilar conductors, thermal energy is absorbed from one junction, and is discharged at the other, making the former cooler and the latter hotter. Thus, a thermal gradient develops from the flowing current, making the Peltier effect.



(fig.4 Peltier effect)

SUMMARY:

The reversible parching bench serves to eliminate the wet surface that arises due to rain or spillage of water or by fog. In such cases it would be difficult to sit on such wet surface but the reversible parching bench will evaporate the wet surface with the help of Peltier effect by heating the surface minimally through which the water gets eliminated and makes easy to sit. Many people in parks and public areas walk for miles and rest for a while by sitting on the benches but after finding the benches being wet, they unturn from sitting on them and going painfully to home. In all such cases reversible parching bench will be necessary and beneficial.

ESTIMATED COST: 3000/-

9. SMART AQUA CULTURE

COLLEGE	VASIREDDY VENKATADRI INSTITUTE OF ENGINEERING AND TECHNOLOGY
GUIDE	Dr.N. KUMARSWAMI
COLLEGE STUDENTS	V.GANESH KUMAR, V. NIKHITHA
SCHOOL STUDENTS	PAMARTHI.BAVANI SHANKAR, PARASA.VENKAT, ZPHS BANTUMILLI

AIM:

Our mission is to accelerate the use of technology in aquaculture. It helps farmers to monitor their ponds in a better way and reduce their investments to make it sustainable.

PROBLEM FACED BY AQUA FARMERS:

An aqua farmer follows the traditional ways of culture and the problems faced are listed below:

1. Lack of proper monitoring of water parameters (pH, DO (Dissolved Oxygen), temp, NH3, salinity & turbidity):

A farmer doesn't have any real time monitoring devices to measure water parameters in above

2. Improper usage of Aerators (overtime): Aerators are needed in an aqua- culture to supplement dissolved oxygen to the aqua life (water). They mix-up the atmospheric oxygen with water.

Fig 1. Aerators

Fig 2. Feeding

Fig 3. Fertigation

3. Over feeding and under feeding: Feeding constitutes over 50% of the production costs. A farmer sometimes may overfeed which leads to wastage of feed.

4. Over usage of Power & controlling of motors: As aqua farmer follows blind rule of switching OFF/ON Aerators, motors & other machines. the power consumption also increases.

5. Fertigation process: During pond culture time, farmers are frequently applying the minerals & fertilizers by hand or traditional methods due to wastage of minerals & over dousing.

6. Labor cost: In order to maintain a pond, huge man power is needed like feeding daily 5 times, ON/OFF Aerators 8 times & security.

7. Viral and fungal attacks on ponds: These are mainly caused by improperness of observing.

8. Security and surveillance: Surveillance is another major problem in the present aqua farming.

Catching fishes without permission & theft of machines at the ponds.

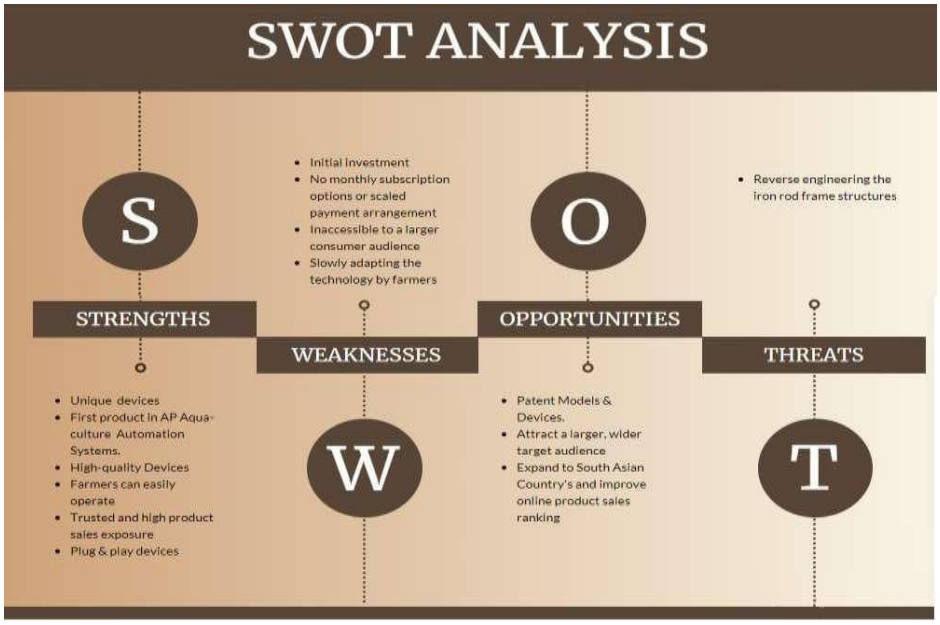
Innovative solution to the above problems:
We designed an **AQUA SMART MONITORING AND REGULATING SYSTEMS**, which overcomes the above problems. The proposed Aqua system automatically monitors these parameters in real-time using different aqua sensors. The measured values are then compared with optimum values of parameters to be maintained. Based on the measured values, the system takes actions following a set of pre-programmed instructions

The actions taken by the system includes:

1. Automation of aerators.
2. Automatic Smart feeders.
3. Alerting farmers time to time about the current status of the pond through IOT
4. Remote controlling of pond equipment through IOT from anywhere.
5. Specially designed mechanical motor to apply minerals and pro-Biotics.

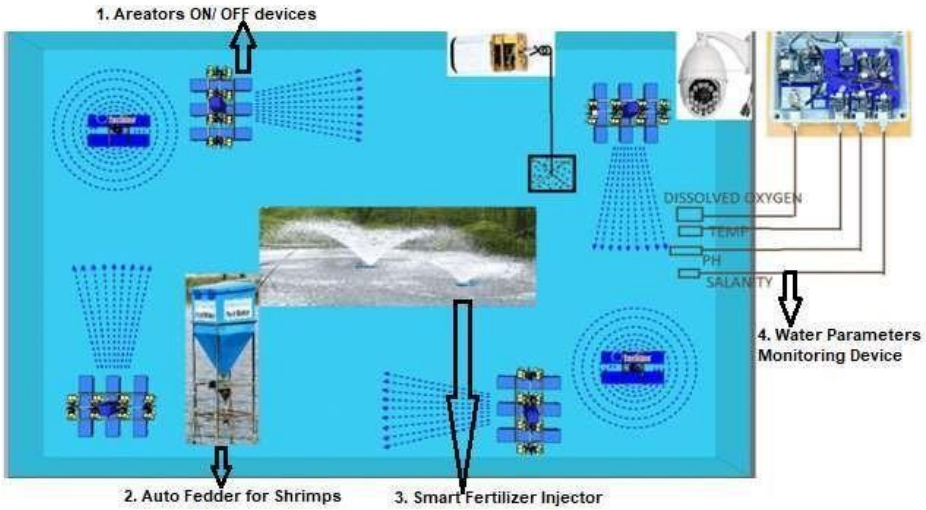
Surveillance through cameras.

SWOT Analysis:



Proposed System for Automation of Aqua-Culture Monitoring:
The proposed system consists of two modules which are transmitter station and receiver station with personal computer as an analyzing center or monitoring center. The following list contributes to overall framework of the automatic aqua monitoring system.

Pictorial view of system



We Develop the below Devices, for to solve above problems:

1. Aerators On/Off Device
2. Auto Feeders for Shrimp (Feed Machine)
3. Smart Fertilizer Injector
4. Water Parameters Monitoring Device

AERATORS ON/OFF DEVICE:

Aerators ON/OFF Device is an electronic device. In generally 1 acre of pond contain 6 - 8 aerators, farmers are frequently on/off manually. We can automate 6-8 aerators are connected in a mesh network they connected each other. Each aerator can fix these **Aerators on/off device**. Aerators can control via APP & Remote signal range (100m).

Features:

1. Control at anywhere in the world by APP.
2. Auto ON/OFF time setting.
3. Current update of Aerators condition.
4. Auto cut-off (trip) in power fluctuations.

AUTO FEEDERS FOR SHRIMP (FEED MACHINE):

Auto feeders for shrimp is a 150kgs drum type mechanical device. It contains iron rods triangle shaped frame, 200 lit drums, motor 3000rpm, dozer motor 60rpm, Hydrophone sensor Box & Micro-Controller box.

1. **Automatic feeder:**

   Precise automatic feeder with Smart controls. Enabling you to monitor the feed for shrimp with all of the latest technology, adjusts the feed based on water quality and weather data, ensures that shrimp get correct amount of feed intelligently.

2. **Feeding schedules:**

   Feeding schedules can be configured from smart-phone app. Using mobile based technology to optimally feed your shrimp.

3. **Reduces FCR:**

   Reduces FCR by 30%, By reducing feed conversion ratios by over 30%, profit margins will only go upwards

SMART FERTILIZER INJECTION:

Fertilizer injector using advanced computer, industrial automation and internet of things technology, according to the law of fertilizer demand at different growth stages of crops, using all-water-soluble fertilizer as raw material, accurately controlling the proportion of nutrients, and accurately formulating the liquid formula fertilizer required for various crops, according to needs. Quantitative automated fertilization.

Advantages:

1. Can achieve the computer, mobile phone APP remote control.
2. Quantitative irrigation and fertilization.
3. Real-time monitoring of water and fertilizer ratio.
4. Fully improve the nutrient utilization.
5. Temperature control wet control, simple operation.
6. Internet interface, fertilizer, soil EC / PH detection sensor intelligent detection.
7. Integrated controller, water pump, EC/PH detection system and multiple solenoid valve control. The external switch is safe and easy to operate.
8. Scientific fertilization method, fertilizer water can be recycled.
9. The use of a wide range of environments, aquaculture, orchards, greenhouses, horticulture and other planting sites can be used.
10. The structure of fertilizer applicator is stable and reliable, corrosion-resistant and rust- proof. There is no external leakage of electromechanical equipment. Long service life, parts can be assembled, good interoperability.

WATER PARAMETER MONITORING DEVICE:

This new water quality monitor is a professional and essential tool to test the PH/ Temperature / DO & TDS of your solution level. By the use sensor networks to have a distributed collection of sensor nodes pH, Humidity, Temperature sensors, DO sensors etc. networked together in some fashion so that they send the raw or processed sensed data to APP. Suitable for all aqua ponds, RAS tanks, Bio-floc tanks laboratory and environment.

This device launched a Smart Water wireless sensor platform to simplify remote water quality monitoring. Equipped with multiple sensors that measure a dozen of the most relevant water quality parameters, Smart Water is the first water quality-sensing platform to feature autonomous nodes that connect to the Cloud for real-time water control. Smart Water is suitable for potable water monitoring, chemical leakage detection in rivers, remote measurement of swimming pools and spas, and levels of seawater pollution. The water quality parameters measured include **pH**, **dissolved oxygen (DO)**, **oxidation-reduction potential (ORP)**, **conductivity (salinity)**, **turbidity, temperature** and **dissolved ions** (**Fluoride (Fluoride (F^-), Calcium(Ca^{2+}), Ammonia (NH_4)** It may use cellular (3G, GPRS, and WCDMA) and long range 802.15.4/Lo-ra (868/900MHz) connectivity to send information to the Cloud, and can accommodate solar panels that charge the battery to maintain autonomy. Smart Water nodes are ready to deploy out of the box and sensor probes can be recalibrated or changed in the field, with kits provided by us.

FEATURES:

1. Widely used to measure pH / DO / temperature / EC & TDS (PPM) solution / water.

2. Easy Calibration of pH with a mini screwdriver.
3. Can online monitoring for a long time.
4. Can work continuously for more than 10 hours of power outage or outdoors without power after charging the battery for 3 hours.
5. Clear LCD display with backlight, 3 results displayed at the same time, Used in water sources, aquariums, hydroponics, laboratories, spas, swimming pools and other aquatic systems.
6. Automatic temperature compensation, Easy to use and provides instant display of results

Block diagram of proposed system:

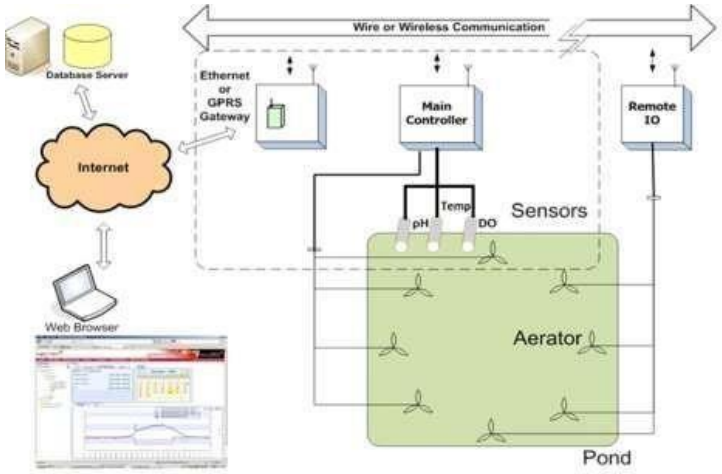
It is proposed to use sensor networks to have a distributed collection of sensor nodes (pH, Humidity, Temperature sensors, DO sensors etc.) networked together in some fashion so that they send the raw or processed sensed data to some central location called base station or database server and followed by some necessary actions through the automation of 3-phase motors, feeders and other electrical equipment automation. A typical pond and connection between various pond equipment are shown in below fig. Architectural view of proposed system in a typical pond.

Heart of the system:

- Lo-Ra module
- Micro-controllers

Aqua Sensors:

- **p**H sensor, DO sensors, Temperature sensor
- Internet enabled system
- CAT5 Cable
- Hardware equipment
- GPRS Gateway Module



Functioning of the system:

In the system proposed, sensor nodes fixed at various places in the pond will send analog data continuously to the microcontroller. The sensor nodes include pH sensor, Dissolved Oxygen sensor, and Temperature sensor. These data are fed to microcontroller via CAT5 cable. The data includes pH levels, oxygen level (ppm) and temperature. The water parameters are almost uniform throughout the pond due to the functioning of aerators and their positioning in pond. Circulation of water by aerators makes the parameters uniformly distributed, Architectural view of proposed system the data acquired at the microcontroller either analog/ digital form has to be modified into and the data received is compared with typical ranges of parameters. Here we dump a code into the

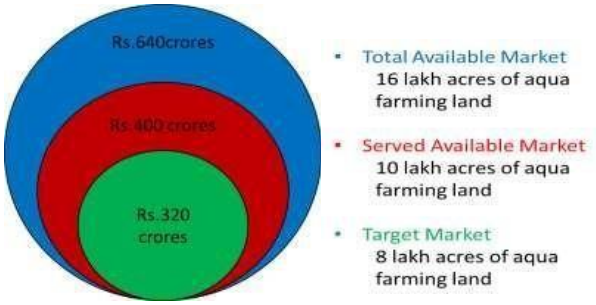
microcontroller such that it checks whether the input parameters are in the ranges. If in case they are not in range the microcontroller sends control signals to the driver. The control signals include automation of Aerators, automatic feeders. The drivers are fed with input of voltage of range (5V-30V) and have an output voltage range (240V).

There is continuous updating of data to the local host (PC) for analysis. The above figure shows the architectural view of the proposed system and how pond equipment are connected.

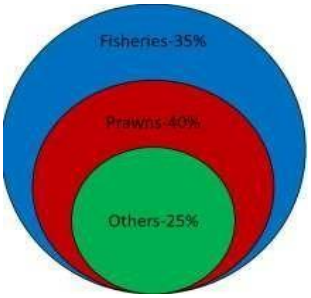
The system will have a feature of sending the current status of pond to the farmer warning him to take certain actions which should be manually done. For example, there will be a situation in which DO falls off rapidly. So, at that time there should be someone to add the oxygen tablets manually into pond.

The system allows farmer to operate his Aerators and feeders through application linked to the global server. The microcontroller is connected to a local host. From there data is exchanged with global server through which one can control the functioning of aerators, turbines, feeders etc.

MARKET STUDY



BENEFICIARY GROUPS



Development of the electronic devices step by step:

Development of the electronic device for my products can be broken down into seven steps: *preliminary production design, schematic diagram, PCB layout, final BOM, prototype, test and program, real time testing on ponds and finally certification.*

Step 1 – Create a Preliminary Production Design

When developing a new electronic hardware product, you should first start with *a* preliminary production design. This is not to be confused with a Proof-of-Concept (POC) prototype.

Step 1A – System Block Diagram

When creating the preliminary production design, you should start by defining the system-level block diagram. This diagram specifies each electronic function and how all of the functional components interconnect.

Most products require a micro-controller or a microprocessor with various components (displays, sensors, memory, etc.) interfacing with the microcontroller via various serial ports.
By creating a system block diagram, you can easily identify the type and number of serial ports required. This is an essential first step for selecting the correct microcontroller for our product.

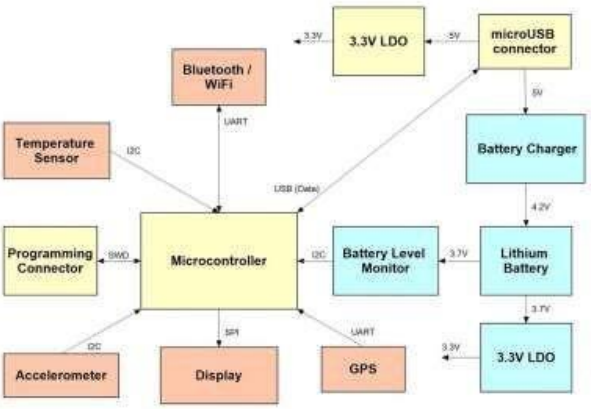


Figure 1 – A block diagram specifies each function and the system-level connectivity.

Step 1B – Selection of Production Components

Next, you must select the various production components: microchips, sensors, displays, and connectors based upon the desired functions and target retail price of your product. This will allow you to then create a preliminary Bill of Materials (BOM).

Figure 2: Selection of the production components is a critical first development step.

In the India, there is no most popular suppliers of electronic IOT components. Now purchasing components via local suppliers.

Step 2 – Design the Schematic Circuit Diagram

Now it's time to design the schematic circuit diagram based upon the system block diagram I created in step 1.

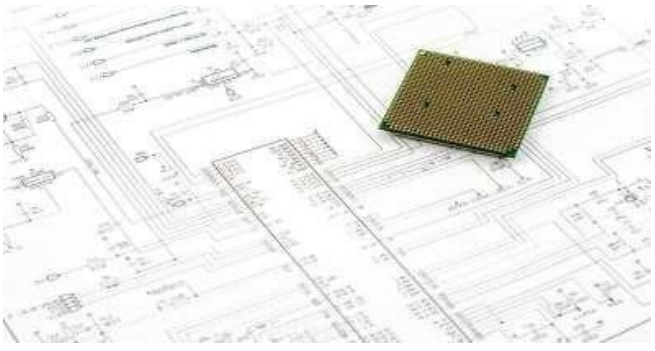


Figure 3: Example of a schematic circuit diagram.
The schematic diagram shows how every component, from microchips to resistors, connects together. Whereas a system block diagram is mostly focused on the higher-level product functionality, a schematic diagram is all about the little details.

Step 3 – Design the Printed Circuit Board (PCB)
Once the schematic is done i will now design the Printed Circuit Board (PCB). The PCB is the physical board that holds and connects all of the electronic components, A PCB design though is very real world.

Figure 4: The schematic circuit diagram must now be turned into a PCB layout design.
The PCB is designed in the same software that created the schematic diagram. The software will have various verification tools to ensure the PCB layout meets the design rules for the PCB process used, and that the PCB matches the schematic.

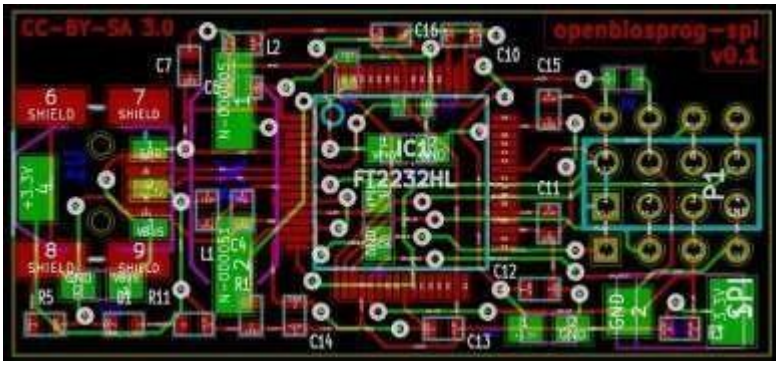


Figure 5 – Example of a Printed Circuit Board (PCB) layout design

For most PCB designs the most critical parts are the power routing, high-speed signals (crystal clocks, address/data lines, etc.) and any wireless circuits.

Step 4 – Generate the Final Bill of Materials (BOM)
Although i should have already created a preliminary BOM as part of your preliminary production design, it's now time for the full production BOM.

Step 5 – Order the PCB Prototypes
Creating electronic prototypes is a two-step process. The first step produces the bare, printed circuit boards. Your circuit design software will allow you to output the PCB layout in a format called Gerber with one file for each PCB layer.

Figure 6: Example of a fully assembled Printed Circuit Board (PCB).
The second step is having all of the electronic components soldered onto the board. From your design software you'll be able to output a file that shows the exact coordinates of every component placed on the board. This allows the assembly shop to fully automate the soldering of every component on your PCB.

It usually takes 1-2 weeks to get assembled boards.

Step 6 – Evaluate, Program, Debug, and Repeat
Now it's time to evaluate the prototype of the electronics. Keep in mind that your first prototype will rarely work perfectly, you will most likely go through several iterations before you finalize the design. This is when you will identify, debug and fix any issues with your prototype.

Figure 7: Most designs take multiple prototype iterations to get ready for market.
This can be a difficult stage to forecast in both terms of cost and time. Any bugs you find are of course unexpected, so it takes time to figure out the source of the bug and how best to fix it. Evaluation and testing are usually done in parallel with programming the microcontroller.

Figure 8: Most new electronic products need firmware programming to function.
Nearly all modern electronic products include a microchip called a Microcontroller Unit (MCU) that acts as the "brains" for the product

Part 4 – Develop the Enclosure
Now we'll cover the development and prototyping of any custom plastic pieces. For most products this includes at least the enclosure that holds everything together, Development of custom shaped plastic or metal pieces will require a 3D modeling expert, or better yet an industrial designer.

Figure 9: Development of a custom enclosure is necessary for most new products.
If appearance and ergonomics are critical for your product, then you'll want to hire an industrial designer.

Step 1 – Create 3D Model

Figure 10: Creating a 3D model is an essential first step to product design.
Once our industrial or 3D modeling designer has completed the 3D model you can then turn it into physical prototypes. The 3D model can also be used for marketing purposes, especially before you have functional prototypes available.

Step 7 – Order Case Prototypes (or Buy a 3D Printer)
Plastic prototypes are built using either an additive process (most common) or a subtractive process. An additive process, like 3D printing, creates the prototype by stacking up thin layers of plastic to create the final product, Additive processes are by far the most common because of their ability to create just about anything you can imagine.

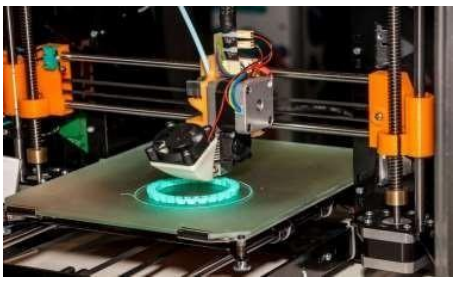


Figure 11: Low-cost 3D printers have revolutionized new product prototyping.
A subtractive process, like CNC machining, instead takes a block of solid production plastic and carves out the final product.

Step 8 – Evaluate the Enclosure Prototypes
Now it's time to evaluate the enclosure prototypes and change the 3D model as necessary. It will almost always take several prototype iterations to get the enclosure design just right.
Developing the plastic for your new product isn't necessarily easy or cheap, especially if aesthetics is critical for our product.

Step 9 – Transition to Injection Molding
Although the electronics are probably the most complex and expensive part of your product to develop, the plastic will be the most expensive to manufacture. Setting up production of your plastic parts using injection molding is extremely expensive.

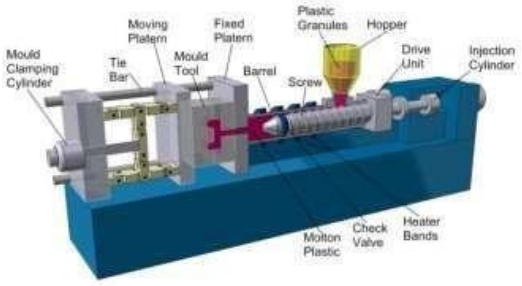


Figure 12: Injection molding machine. Image supplied courtesy of Rutland Plastics.
Injection molding technology has one big advantage – it's a cheap way to make millions of the same plastic pieces.

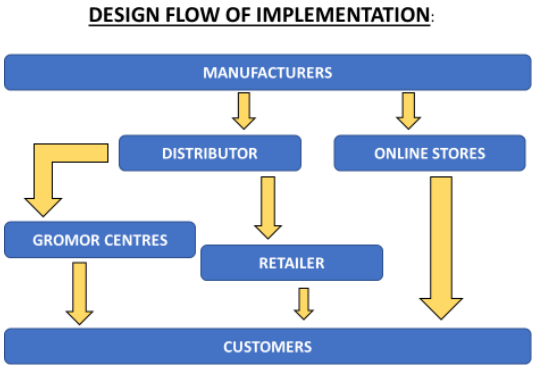
Part 5 – Real time testing on ponds
The Designed device will be tested in the pond Environment.

Part 6 – Certify our Product
All electronic products sold must have various types of certification. The certifications required vary depending on what country the product will be sold in. We'll cover certifications required in the USA, Canada, and the European Union.

Although these are all electrical certifications, in most cases they will need to be completed on the finished product including the enclosure, and not just on the bare electronics.

Figure 13 – Nearly all electrical products require some levels of certification.
FCC (Federal Communications Commission)
FCC certification is necessary for all electronic products sold in the United States. All electronic products emit some amount of electromagnetic radiation (i.e., radio waves) so the FCC wants to make sure that products don't interfere with wireless communication.
There are two categories of FCC certification. Which type is required for your product depends on whether your product features wireless communication capabilities such as Bluetooth, Wi-Fi, Zig-Bee, or other wireless protocols.

IMPLEMENTATION OF PRODUCT:

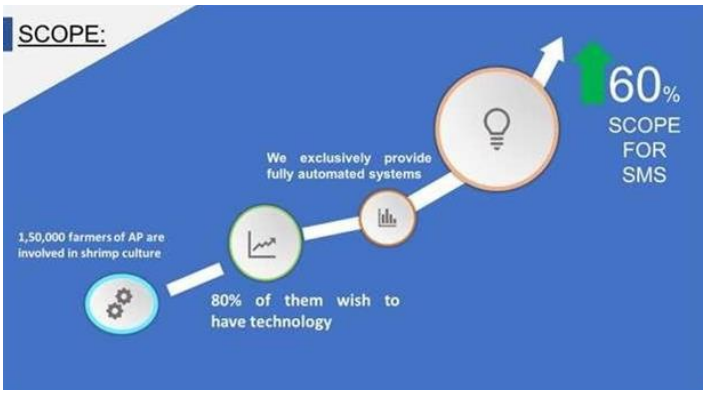


COMPETITORS:

Shrimp SMS is our Start-up

SPECIFICATIONS	ERUVAKA TECH	C FOG	JALSAFE	GROW YIELD	SHRIMP SMS
➢ Monitoring System	yes	yes	yes	yes	yes
➢ Auto Machine	No	yes	No	No	yes
➢ Alerts	yes	yes	yes	yes	yes
➢ GSM & IOT based System	yes	yes	No	yes	yes
➢ Wireless technology	No	No	No	No	yes
➢ Smart feeder	No	No	No	No	yes
➢ Regulating System	No	No	No	No	yes

SCOPE:



Delivery model: At first, we setup our model in a village for testing and we explain about our model directly to the farmers. In that village we take feedback from them. According to that we design our real-time system and present the working of the system to government. With government support we take this product to local bodies and to farmers.

Conclusion: There have been considerable problems in aqua & agriculture, in terms of reduced yields and increased costs. We are building SMS an AQUA -Tech solution that monitors critical crop parameters 24x7 and control them automatically to increase crop yields and reduce costs. We use IOT, Machine Learning and Cloud Computing technologies in delivering intuitive solution to our farming community and join their journey of empowerment

10. SMART PLUG

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDHURY
COLLEGE STUDENTS	CHALLA VENKATESWARA RAO, TAMMA TRINADH REDDY
SCHOOL STUDENTS	O. SWATHI, RAMU, ZPHS GADIPALLY

ABSTRACT:
In order to lead a comfortable life full of all facilities and services, we need electricity. Without energy, the planet will become inactive. Every day, from watching TV to charging devices, we use a lot of resources without paying much attention. We all have had a feeling at a time that we are wasting energy. We have encountered instances where we know that it requires some specific time to charge devices, but at the same time you can't turn off the switch.
The primary focus of this smart plug is to transmit the user's power by power planning at that particular time from user instructions.

HYPOTHESIS:

The main objective of this project is to include the following parameters:

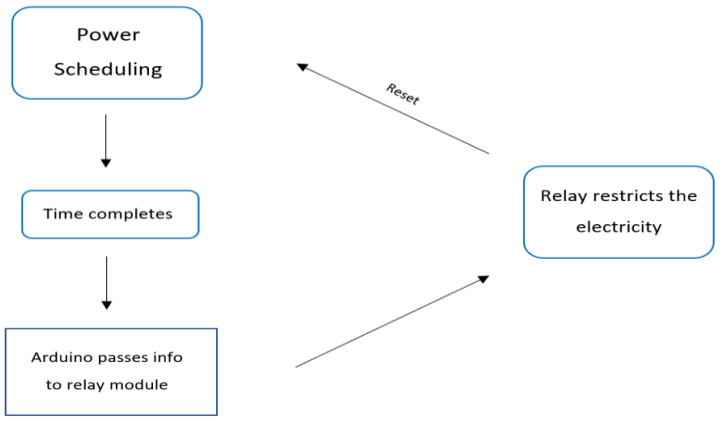
- To provide a smart plug that can be a versatile and functional building block for homes.
- To save those little precious hours of electricity wastage while charging our gadgets.
- Providing power scheduling without Wi-Fi connectivity for the home of the user, while most smart plugs come with IoT that requires Wi-Fi.
- To provide a model for power scheduling which is feasible and concise

This project's main purpose is to provide the community with an affordable and practical smart plug.

METHOD:
The Smart plug works with the aid of a microcontroller, relay, RTC (real time clock) and a potentiometer that functions as a scheduler.

Where the Microcontroller serves as the brain and, when the user schedules specific time and the time completed, Arduino triggers the Actuator Relay and blocks the power passage. As specified, the potentiometer acts like a timer and the timer can be configured by the user and the time is measured with the help of an RTC (Real time clock).

BLOCK DIAGRAM:



Relay:

Relays are the switches that open and close circuits electromechanically or electronically. Relays control one electrical circuit by opening and closing contacts in another circuit. As relay diagrams show, when a relay contact is normally open (NO), there is an open contact when the relay is not energized. When a relay contact is Normally Closed (NC), there is a closed contact when the relay is not energized. In either case, applying electrical current to the contacts will change their state.

Relays are generally used to switch smaller currents in a control circuit and do not usually control power consuming devices except for small motors and Solenoids that draw low amps. Nonetheless, relays can "control" larger voltages and amperes by having an amplifying effect because a small voltage applied to a relays coil can result in a large voltage being switched by the contacts.

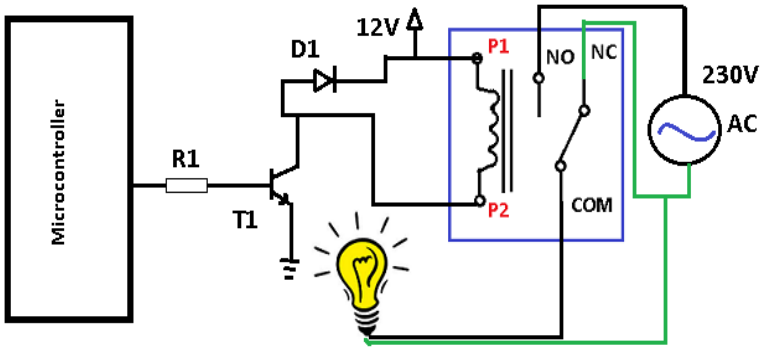
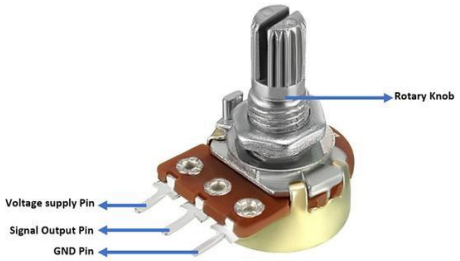


Fig 1. Basic working of a relay interfaced with Arduino

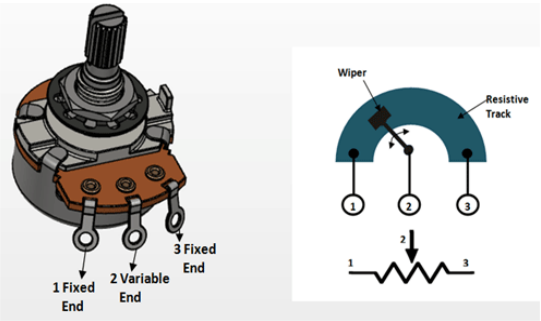
Potentiometer:



A potentiometer is a three-terminal resistor with a sliding or rotating contact that forms an adjust Table voltage divider. If only two terminals are used, one end and the wiper, it acts as a variable resistor or rheostat.

The measuring instrument called a potentiometer is essentially a voltage divider used for measuring electric potential (voltage); the component is an implementation of the same principle, hence its name.

In this project, we used potentiometer to set the required time of operation. As potentiometer has 1024 values (0 to 1023). These values are mapped to 30 seconds in this case. 100% resistance of potentiometer means the timer set to 30 seconds, similarly, 50% means the timer set to 15 seconds.

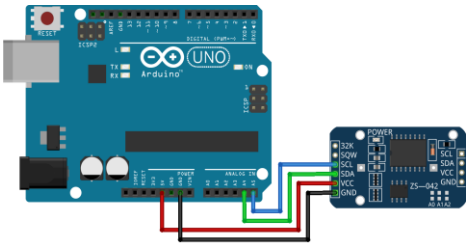


RTC module:

Real Time Clock or RTC is a system that keeps track of the current time and can be used in any device which needs to keep accurate time. The Time Clock Module (or DS3231) is a module that measures the time, dependently or independently of his Arduino card through of his cell. The Arduino card measures the elapsed time since the module was turned on (in ms). The module comes assembled ready-to-use, with battery (supplied).

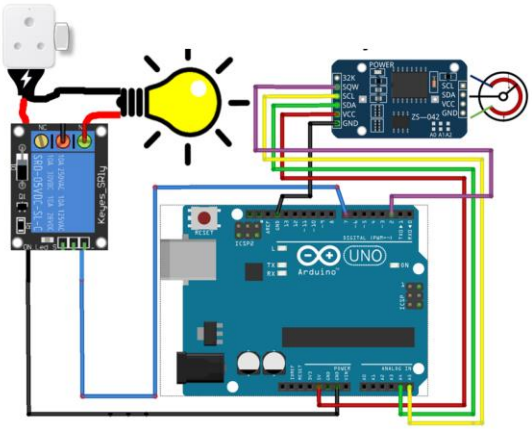
You can also keep tracking the exact time without using RTC systems, but RTCs have some important advantages. Here are some of these advantages:

- Low power consumption
- Releasing system time from time calculation
- High accuracy



EXPERIMENT:

Basic circuit:



1. The RTC (real time clock) reads the value of the potentiometer (regulator) in this circuit and measures the time. When the specified time is over, the signals will be sent to Arduino (Microcontroller).
2. Arduino operates like a brain, and it will activate the Actuator (Relay) when it receives the

signals from RTC and then the power passage will be blocked.

3. The 12V relay can switch 230V AC. Therefore, it is useful for home appliances because 230V AC is the standard voltage for home appliances.
4. The RTC can be used for various other applications, the user can set unique on/off time, and Arduino and Relay will operate the instruction. It requires a certain coding aspect, nonetheless, it also needs to be built.

SUMMARY:

The user has to specify time through regulator (Potentiometer) of smart plug. The RTC calculates the time and when it's completed the Arduino triggers relay and block the power through socket. Thus, we can control the power passage through the means of time.

This smart plug is a device that takes the initiative by manually scheduling power to reduce over-electricity consumption and wastage. Compared to the other items on the market that have unnecessary and overpriced features, this is budget friendly and economical. It is still a prototype version and we can later assemble the components into small size on PCB layouts and can design the smart plug.

ESTIMATED COST:

S.No	Component Name	Cost
1	Arduino Uno	250
2	Relay Module	70
3	RTC (real time clock)	50
4	Potentiometer	30
5	Plug Adapter	100
		Total = 500/-

11. SMART SHOE

COLLEGE	B.V. RAJU INSTITUTE OF TECHNOLOGY
GUIDE	R ANIRUDH REDDY
COLLEGE STUDENTS	NAYINI VAMSHI KRISHNA, VOLETI BABY JAHNAVI, V NANDITHA
SCHOOL STUDENTS	ANAMIKA KUMARI, RAJ KUMAR, ZPHS ISNAPUR

ABSTRACT:

We see that people who are visually impaired have trouble walking alone on roads. They often seek others help or help of a white cane while walking on roads. So, to assist people with who are visually impaired, we are providing a solution which makes the person walk with ease and without anyone's assistance. Our device is a 'Smart Shoe' which helps visually impaired persons to walk on road without anyone's help. It warns the user when there is an obstacle ahead.

HYPOTHESIS:

The goal of this assistive technology device is to provide people with vision disabilities a secure and an easy way to walk alone and feel secured while walking on roads and to facilitate participation in many societal activities.

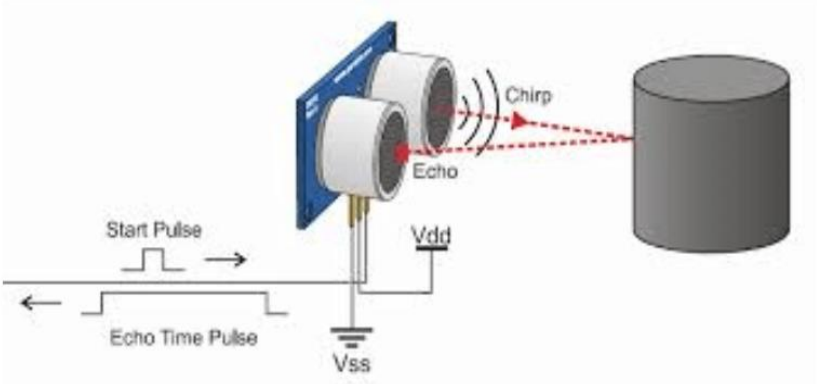
This smart shoe is cost efficient and is affordable. Also, we want to facilitate this smart shoe in different sizes.

Our main concern is to provide a fragmentary vision to the people who are partially and completely visually impaired with comfortable and light weight device.

METHOD:

This smart shoe works with the help of microcontroller, sensors and actuators like ultrasonic sensor, moisture sensor and piezoelectric buzzer and vibration motor module.

In this project we use microcontroller which can be able to work as a brain for this entire project, and it is capable to calculating the distance of the obstacle with the help of ultrasonic sensors which are mounted on the front and on one side of the shoe with facing two different directions. If the obstacle is detected, the microcontroller will take this data as an input and the system will alert the person or notifies the person about the obstacle in their path with help of a buzzer and a vibrator.



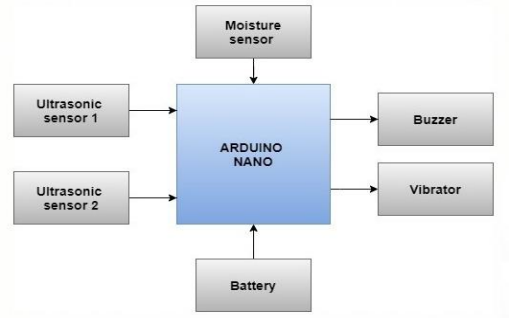
Speed of sound:

V= 340 m/s

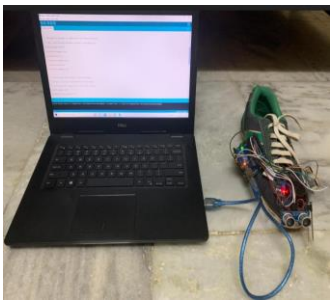
V=0.034 cm/us

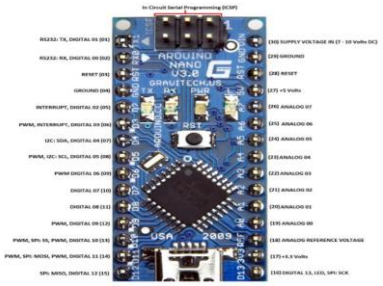
Time =distance /speed
t=s/v=10/0.034=294 us
Distance:
s=t*0.034/2

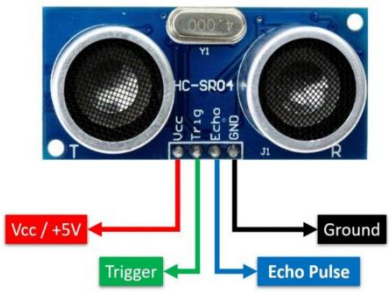
BLOCK DIAGRAM:

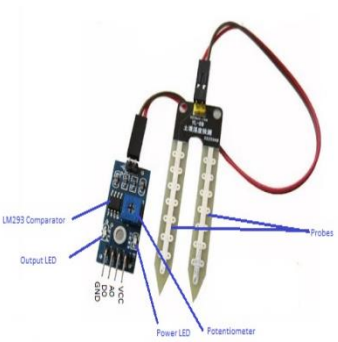


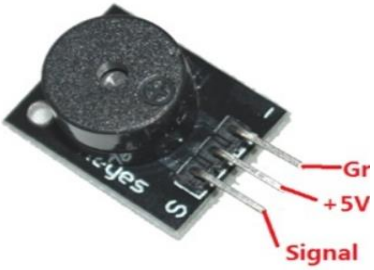
EXPERIMENT:











COMPONENTS USED:

ARDUINO NANO:

We are using Arduino nano development board. It is having Atmega328 as a microcontroller. Microcontroller is programmed in such a way that it takes the input from sensors and activates the actuators in the device.

ULTRASONIC SENSOR:

Ultrasonic sensors work by emitting sound waves at a frequency too high for humans to hear. This works by sending the ultrasonic waves from the trigger. If an object is present, these sound waves will reflect to the echo. By the time and speed parameter we can calculate the distance at which the object is present.

MOISTURE SENSOR:

The soil moisture sensor consists of two probes which are used to measure the volumetric content of water. The two probes allow the current to pass through the soil and then it gets the resistance value to measure the moisture value.

BUZZER:

The buzzer we are using is piezo electric buzzer. This buzzer is used to alert the user on detection of the obstacle by producing sound.

VIBRATOR:

This vibrator motor module is also used for alerting the user on detection of the obstacle, we are using this extra alerting system to alert the user in special cases such as, when the user is deaf too and when he goes to high noise places.

ESTIMATED COST:

It costs around 600-700 INR.

SUMMARY:

Smart shoe is a device that helps the visually impaired people to walk on road without any assistance of another person or a white cane. This shoe gives an alarm or a buzz when there is an object in front of the person and alerts him beforehand so that he can avoid severe accidents on roads. It is a lightweight shoe which is very comfortable while walking. Our main concern behind implementing this idea is, people who are visually impaired should be able to walk comfortably and confidently on roads.

12. UVC DISINFECTOR

COLLEGE	B.V. RAJU INSTITUTE OF TECHNOLOGY
GUIDE	PANDURANG MIRAJKAR
COLLEGE STUDENTS	P.ALEKHYA REDDY, KOTA VIKRAM DEV, PAMENA.VENKATESH, VISHAL RAJ KANDUKURI, LALITHA PATRA
SCHOOL STUDENTS	SK ABDUL ALI, VADLA VYSHNAVI, TELANGANA MODEL SCHOOL, JAKKAPALLI, NARSAPUR

ABSTRACT:

During the pandemic time the need for sanitization is very high. It is very essential to sanitize ourselves as well as the objects around us, for this purpose we have come up with the idea of UVC Disinfector machine. The main component of this machine is UVC light and conveyor belt. The working principle is to use UV light to illuminate the object for inspection and analyze the infector and disinfect the germs on the objects.

HYPOTHESIS:

The main vision (or) Motto of the project is to provide following parameters

- To provide a low-cost model that can be afforded by every common man.
- To provide a small size and light weight model.
- To provide a reliable solution to sanitizing objects where application of sanitizer solutions is not advised.

The major intention of this project is to provide a disinfection solution for everyday objects with the help of present technology.

METHOD:

UVC Disinfector machine works with the help of a Microcontroller and a few input output devices like load cell sensor and actuator.

The microcontroller acts a brain where it calculates the weight of the object with the help of weight sensors which are mounted on to the starting of the belt. With the help of this data microcontroller gives information to the person about the weight and depending on the weight, it moves or rejects the object and disinfects.

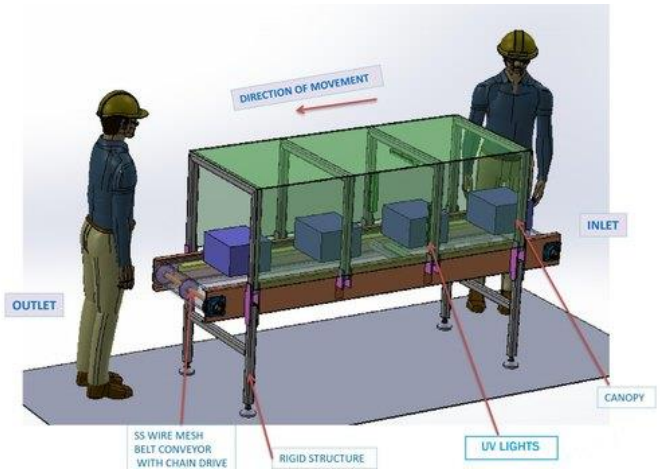
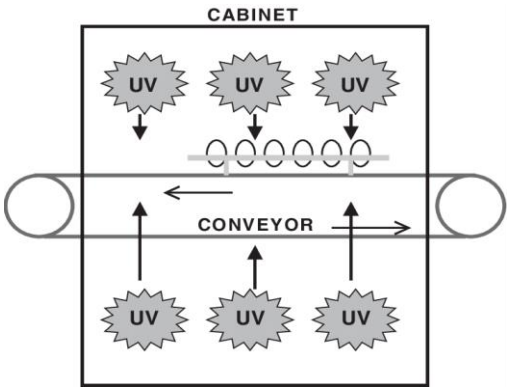
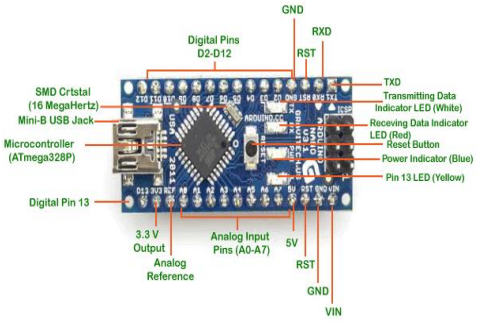


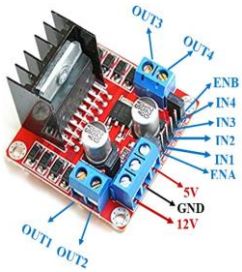
Fig 1. Basic working of a UVC conveyor belt

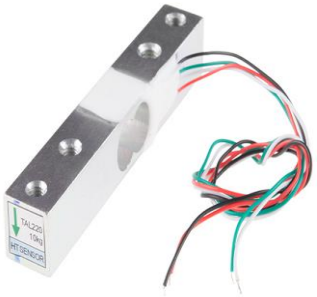
BLOCK DIAGRAM:

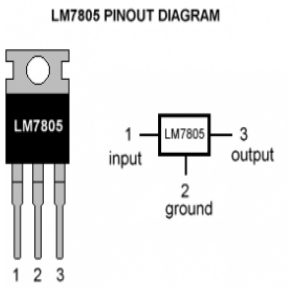


EXPERIMENT:









1. Voltage sources in a circuit may have fluctuations resulting in not giving fixed voltage outputs. Voltage regulator IC maintains the output voltage at a constant value.
2. Arduino acts as a brain for the whole process. It has been programmed in such a way that when an object is placed it moves the belt by an actuator after calculating its weight.
3. Load cell transmits the electronic signal (of few millivolts) and it is amplified by the load cell amplifier. Then the weight is calculated and displayed.
4. According to the weight calculated the actuator moves the conveyor belt and the object is sent into the uv chamber for disinfection, after which it is sent out of the chamber for collection.

SUMMARY:

UVC Disinfector is a prototype which is used to make an easy approach towards sanitization of everyday objects. The project aims to be affordable to everyone. As it is still a prototype version which can be upgraded in later on fully assembled models.

ESTIMATED COST:

Rs. 2000/- Only

13. WATER QUALITY MONITORING DEVICE

COLLEGE	B.V. RAJU INSTITUTE OF TECHNOLOGY
GUIDE	PANDURANG MIRAJKAR
COLLEGE STUDENTS	K VENKAT SAI, R.LIKITHA, P.TARUN, SAKHAMUDI SAI NARENDER, Y.SRI RANGA SNIGDHA
SCHOOL STUDENTS	MOHAMMAD NADIYA, THIRUNAHARI AISHWAIRYA, TELANGANA MODEL SCHOOL, JAKKAPALLI, NARSAPUR

ABSTRACT:
Drinking water is essential for the survival. Every day in our life, we observe people drink water in the public areas, who have no idea whether the water is safe to drink or not. If the water is contaminated, its unsafe to drink it and so the people fall ill. So, to avoid this problem, we are coming with a solution. The central idea of our project is to design a portable device which indicates the acceptable and unacceptable levels of drinking water.
There are few already existing solutions, but our product is of low cost. In our proposed solution, PH and TDS sensors indicates the safe and unsafe levels of drinking water. Through our proposed solution, people can regularly check the quality of drinking water. Our product is highly efficient and it prevents the harmful effects of drinking contaminated water.

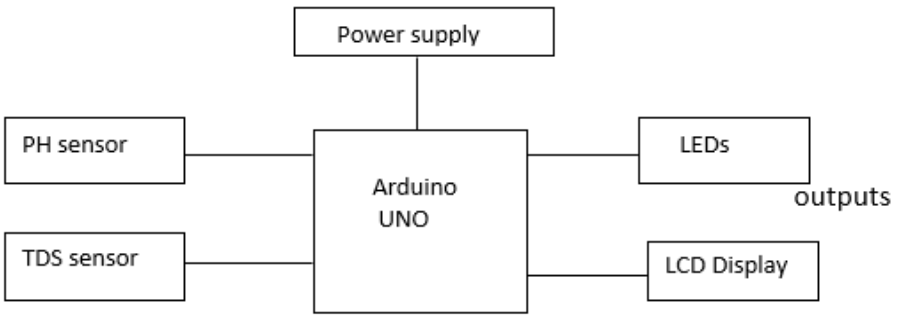
HYPOTHESIS:
The main vision (or) Motto of the project is to provide following parameters

- To provide a low-cost model that can be afforded by every common man.
- To provide a small size and light weight model.
- To give assurance to the people in providing safe drinking water.

The major intention of this project is to provide the acceptable range of drinking water in public areas, by indicating the quality level of the water.

METHOD:
WATER QUALITY MONITORING DEVICE work with the components PH sensor, TDS sensor connected to an Arduino. Based on the values of pH and TDS of water we determine whether it's safe to drink or not and there are also LEDs connected to the Arduino which indicates the quality of water which is also displayed on the LCD screen.

BLOCK DIAGRAM:



PERIPERALS:

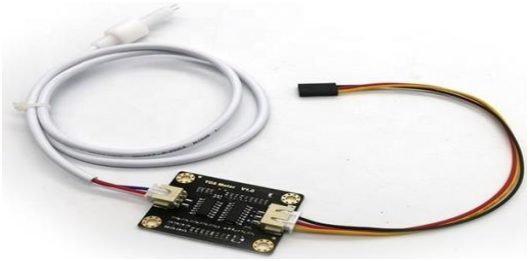
Arduino

PH Sensor

Connecting pH sensor to Arduino:

Ph Sensor has 3 pins that need to be connected to Arduino. So, connect the VCC pin to 5V of Arduino and GND to GND. Connect its analog pin to A0 of Arduino.

TDS Sensor:



Connecting TDS to Arduino:

The connection of TDS Sensor with Arduino is fairly simple. Connect the VCC to Arduino 5V & GND to GND. Connect its Analog pin to any analog pin of Arduino. You can use Analog pin A1 of Arduino.

SUMMARY:

Water quality monitoring device is a prototype which is used to detect the quality of drinking water, mostly in public areas. In this the total cost factor is very low so that any common man can afford it and utilize it. As it is still a prototype version which can be upgraded in later on fully assembled model.

ESTIMATED COST:

Rs.2000 /- Only

14. WOMEN SAFETY WRIST BAND

COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDHURY
COLLEGE STUDENTS	MOOLA JEEVAN CHAITANYA GOUD, PRAGYA SENGAR
SCHOOL STUDENTS	K.MAHESH, G.SREEDHAR, ZPHS SHIVARAMPALLI

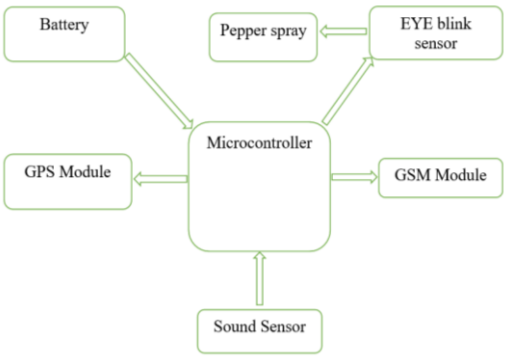
ABSTRACT:
The violence against women is mushrooming at an alarming rate every single day, even in modern days with much advancement in technology. A Large number of situations are being unnoticed which occur at night times while returning home from the workplace. Human trafficking, domestic violence, marital rape, and many more are familiar words in our society. Due to much physical power possessed my men, women could not get rid of their trap. In order to rescue themselves from the chaotic situations, there must be a device that can get off the hook. Women are a big social issue that needs to be solved very soon.
So, we came up with the Automatic wrist band that is especially designed for the safety of women who work for late nights. This watch is equipped with sound detection feature which automatically detects the high pitch voice and tracks the location of person to send SMS. The other key functionality is that it will spritz pepper spray in the eyes of foe to get rid of physical damage until someone come to rescue the women.

HYPOTHESIS:
The main motto behind this project is to meet the following parameter:

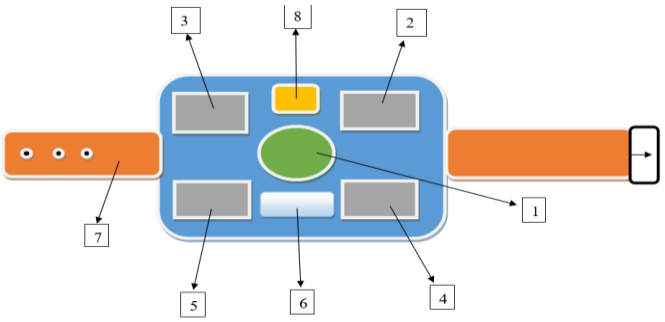
- As the watch has unique feature to spritz the pepper spray which will reduce the physical damage to woman until someone come to rescue.
- The automatic SMS will activate the trustable persons or police indicating that He/she is in danger.
- It will reduce the activities like rape, Kidnap, Human trafficking.
- The watch is automated by itself with the sound sensor whenever is detects high noise, this will not require any human activation.
- It can be carried by anyone to be safe and preventive for hazardous situations.

METHOD:
The working mechanism of the watch is that, it is enabled with a GPS module, sound sensor, eye blinking sensor, whenever a woman shouts with high noise, the sound sensor would recognize the sound and automatically be enabled to trigger the GPS module in order to send the SMS. The eye blinking sensor would be producing an alarm when brought close to the eyes. Once, the eye blinking sensor is activated, the pepper spray will be sprinkled into the eyes of the foe. All the above-mentioned sensors are equipped to Arduino for their functioning.

BLOCK DIAGRAM:

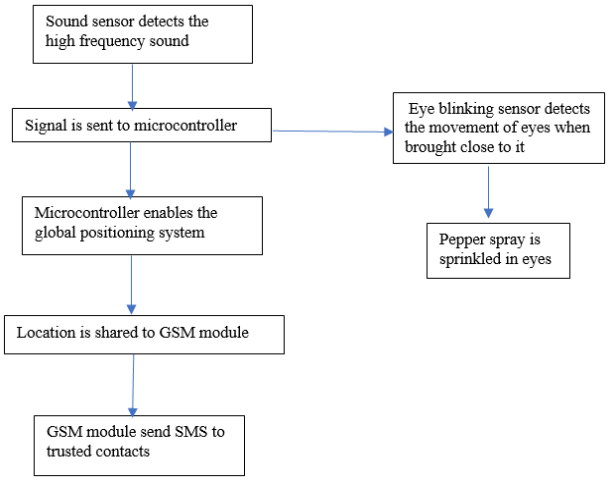


DESIGN:



1	MICROCONTROLLER
2	SOUND SENSOR
3	GPS MODULE
4	EYE BLINKING SENSOR
5	GSM MODULE
6	PEPPER SPRAY CYLINDER
7	WATCH BELT
8	RECHARGEABLE BATTERY

FLOW CHART:



SUMMARY:
Life is very precious, once lost, cannot be retrieved back. Every Women in this society are prone to many evil activities through which few lost their lives and few lost their identity. In order to stop such activities upon women, this safety band will be very helpful to rescue them from dangerous situation, be it a night or morning. The features like live tracking and sending the SMS will activate police along with their family. Another feature of pepper spray will safeguard them from the foe. Over all this band will be more suitable for women working at late night or someone who is having trouble in their workplace.

ESTIMATED COST:
Rs.2210/- Only

15. AUTOMATIC WATERING FOR PLANTS

COLLEGE	CHADALAWADA RAMANAMMA ENGINEERING COLLEGE
GUIDE	Dr.P.KRISHNAMURTHY
COLLEGE STUDENTS	LEELAMANI BADIGA, SRIPATHI BACHU
SCHOOL STUDENTS	SAMUNDEESWARI RAJI, HEMANTH KUMAR BUGGA, ZPHS TIRUCHANOOR

ABSTRACT:
The Plants are an integral part of nature, and in the name of development, we already have sacrificed most of the green. But being a lazy one, it is too difficult for me to get up and water my plants. On the other hand, if you see, it's not only me who forgets to water the plants. A similar scenario is widespread with most of us. We all are busy one way or the other. Due to which our plants suffer and their health decay.
The main focus of this project is to provide the plant watering system designed as automated. It waters the plant when needed. To achieve this, placed a water pump in a water reservoir and connected it to a microcontroller via a relay module.

HYPOTHESIS:
The main vision (or) Motto of the project is to provide following parameters

- To provide a low-cost model that can be afforded by every common man.
- To provide watering to plants in human absence.
- To keep soil water level of the plants always wet.

The major intention of this project is to provide automatic watering for plants without any human presence with the help of present technology.

METHOD:
The Automatic Plant watering system we needed a Soil Moisture Sensor, a Relay Module, an Arduino Uno, a Water Pump. e write code on Arduino IDE, to establish a communication between Soil moisture sensor and relay module using Arduino.

The soil moisture sensor is based on a principle of measuring dielectric permittivity of surrounding medium. In soil, dielectric permittivity is a function of the water content. The sensor creates a voltage proportional to the water content of the soil.

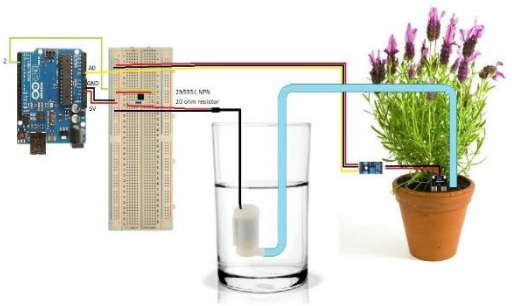


Figure 1: Automatic watering for plants using Arduino uno

BLOCK DIAGRAM:

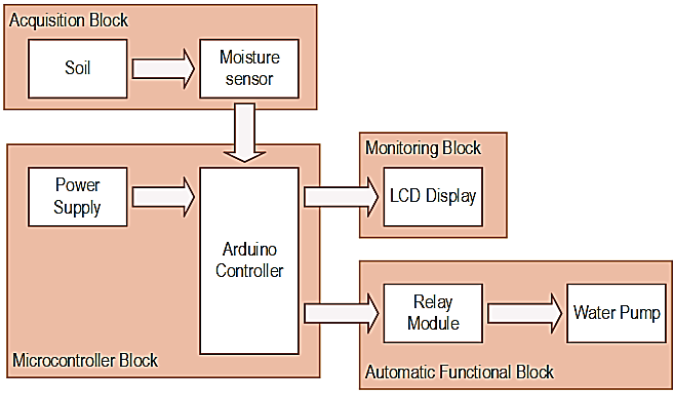


Figure 2: Block Diagram of Automatic Watering for Plants

EXPERIMENT CIRCUIT:

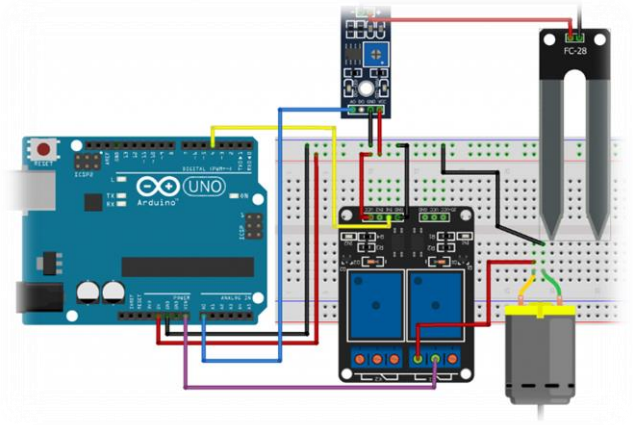


Figure 3: Circuit Diagram for internal connections

The major components used in the above circuit are as follows:

Soil Moisture Sensor:

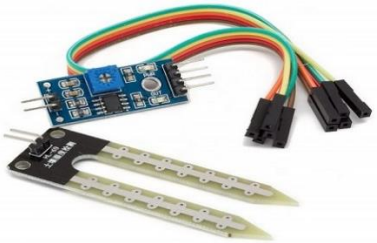


Figure 4: Soil Moisture Sensor

The soil moisture sensor is one kind of sensor used to gauge the volumetric content of water within the soil. As the straight gravimetric dimension of soil moisture needs eliminating, drying, as well as sample weighting. These sensors measure the volumetric water content not directly with the help of some other rules of soil like dielectric constant, electrical resistance, otherwise interaction with neutrons, and replacement of the moisture content.

The relation among the calculated property as well as moisture of soil should be adjusted & may change based on ecological factors like temperature, type of soil, otherwise electric conductivity. The

microwave emission which is reflected can be influenced by the moisture of soil as well as mainly used in agriculture and remote sensing within hydrology.

Arduino Uno:

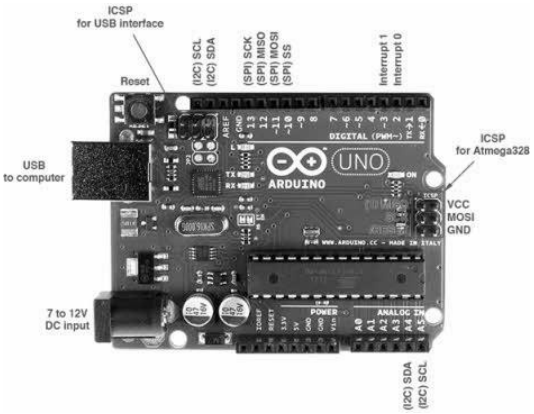


Figure 5: Arduino Uno Board

The features of Arduino Uno ATmega328 includes the following.

- The operating voltage is 5V
- The recommended input voltage will range from 7v to 12V
- The input voltage ranges from 6v to 20V
- Digital input/output pins are 14
- Analog i/p pins are 6
- DC Current for each input/output pin is 40 mA
- DC Current for 3.3V Pin is 50 mA
- Flash Memory is 32 KB
- SRAM is 2 KB
- EEPROM is 1 KB
- CLK Speed is 16 MHZ

Relay:

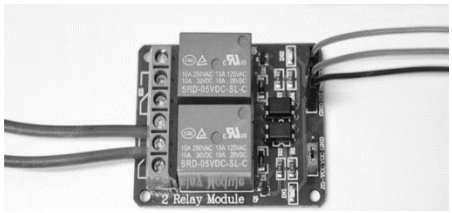


Figure 6: Relay

A relay is an electromagnetic switch operated by a relatively small current that can control much larger current. Here's a simple animation illustrating how the relay uses one circuit to switch on another circuit. Initially the first circuit is switched off and no current flows through it until something (either a sensor or switch closing) turns it on. The second circuit is also switched off.

When a small current flow through the first circuit, it activates the electromagnet, which generates a magnetic field all around it.

Water pump:

Figure 7: Water pump

The working principle of a water pump mainly depends upon the positive displacement principle as well as kinetic energy to push the water. These pumps use AC power otherwise DC power for energizing the motor of the water pump whereas others can be energized.

SUMMARY:

In this system, soil moisture sensor senses the moisture level of the soil. If soil will get dry then sensor senses low moisture level and automatically switches on the water pump to supply water to the plant. As plant get sufficient water and soil get wet then sensor senses enough moisture in soil. After which the water pump will automatically get stopped.

TEAM PHOTO:

ESTIMATED COST:

Rs.2500/-

16. SMART MASK AND SANITIZATION(SMS) T-SHIRT FOR CHILDREN

SCHOOL	AMARARAJA VIDHYALAYAM
GUIDE	R.SASIKANTH
COLLEGE STUDENTS	
SCHOOL STUDENTS	D.GAGANA SRI, R.VISHAL, AMARARAJA VIDHYALAYAM, DIGUVAMAGHAM

ABSTRACT:
COVID-19 affects different people in different ways. Most infected people will develop mild to moderate illness and recover without hospitalization. People are following trusted sources for corona information, having confidence and in prevention of COVID-19; at school level we designed with proposed features will help from pandemic COVID-19 situation.
The main focus of this project is to provide a maximum protection, cost effective, design color mask, light weight and make every person to feel safe.

HYPOTHESIS:
The main vision (or) Motto of the project is to provide following parameters:

- To provide a low-cost model that can be afforded by every common man.
- To provide a safe and secure protection.
- To provide an accurate maximum protection on personal health & hygiene
- To avoid respiratory disorders.
- To provide awareness about the Arogyasetu app and sensor technology.

The major intention of this project is to provide a secure life for children's in the world with the help of present technology.

METHOD:
T- Shirt / shirt with attachable and detachable mask. Children's can show interest on wearing T-shirts with colorful images of masks so this type of proposed t- shirts / shirts will have different and attract children. Mask should have object finding sensor which can give light signal / alarm which mask is wear-on this sensor also attached / detachable for washing purpose Like Arogyasetu app we can fix sensors into t-shirts/ shirts for altering the T-shirt wear children, when others are reaching to him. Pocket is stitched in the t- shirt/ shirt will be useful for keeping sanitizers along with him at any time for effective usage.
In the current panic COVID-19 situation, it will give best practice on hygiene for preventing corona by using SMS. Useful for schools, uniform color shirts / T-shirts for designed with proposed features will help for panic COVID-19 situation. Color of the shirt is same only mask and sensors will add to the shirt.

EXPERIMENT:
Like Arogyasetu app we can fix sensors into t-shirts/ shirts for altering the T-shirt wear children, when others are reaching to him.

SUMMARY:
Mask should have object finding **sensor** which can give **light signal / alarm** which mask is wear-on this sensor also attached / detachable for washing purpose.

1.Make sure it covers both your nose, mouth and chin. When you take off a mask, store it in a clean plastic bag, and every day wash it if it's a fabric mask.
2.Don't use masks with valves.
3.Masks should be used as part of a comprehensive "do it all".
4.A sensor is a device purpose is to detect events or changes in its environment and send the information to another processor.

PICTURES:

TEAM PHOTO:

ESTIMATED COST:

1. Fabric cost: Rs.200
2. Mask Cost: Rs.15
3. Sensors Cost: Rs.150

   TOTAL:365

17. COLLIDANCE AVOIDING DOOR

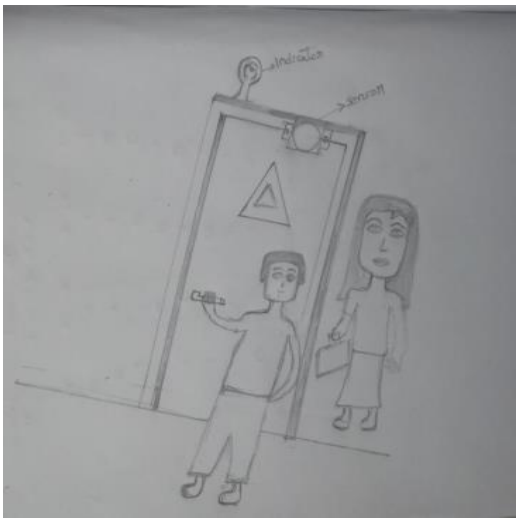
COLLEGE	LOVELY PROFESSIONAL UNIVERSITY, PUNJAB
GUIDE	RUHUL AMIN CHOUDHURY
COLLEGE STUDENTS	MALAKALAPALLI NAGENDRA, BALLA CHIRU CHANDANA SURYA HASA
SCHOOL STUDENTS	G.DIVYA SWAROOPA, TRIKARANI, ZPHS PARAVADA

ABSTRACT:
Now a days we are using non-transparent doors everywhere in schools, collages, malls, restaurants etc. With this type of doors there is a problem if the person is in hurry. For suppose when two persons try to open the door at the same time one of them will get hurt by hitting the door. This problem arises in many places in restaurants, seminars, theatres etc. Small children also will get hurt if they are beside the door. Likewise, we notice many misunderstanding situations leading to physical damages to people. To get rid of such problems we need to automate the door to detect people approaching it.

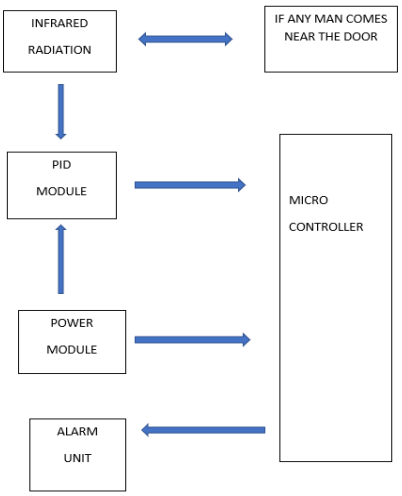
DETAILED DESCRIPTION (Technical as well as non-Technical):
We can minimize the above-mentioned problem by fixing a sensor at top of the door with an indicator. This indicator will be an electronic sensor which measures infrared (IR) light radiated from the objects in its field of view. They entirely work by detecting infrared radiations (radiant heat) emitted or reflected from the objects. By hearing that indication, a person will slow down his pace coming from another side of the door, in other cases we can fix the sensor at top of the wash-room door or on the main door. The sensor is advantageous when malls or restaurants are shutdown, if any person get stuck in a particular area, the sensor will give an indication through buzz sound to watchman so that he can verify if any person is there inside the mall.

METHOD:
The present invention detects the warm body above 0k approaching near the door in order to send the input to micro controller which then activates the indicator or an alarm.

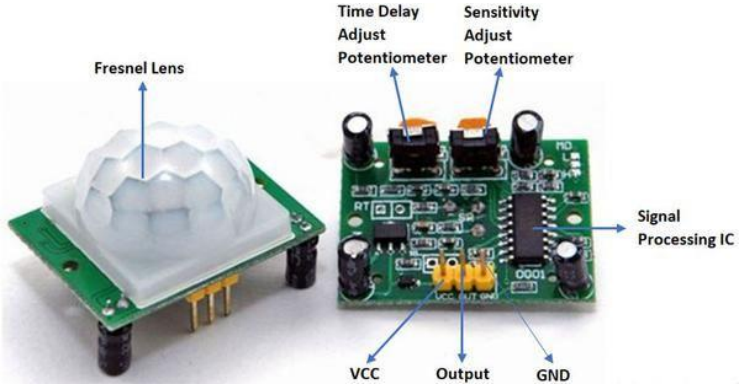
DESIGN:



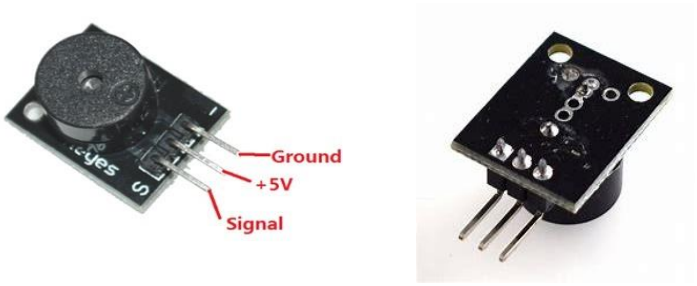
BLOCK DIAGRAM:



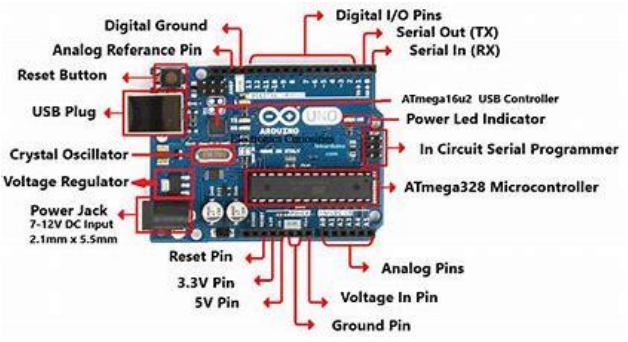
HC-SR501 Human body Pyroelectric Infrared sensor PIR:



BUZZER:



Arduino UNO:



ADVANTAGES:

- The people will recognise if any person coming from the other side of door.
- It will help to avoid colliding with door.
- It will help whether any person is there in locked restaurants.
- It will made with very less cost.

SUMMARY:

Collision avoiding door is a device where the door will be installed with a device that captures the infrared radiations from the body\object and sends the signal to buzzer with the help of micro controller and gets buzzes itself. This helps in avoiding the Collison between the people on either side of the door. This device is very easily affordable device and can be purchased and used anywhere and anytime. Since it is a prototype which can be upgraded later to a fully upgraded or assembled model/device.

ESTIMATED COST:

Rs.400/- Only

DIGNITARIES IN ANVESHANA BANGALORE (2012 to 2015)

In 2012 *- Mr. G. Kumar Naik I.A.S,(Education Secretary, Karnataka Government) giving the inaugural speech to students (Mr. Ramji Raghavan, Mr. Sharat Kaul, Mrs. Erin Brennock, Dr. V S Ramamurthy, Director NIAS, Bangalore, Padmashri Prof. R M Vasagam, Former Vice Chancellor, Anna University Prof. Ramaswamy, Rtd. Prof IISc on the stage)*

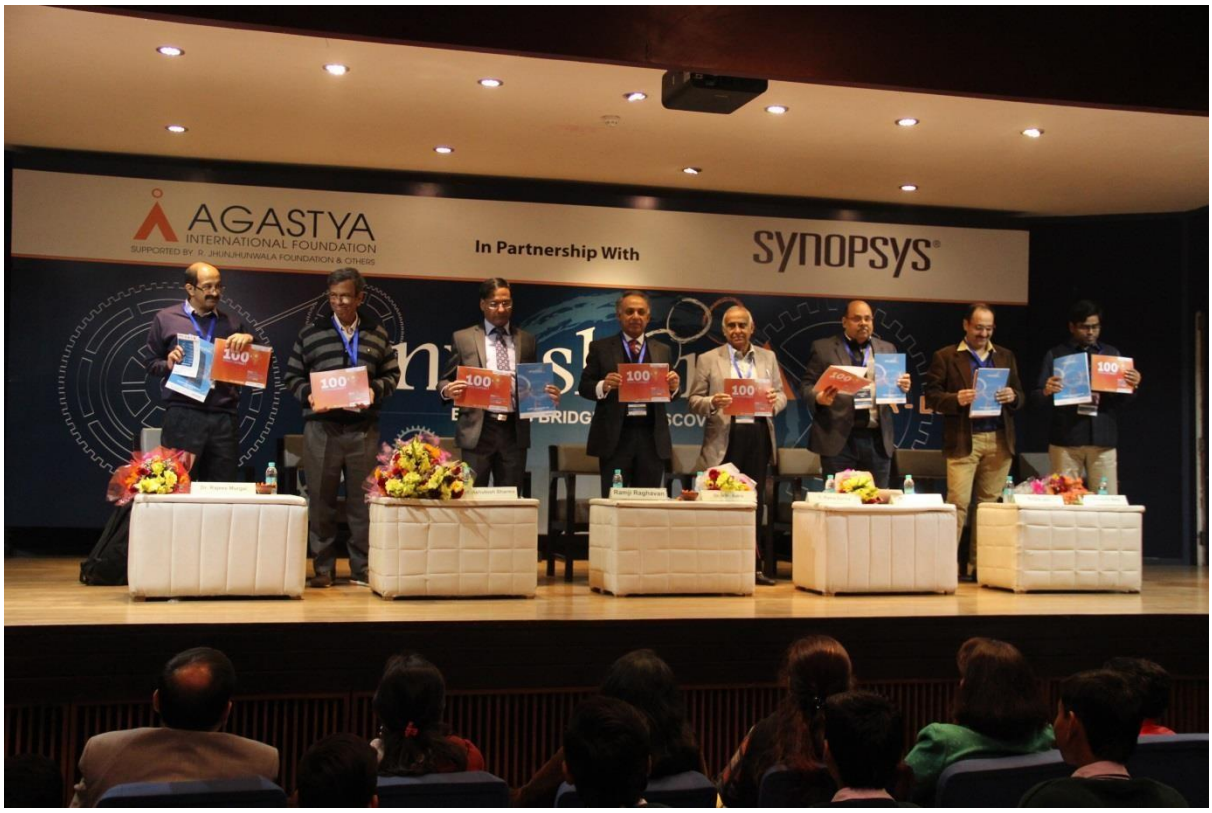
In 2013 *- Anveshana abstract Book Launch - Ramji Raghavan, Chairman Agastya International Foundation, Sharat Kaul, Sr. Executive Account Manager, Synopsys India, Dr. Pradip Dutta, Corporate Vice President & Managing Director, Synopsys India, Dr. H. Harish Hande, Magsaysay award winner, G. Kumar Naik I.A.S.(Education Secretary, Karnataka Government), Dr. K.G. Narayanan, Former Director Aeronautical Development Establishment, Bangalore*

In 2014 *- The program was inaugurated by Prof U.R. Rao, Former Chairman, Space Commission & Secretary, Department of Space, and ISRO- DOS in presence of Dr. Rajkumar Khatri, IAS, .Education Secretary, Karnataka Government, Raja Subramanian, Country Director, Synopsys India, Dr. Wooday P Krishna, Chairman IE, Karnataka State Center, Padmashri Prof. R M Vasagam, Former Vice Chancellor Anna University, D R Seetharaman, Group Director, R&D Solutions Synopsys India*

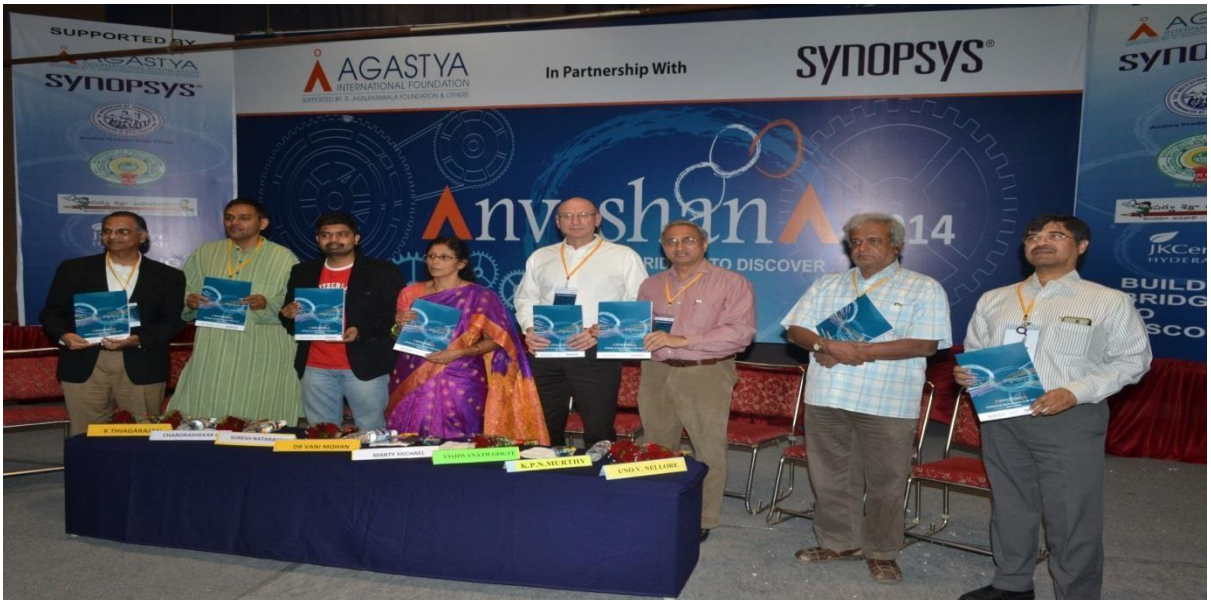
In 2015 *- Inauguration by Sri Kimmane Ratnakar - Minister for Primary & Secondary Education, Karnataka State Government in presence of Dr. V K Aatre, Scientist & Former Head of DRDO, Dr. Pradip K Dutta, Corporate Vice President & Managing Director, Synopsys India, Prof. Anurag Kumar, Director IISc, Bangalore, Padmashri Prof. R M Vasagam, Former Vice Chancellor Anna University, Prof. Sudhindra Haldodderi, Science Writer, Former Scientist DRDO, and Dr. A Maulishree, CEO ICT Skills Development Society, Department of IT,BT & S&T, Government of Karnataka*

DIGNITARIES IN ANVESHANA NCR-DELHI (2015-16)

In 2016 *- Prof. Ashutosh Sharma, Secretary DST, GOI, in presence of Dr. V K Aatre, Scientist & Former Head of DRDO interacting with students before inauguration at Anveshana NCR-Delhi*



DIGNITARIES IN ANVESHANA HYDERABAD (2014 to 2015)



In 2014 -Abstract Book launch by Dr. G. Vani Mohan, I.A.S, Commissioner & Director of School Education, Government of AP in Presence of Marty Michael, Senior Director, Technical Support and Training, Synopsys USA, Jury Panel - Dr.Vishwanath Gogte, Director, Vignyan Vahini, Prof. K. P. N. Murthy, Director Center for Integrated Studies, University of Hyderabad, K Thiagarajan, COO, Agastya International Foundation, Chandrashekar DP, COO, JGI Group, Suresh Natarajan, Jiddu Krishnamurthy Center, Hyderabad,

2015 - Dr. R.S. Praveen Kumar I.P.S, IG of Police and Secretary, TSWREIS present in Anveshana 2015-Hyderabad addressing students

28th January 2015 *Inauguration by Ms. Erin Brennock, Director- Government Affairs, Synopsys in presence of Mr. Uno V Nellore, Manager Technical Support and training, Synopsys Mr. Ajith Basu, CPE, Agastya International Foundation along with the Jury Panel*

29th January 2015 *–First prize winners after receiving the Prize from* Marty Michael, Senior Director, Technical Support and Training, Synopsys USA, in presence of *Ms. Erin Brennock, Director- Government Affairs, Synopsys, Mr. Uno V Nellore, Mr. Thiagarajan, and the Jury Panel*