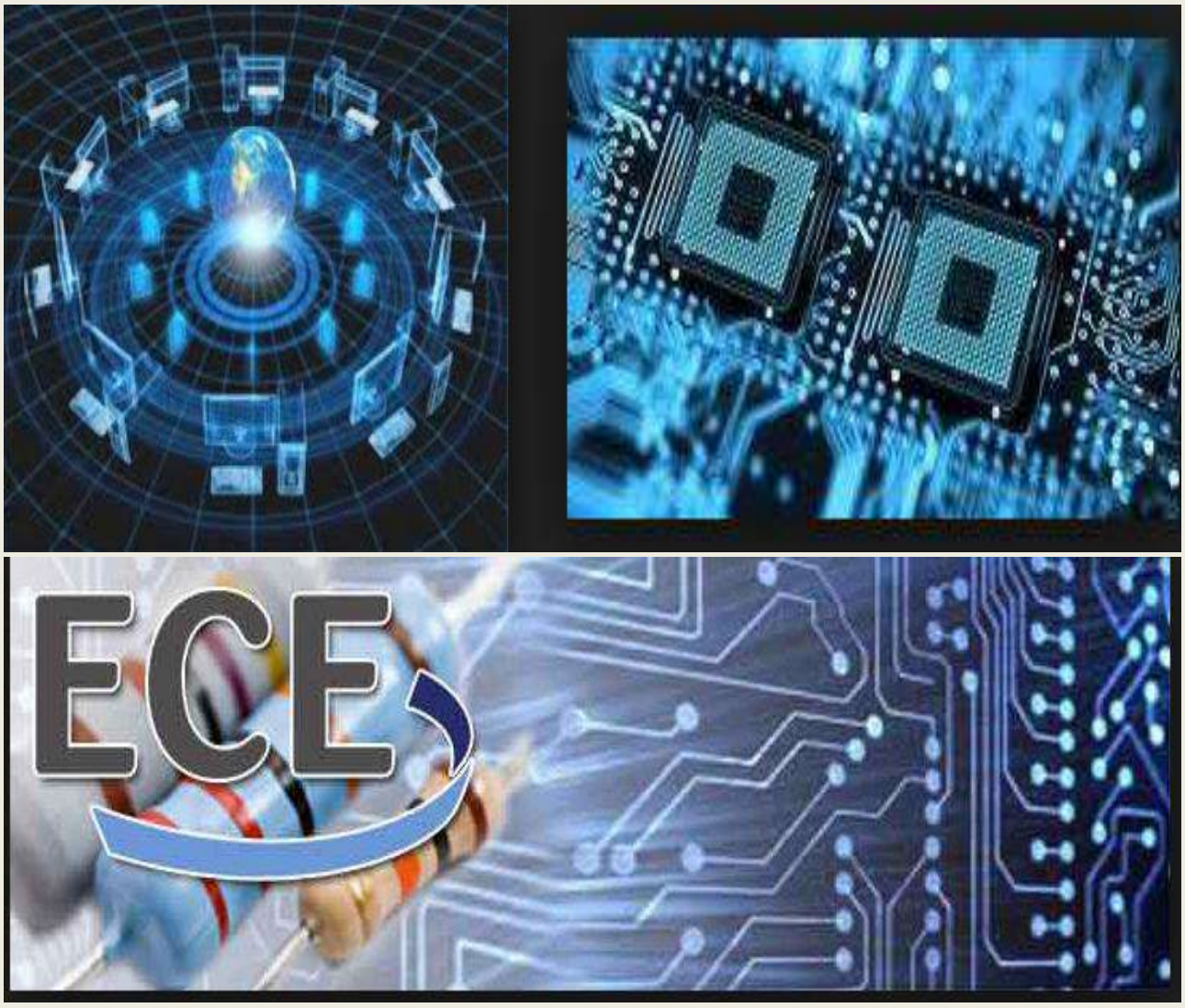
S.A. ENGINEERING COLLEGE

CHENNAI-77

SAANKETHIKA 2K18

Annual Magazine, Issue 6, May 2018



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DEPARTMENT OF

ELECTRONICS AND COMMUNICATION ENGINEERING

DEPARTMENT OF ELECTRONICS & COMMUNICATION

Electronics and Communication Engineering is one of the most upcoming areas of Research & Engineering among all other branches of engineering. As of today, Electronics and Communication Engineers are working in all spheres of modern industry. The goal of this course is to impart all around technical education to the students to fulfill requirements of new challenges of industries as well as to find new waysto solve the practical problems of our daily life.

The Department of Electronics and communication Engineering was established in the year 1998-99. It inculcates a spirit of scientific temper and analytical thinking and trains the students in contemporary technologies in Electronics and communication to meet the needs of the industry. The Department is well-equipped with laboratories i.e. Digital Design, Digital Signal Processing, Microprocessor, Electronic Circuits Analog & Digital Communications, , RF &Microwave ,Computer Networks and VLSI Design which cater to program needs.The M.E degree course in communication systems was started in the academic year 2006-07.The Department has extensive and fruitful interactions with the industry, R & D organizations and other professional bodies, the interactions with them culminate into professional activities, research agendas and partnerships through MOUs.An excellent academic environment is available for creative and productive work both for faculty as well as students.

MESSAGE

*Our college is committed to maintaining an academically rich and professionally competent environment by encouraging the skills of our students. Our faculty members do support and play a vital role in the overall development of our students and the institute. It is a great pleasure to see the creative expressions of students who had contributed to "**SAANKETHIKA 2K18"**. I am confident that the initiative will not only bring laurels to the student community but will also open new vista for further innovations.*

*I convey my regards and hearty felicitation to the organizers for the successful release of the e-magazine "**SAANKETHIKA 2K18**".*

Dr.D. Dasarathan

Secretary

S.A.Engineering College

MESSAGE

I am very glad that the Department of Electronics & Communication Engineering of S.A.ENGINEERING COLLEGE is bringing out the ***SAANKETHIKA 2K18.***

I hope this magazine will be a treasure for those associated with Electronics & Communication Engineering and will help in providing a platform for sharing experiences & learning in this area.I once again congratulate the Electronics &Communication Engineering Department and the entire team on this endeavor and wish the Technical Magazine all success

Mr.P.Venkatesh Raja
Director
S.A.Engineering College

MESSAGE

*I am happy to know that ECE department is bringing out its magazine "**SAANKETHIKA 2K18"** with dedicated team of staff and students. I'm sure every article in this compilation will be unique and every page will be inspiring and interesting in its own way.It is the perfect occasion for the budding engineers to display their technical skills.*

I once again congratulate the Electronics & Communication Engineering Department and the entire team on this endeavor and wish the Technical Magazine all success.

Dr.P.K.Nagarajan

Principal

S.A.Engineering College

MESSAGE

At the onset I pay my heartfelt tributes to the Editorial Committee and student's for the selfless dedication in making ***SAANKETHIKA 2K18 .****It is great to find a considerable number of articles that certainly prove that our staff and students are adequately equipped and possess necessary skill sets to express their talent. I trust this will prove a very successful endeavor in future to evolve a team of intellectuals who will share their views with such magazine for the growth of Institute and development of nation as a whole.*

With great pride, let me take this opportunity to wish the organizing committee who are working for this magazine.

Dr.B.R.Tapas Bapu
Head of the Department
S.A.Engineering College

INSTITUTION

Vision

Transform our institution into quality technical education center imparting updated technical knowledge with character building.

Mission

To create an excellent teaching and learning environment for our Staff and Students to realize their full potential thus enabling them to contribute positively to the community.

DEPARTMENT

Vision

To achieve overall excellence in education by continuously upgrading the teaching learning process and incorporating latest technological advancements happening worldwide with ethical responsibilities.

Mission

- *To impart sound technical competency and quality education for students to enhance the employability and ethical values.*
- *To provide conducive environment for faculty and students with excellent facilities to improve research activity*

Programme Educational Objectives

PEOs are broad statements that describe the career and professional accomplishments that the program is preparing its graduates to accomplish.

- *Our graduate Engineers will have professional competency in Electronics and Communication Engineering with good foundation in Mathematics and basic sciences.*

- *Our graduates will possess lifelong learning process and augment their engineering skills for new challenges with sustainability.*

- *Our graduates will have effective communication skills and work in multidisciplinary team.*

- *Our graduates will practice the profession with ethics, integrity, leadership and social responsibility.*

Programme Outcomes

a. *To apply **knowledge** of mathematics, science and engineering appropriate to ECE discipline.*

b. *To formulate and analyze the complex engineering **problems** by using the principles of mathematics and engineering fundamentals.*

c. *To **design and develop system** (or) process to meet the desired needs within the realistic constraints of the societal and environmental considerations.*

d. *To **investigate complex problems** by conducting experiments, analyze interpret and synthesize the information to provide conclusions.*

e. *To select and use appropriate **modern tools** for solving complex engineering problems.*

f. *To apply **reasoning knowledge** for providing engineering solutions to societal needs with professional engineering practice.*

g. *To demonstrate the knowledge of engineering for providing **environmental solutions** and **sustainable** development.*

h. *To understand the **ethical principles** and professional responsibilities.*

i. *To function effectively as a member (or) **a leader in multidisciplinary activity**.*

j. *To deliver effective **presentations** and **communicate** at ease with the society.*

k. *To be successful member (or) leader in diverse teams with enhanced **administrative skills** and **financial management**.*

l. *To realize the need for **lifelong learning** and adopt themselves to technological changes.*

TABLE OF CONTENT

SMART GLASSES FOR THE BLIND

R.MAHALAKSHMI, R.NANDHINI &P.PRIYADHARSHINI,
IV YEAR ECE B

OBJECTIVE

- To lower the barrier in communication between the deaf-mute communities and others
- To make it reliable for differently abled people

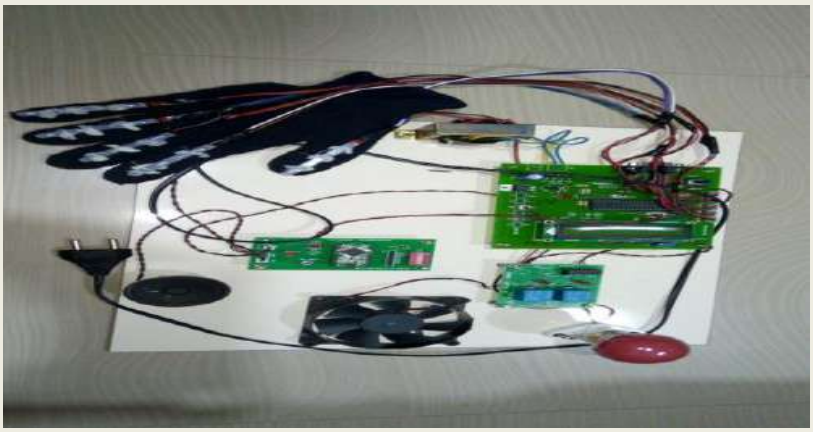
MOTIVATION

Around 360 million people in the world are deaf-mute. The interaction with deaf-mute people becomes difficult, so to bridge the communication gap between the differently abled communities and others we designed a smart glove that overcomes this barrier.

DESCRIPTION OF THE PROJECT

One of the most common buzzwords in technology circles right now is "***Internet of Things***" (***IoT***).New services, devices, apps and technologies of the **Internet of Things** (IoT) are being introduced at a feverish pace and the world is silently growing more hyper-connected with each passing day. The main aim of this smart device is to overcome the travelling difficulty for the visually impaired group, by giving these people guidance efficiently and safely. A novel sensor-based obstacle avoiding algorithm is proposed, which utilizes ultrasonic sensor to solve the problems of detecting small obstacles. On the other hand, wandering or disorientation is commonly experienced by people suffering from the visual impairment. If this happens, it's imperative that they are found right away to prevent harm from catching up on them. That's why tracking their location immediately is very important. Using an Internet-connected smartphone or a system, one can view their movements in real time. Not

only does it help you monitor their movements, it also helps his\her well-wishers locate them immediately in the event they get lost.



A highly accurate, cost effective and an independent glove is designed for deaf and dumb people. The glove is capable of translating their sign language gesture into speech through voice module. In this system a glove is mounted with flex sensors which give their output in the form of change in resistance according to the bend angle. For each value received at RF receiver, the microcontroller gives corresponding commands to the voice module.

SOCIETAL IMAPACT OF THE PROJECT

The interaction with deaf-mute people becomes easier.

DESIGN AND FABRICATION OF LOW COST BIO SAND FILTER

C.SIVASANKAR, M.SARAVANAN & R.VIJAY,
IV YEAR ECE C

OBJECTIVE

- To make Consumers prefer low initial cost technologies, made up of locally available materials which are easy to manufacture, operate and maintenance.
- Many rural communities draw their water from rivers or dry river beds**.** Often, it is possible to observe people digging a shallow hole in the riverbank, just away from the main stream.

MOTIVATION

- Waterborne diseases are the number one that cause deaths worldwide, with WHO and CDC estimating 3.5 million deaths every year due to contaminated drinking water.
- In India alone, around 2,000 people die every day due to lack of clean drinking water, and out of these, children under the age of five are most vulnerable.

DESCRIPTION OF THE PROJECT

This project is made up of an FRP drum and the input of water is done by using gravity method and it consist of two process sand process and ph enhancer the FRP drum is closed by using an three way multiport backwash, rinse and filter generally it can be used for lifetime with well maintenance of the sand and the ph enhancer can be used up to 6000 litres of water.

SOCIETAL IMAPACT OF THE PROJECT

Its main purpose to drink water at low cost so this filter can be mostly used in community or villages and also without electricity and without omitting any other minerals we can drink pure and healthy water.

WEARABLE SENSOR NODE BASED HEALTH AND ACTIVITY MONITORING OF ELDERLY PEOPLE USING INTERNET OF THINGS

SEEBA SRI.R, SHARMILA.S & YAMINI.V,
IV YEAR ECE A

OBJECTIVE

- Development of wearable sensor node to monitor human body parameters and human activity.
- Development of sensor node to monitor the environment parameters where the people is occupied.
- Data analysis will be carried out in the IOT server to perform actuation mechanism.

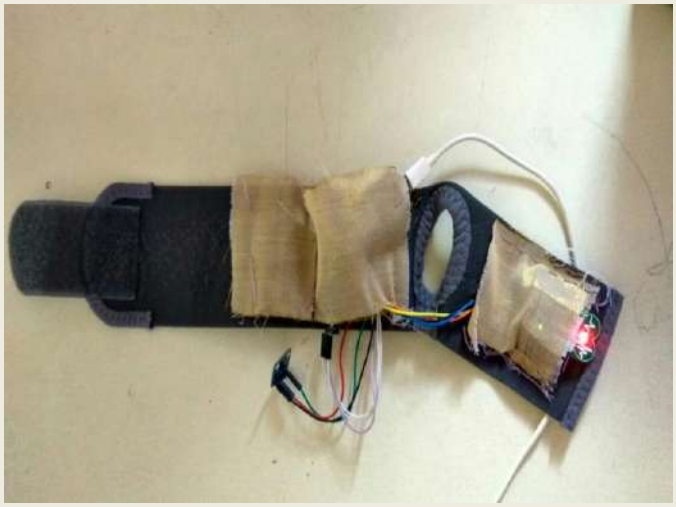
MOTIVATION

The motivation of the project are to avoid continuous monitoring of elderly people by a care taker. To reduce the system design complexity by developing wearable sensor node.Health and activity of the elderly people can be monitored by the care taker.Desired actuation can be taken by the care taker from anywhere during abnormality.

DESCRIPTION OF THE PROJECT

The wearable sensor node consists of adxl335 accelerometer sensor to monitor the motion signals and MAX30100 integrated with heart rate sensor, pulse rate sensor, temperature sensor which will be connected with a Bluetooth Low Energy (BLE) device. The deployed sensor node (DSN) is located at various rooms which consists of DHT11 which is used to measure the environment temperature and relative humidity level with a BLE and WIFI (ESP8266) enabled microcontroller. The wearable sensor node and deployed sensor node will get paired through Bluetooth protocol once the

elderly people entered into the respective rooms. The DSN collects the body parameters of the elderly people and sends the information to the centralized server along with the environment parameter and location stamping. The database of the centralized server accessed by the smart phone API (Application Programming Interface). The analyses data for any abnormality. In case of any emergency, the information will be notified to the care taker with alarm through API. Data analysis will be carried out in the IOT server to perform actuation mechanism



SOCIETAL IMAPACT OF THE PROJECT

- Health and activity of the elderly people can be monitored by the care taker.
- Desired actuation can be taken by the care taker from anywhere during abnormality

DEVELOPMENT OF ROBO HYDRO-JETTER CUM CUTTER FOR REPLACEMENT OF MANUAL SCAVENGING

DIVYA.P, IQLAS AMEER & POOJA SHARMA.K,

IV YEAR A SEC

OBJECTIVE

- To design and fabricate a low cost Hydro-Jetter Cum Cutterfor Sewage Cleaning
- To replace manual scavengers employed for cleaning the sewage pipe lines and avoid the humans entering into man holes.

MOTIVATION

According to Harnam Singh, the chairman of the Delhi SafaiKaramchari Commission, (Delhi cleaners commission) almost 70 per cent of the manual scavengers die on the job. An estimated 61 sewer divers have died in last six months alone. 28 workers who have died in the city since May 2014. But social workers estimate that around 100 sewer workers die every year across India.

DESCRIPTION OF THE PROJECT

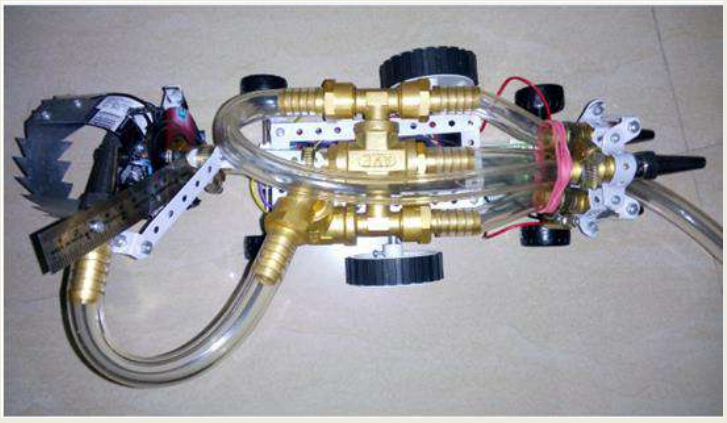
To prevent blockages and backups; cleaned by flushing water using high pressure nozzle and root cutter.This project is aimed at designing and fabrication of a low cost Hydro-jetter Cum Cutter for Sewage Cleaning and to replace manual scavengers employed for cleaning the sewer and to avoid the humans entering into man holes to clean sewer pipes and also to prevent blockages and backups. Cleaning is done by flushing water using high pressure nozzle to remove debris, grit, sand etc.; and a root

cutter to clear tree-roots and also to determine the condition of sewage pipes by inserting a camera to inspect the damage and repair them.

SOCIETAL IMAPACT OF THE PROJECT

- Cleaning, not just unclogging.
- Accurate and Consistent Cleaning without having to dig up your yard.
- Powerful and Efficient for Residual Removal.
- Removes Pathogens.
- More economical and environmentally safe.

More importantly, avoids human sewer diving i.e. humans entering into man holes to clean sewer pipe lines.



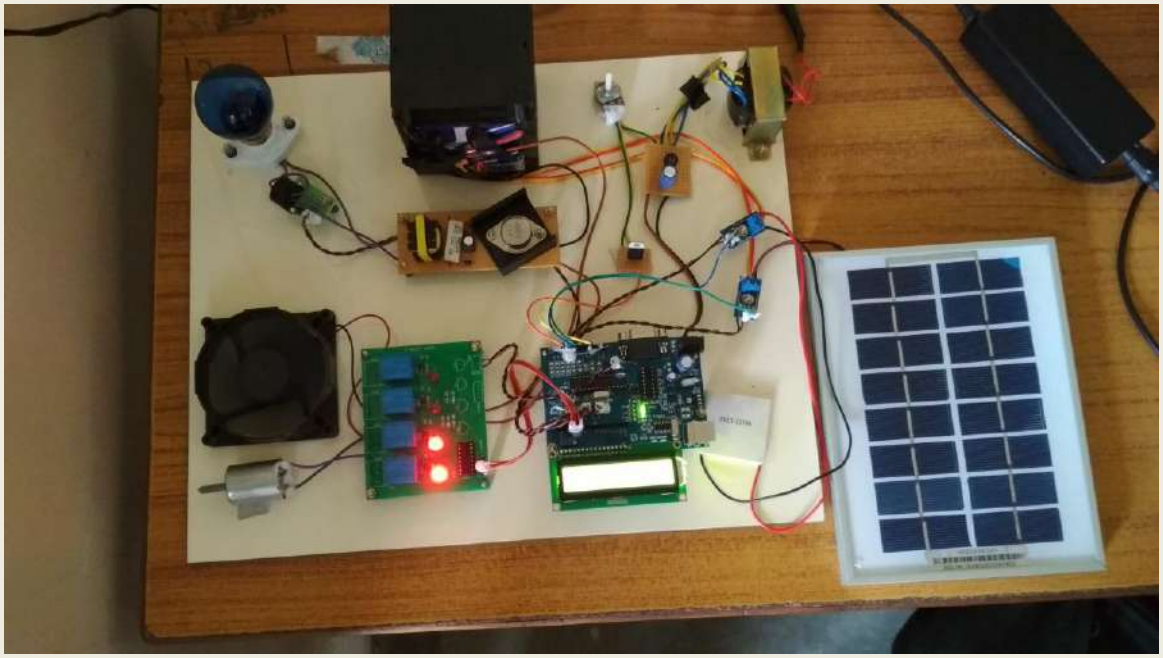
Top view of Robo Hydro-Jetter cum Cutter

Side view of Robo Hydro-Jetter cum Cutter

DESIGN OF HIGH PERFORMANCE AND COST EFFECTIVE HYBRID POWER GENERATION SYSTEM FOR INDUSTRIAL APPLICATIONS

D.ASHOK,D.DILIPAN &V.HARISH SRINIVAS,

IV YEAR A SEC



Nowadays, there is a demand to increase the power generation capacity because of steadily rising electrical energy consumption. In order to achieve this, renewable energy sources are the best option. However, the reserves of fossil fuels will soon be depleted, since oil is a limited resource. So overcome this we can use the renewable energy sources as it will also provide a cleaner environment for future generations. Renewable energy can be created by many methods; for example, solar energy, wind energy, hydro energy, nuclear energy, and many more. For each of these different forms of creating electricity, there are certain limitations. Among all the renewable energy

sources, solar power generation system tops the list. But solarenergy can only be created when there is sunlight, so overcome this by we can hybrid with other technologies, so here using hybrid generation using the solar and peltier plate. So when there is no sun then we can be get generate energy using the peltier plate. The solar and peltier energy obtained is stored to a battery. By hybrid which increases cell life, improve performance, and provide operational benefits under different environmental conditions. The battery which is used can be recharged with the two generation inputs like solar and peltier. The battery is connected to the inverter. From this energy the ac motor can be controlled using inverter design.

DESIGN OF GSM BASED VOICE DATA PROCESSING THROUGH BONE CONDUCTION PRINCIPLE FOR HEARING IMPAIRED PEOPLE

PANNEER SELVAM.P,KARTHIK.S&KARTHIK.R ,

IV YEAR B SEC

OBJECTIVE

- To design and analysis of GSM based voice data processing system through Bone Conduction Principle for hearing impaired people.
- The principle of bone conduction has been used for many years to treat patients with single-sided deafness and conductive hearing loss.

MOTIVATION

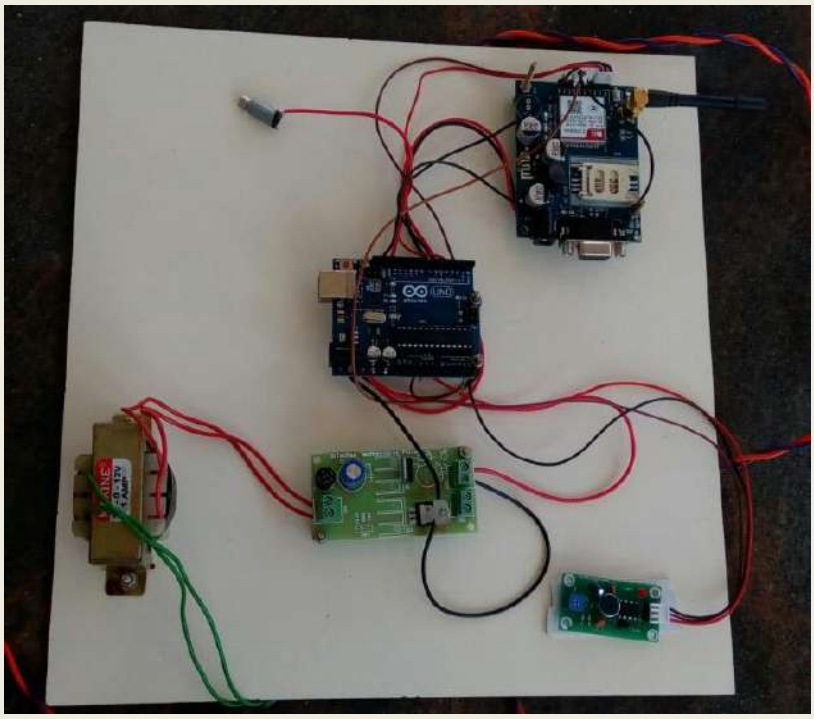
- To help Hearing impaired people in a productive way by applying Engineering skills and knowledge.
- There is a risk of surgical complications such as infections and bleeding.
- To avoid the standard surgical risks of a cochlear (Inner drum of ears) implant.

DESCRIPTION OF THE PROJECT

The GSM based Sound Bite hearing system allows people to hear the sounds via bone conduction to wear an intraoral device and a small microphone in the deaf ear to regain lost hearing. This device consists of GSM modem ATmega 328 controller and audio amplifier unit. GSM modem will receive incoming calls and automatically answer the call via AT Commands. Then incoming voice signal is converted into low frequency vibration signal that fed through the teeth to cochlea. Unlike implantable bone conduction hearing aids, Sound Bite requires no surgery. Rather, it is the world's first removable and non-surgical hearing solution to use the well-established principle of bone conduction to imperceptibly transmit sound via the teeth. Custom made for each person, Sound Bite is simple, removable, and totally non-invasive.

SOCIETAL IMAPACT OF THE PROJECT

To help the hearing impaired people to regain a loss of hearing and to overcome the surgical issues.

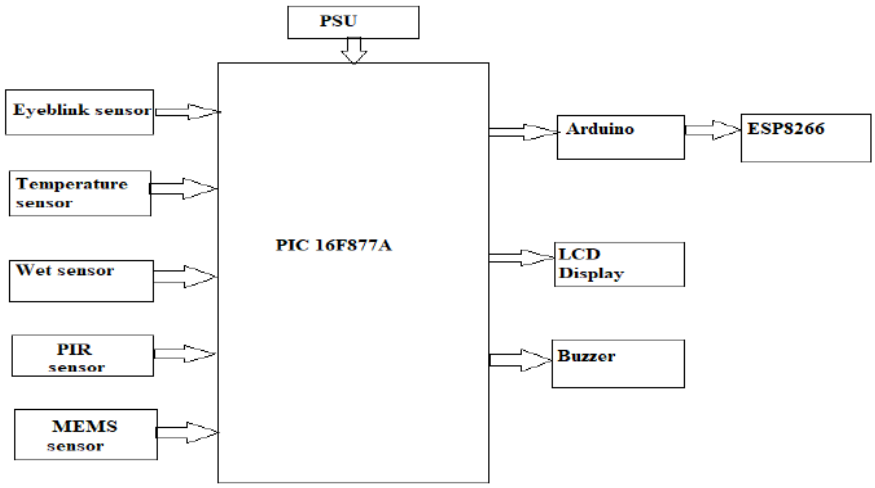


IoT BASED HEALTHCARE SYSTEM IN ICU

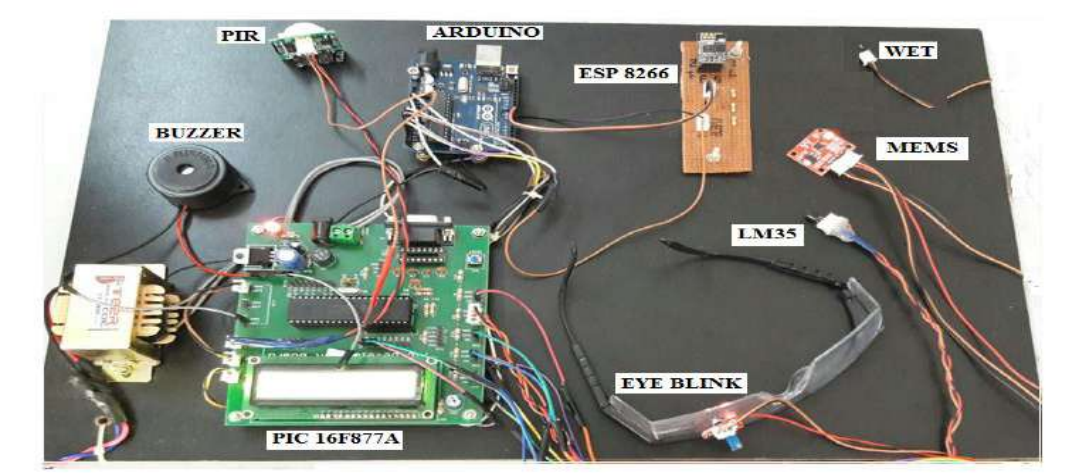
R.KEERTHIKA,A.PRIYADHARSHINI& R.RAJARAJESWARI

IV YEAR B SEC

Intensive care units (**ICU**),cater to patients with severe and life-threatening illnesses and injuries, which require constant, close monitoring and support from specialist equipment and medications in order to ensure normal bodily functions. Common conditions that are treated within ICUs include acute (or adult) respiratory distress syndrome (ARDS), trauma, multiple organ failure and sepsis.



Care in the ICU differs from other hospital units. Seriously ill patients require close observation and monitoring. Specially trained nurses care for one or two patients at a time, each shift. ICU doctors are specially trained critical care doctors. Patients may have special equipment in their room, depending on their unique situation and condition. The equipment in the ICU may seem overwhelming. Patients are connected to a system namely known as **IOT based telemedicine system in ICU** to monitor their temperature, wet sensing bed unit, eye blinking finder (coma) and movement sensor.



EMBEDDED SYSTEM DESIGN FOR SCREENING LEARNING DISABILITIES(SLD) IN CHILDREN

P.S.VIMAL RAJ,P.VIJAY&M.VIGNESH

IV YEAR C SEC

Specific Learning disabilities (SLD) is a type of disability that comprises several functional areas in which an individual has difficulty caused by unknown factors. It consists of a group of disorders characterized by improper development of particular language and speech skills. Types include reading (dyslexia) and mathematics (dyscalculia). The unknown factors are the disorders that makes the brain less functional and affects the brain and its ability to observe and process information. This type of Learning disabilities can make it difficult for a person to learn as the same way as someone who is not affected. The following assessments such as Speech analysis for Speech-based processing, Calculation test for mind co-ordination using embedded system design which checks the pronunciation, spelling and brain analytical response to math calculations. The assessment results are evaluated using Frontend screening and stored in Backend Database to characterize them by their inadequate development in academic, language and speech skills.

DESIGNINGLED FOR HORTICULTURE APPLICATIONS

JASPER ZIONI.A
II YEAR ECE-A

Satisfying the world's ever-expanding demand for fresh fruits and vegetables is becoming more challenging with every passing year. A fast expanding number of fruit vegetables, and flower growers are turning to indoor horticulture to offset shortages due to loss of arable land ,extend the growing season, or grow plants that otherwise couldn't survive in a particular climate.

HPS VS LED:

- Although they were developed for use in lightening streets, parking lots, and security areas, High Pressure Sodium (HPS) lamps have also been used in greenhouses because they deliver very high light intensities and most of the light emitted in the 565-700nm range, which can drive photosynthesis.
- However, today's Light Emitting Diode(LED) lamps offer a variety of advantages over HPS lamps for horticultural applications, particularly the efficacy with which they convert electrical energy into light that plants can use.
- LED lighting systems are both easy to control and energy efficient; when properly designed. LED lamps offer long operating lifespans of more than 50000 hours.
- However, horticulture lighting system designers need to understand that LEDs aren't as robust in terms of withstanding electrical disturbances as HPS lamps.
- Electrical disturbances that affect horticulture lights can be the result of environmental factors like humidity, as well as the kinds of disturbances that can affect devices any electrical system, such as switching load surges or power faults.

- It’s critical to keep in mind that LEDs are semiconductor devices that demand comprehensive circuit protection in order to reach their maximum life and provide adequate return on investment.
- Unlike many general lighting applications, LED lighting systems designed for plant growth are often intended to operate continuously; in addition, the operational environment is often very humid and subject to chemical, biological, or other types of corrosion.

POWER AND CONTROL SYSTEM FOR HORTICULTURE:

Depending on the crops being raised and the design of the growing environment, LED lighting for horticulture may take a variety of form factors, including LED strings, arrays, or discrete LED luminaires like linear LED lamps (often called TLEDs) or flowering lamps. A control circuit is implemented inside a wall mounted control box that controls the timing and power for plant growth. Providing protection from transients for both the LEDs and all the active and passive components upstream from them in the circuit is one of the most significant challenges associated with indoor LED luminaires. These transients are typically the result of lighting-induced surges on the AC input, switching surges, power faults, ESD events, or moisture intrusion due to high humidity or irrigation.

These threats mean that LED luminaries require both over-current and over-voltage protection. Anything directly connected to an AC power source can be damaged by short circuit and overload conditions caused by components and /or circuit failures inside the luminaire. In addition, lightning surges or load switching transients (originating outside the luminaire) can create voltage spikes or ring waves that can stress and ultimately damage components inside the luminaire.

PRIMARY OVERVOLTAGE PROTECTION DEVICE:

The primary overvoltage protection device for an LED-based light is an AC input circuit Metal Oxide Varistor (MOV). When properly selected for all of the required design parameters, it will protect all downstream components from Electrical Overstress (EOS) damage from induced transients and ring wave effects by clamping short-duration voltage pulses. A MOV offers a cost-effective way to minimize transient energy that could otherwise make its way into downstream components. Proper MOV selection is based upon a number of electrical parameters including the voltage rating, peak pulse current, energy rating, disc size and lead configuration. Designers of LED-based lighting systems for horticulture must consider a variety of important issues in order to select an appropriate AC fuse.

LED LUMINAIRE BASIC CIRCUIT BLOCKS:

- Multiple, single-chip LEDs configuration in series electrically, known as an LED string.
- Multiple strings are often connected in parallel and driven by a common power source.
- An LED string driver circuit, with corresponding controller circuitry for LED string protection, including a series Positive Temperature Coefficient (PTC) resistor for Over Current Protection (OCP) and a parallel TVS diode for Over Voltage Protection (OVP).
- A DC-DC converter circuit, which would include a series high voltage DC fuse on the output for secondary OCP of downstream components.
- EMI filter components.
- An AC input circuit, which is made up of a line series AC fuse and a line-to-neutral parallel MOV.

ADVANCEMENT:

The future of farming is looking up. Fuji Farm, Japanese indoor vertical farm, produces 12000 heads of lettuce a day with LED lighting. Bowery Farming, another tech-filled indoor farm, grows produce in the middle of Manhattan. The world's largest indoor vertical farm operates in New York, New Jersey- growing food using LED lighting. According to the United Nations, urban farms produce a fifth of the world's food. The Vertical farming market is expected to reach $6.81 billion by 2022, says a Research and markets report. A WinterGreen Research report forecasts the LED light module market for agriculture will grow to $1.8 billion by 2021. Littlefuse provides a variety of devices designed specifically for the use of LEDs in horticulture, and presents this application note to help lighting design engineers select the right solutions for protecting both the LEDs and all the active and passive components up- and downstream from them in the circuit.

ADVANTAGES OF LED GROW LIGHTS:

- **Quick Harvest Cycle:** When LED light is used to grow auto flowering plants, multiple harvests are possible in one season. The grower is able to alter flowering times plants and increase production.
- **Increased Lifespan:** The longer lifespan of LEDs means you can grow crops for many years without needing to replace the lighting systems, which reduces costs.
- **Energy Savings:** LED lights emit less heat and provide more usable light than traditional lighting systems. This is because an LED diode does not burn anything to produce light. Due to their reduced energy use and heat production, LED grow lights lower energy bills considerably.

- **Healthier Plants:** With LED grow lights, heat and harmful wavelengths of light are limited, As a result, the water and energy is used to grow and develop healthier plants and not to merely survive.
- **Target Wavelength:** The use of LED grow lights enables growers to regulate the wavelength of light, which enhances photosynthesis.
- **Full Spectrum:** LED plant lights produce a balanced full spectrum of light.
- **Cool Operating Temperature:** LED plant lights eliminate the need to install cooling systems in your grow area.
- **Environment Friendly:** LED grow lights are 100%recyclable.

DISADVANTAGES:

- **Produce Directional Light:** LED fixtures provide light that is directional like a flashlight.

  The area they cover is generally smaller than that covered by traditional lighting systems.
- **High Purchasing Cost:** LED grow lights are much more expensive than HID or fluorescent lights.
- **Light Pollution:** LED grow lights produce a bright blue light (in addition to other colors) which can cause blindness in humans.
- **Affected by Heat:** The diodes may fail much more quickly under high temperatures and the quality of light they produce suffers as a result.
- **Aging Effect:** LED diodes may also begin to change color as they get older. Despite having a long lifespan, as they age, they may fail to consistently produce the expected quality of light.

ARDUINO

NILOFAR NISHA. A
II YEAR A SEC

Arduino is an open source computer hardware and software company, project, and user community that designs and manufactures single - board microcontrollers and microcontroller kits for building digital devices and interactive objects that can sense and control objects in the physical and digital world. Arduino boards are available commercially in preassembled form, or as do-it-yourself kits.

Arduino board designs use a variety of microprocessors and controllers. The boards are equipped with sets of digital and analog input /output pins that may be interfaced to various expansion boards or breadboards and other circuits. The microcontrollers are typically programmed using a dialect of features from the programming languages C and C++.

HARDWARE :

Arduino is open - source hardware. The hardware reference designs are distributed under a creative commons attribution sharealike 2.5 license. Most arduino boards consist of an Atmel 8-bit AVR microcontroller with varying amounts of flash memory, pins and features. The 32-bit arduino due, based on the Atmel SAM3X8E was introduced on 2012. The boards use single or double - row pins or female headers that facilitate connections for programming and incorporation into other circuits. These may connect with add - on modules termed shields.

Arduino microcontrollers are pre-programmed with a boot loader that simplifies uploading of programs to the on - chip flash memory. The arduino board exposes most of the microcontrollers I/O pins for use by other circuits. Many arduino devices and arduino compatible exist.

SOFTWARE :

A program for arduino hardware may be written in any programming language with compilers that produce binary machine code for the target processor. Atmel provides a development environment for their 8-bit AVR and 32-bit ARM cortex-M based microcontrollers.

The arduino Integrated Development Environment (IDE) is a cross - platform applications that is written in the programming language JAVA. It includes a code editor with features such as text cutting and pasting, searching and replacing text, automatic identity, brace matching, and syntax highlighting and provides simple one - click mechanisms to compile and upload programs to an arduino board. It also contains a message area, a text console, a toolbar with buttons for common functions and hierarchy of operation menus.

The arduino IDE supports the languages C and C++using special rules of code structuring.

APPLICATIONS :

- The obstacle avoidance robot is operated using arduino.
- It is used for controlling electrical appliances.
- Using arduino board the underground fault is recognised.
- Light intensity of street lights can be controlled.
- Arduino is also used in parking lot counter, weighing machines, medical instrument, emergency light for railways.

ADVANTAGES :

- The biggest advantage of arduino is its ready to use structure.
- It is a big library with lots of codes.
- Simplified and open-source platform.
- User-friendly programming language.

- Low power consumption.
- It is portable.

DISADVANTAGES:

- Arduino board is a delicate device, so it has to be handled carefully.
- It is costing.
- Due to temperature variation, after sometime it's efficiency may be decreased.
- For larger loads equipment required is bulk.

IMPLANTED DEVICES FOR MEDICAL APPLICATIONS

JAYA SUJITHRA.J.J
II YEAR A SEC

MIT researchers, working with scientists from Brigham and Women's Hospital, have developed a new way to power and communicate with devices implanted deep within the human body. Such devices could be used to deliver drugs, monitor conditions inside the body, or treat disease by stimulating the brain with electricity or light. The implants are powered by radio frequency waves, which can safely pass through human tissues. In tests in animals, the researchers showed that the waves can power devices located 10 centimeters deep in tissue, from a distance of 1 meter. "Even though these tiny implantable devices have no batteries, we can now communicate with them from a distance outside the body. This opens up entirely new types of medical applications," says FadelAdib, an assistant professor in MIT's Media Lab and a senior author of the paper, which will be presented at the

Association for Computing Machinery Special Interest Group on Data Communication (SIGCOMM) conference in August. Because they do not require a battery, the devices can be tiny. In this study, the researchers tested a prototype about the size of a grain of rice, but they anticipate that it could be made even smaller. "Having the capacity to communicate with these systems without the need for a battery would be a significant advance. These devices could be compatible with sensing conditions as well as aiding in the delivery of a drug," says Giovanni Traverso, an assistant professor at Brigham and Women's Hospital (BWH), Harvard

Medical School, a research affiliate at MIT's Koch Institute for Integrative Cancer Research, and an author of the paper. Other authors of the paper are Media Lab postdoc Yunfei Ma, Media Lab graduate student ZhihongLuo, and Koch Institute and

BWH affiliate postdoc ChristophSteiger. Wireless communication Medical devices that can be ingested or implanted in the body could offer doctors new ways to diagnose, monitor, and treat many diseases. Traverso's lab is now working on a variety of ingestible systems that can be used to deliver drugs, monitor vital signs, and detect movement of the GI tract. In the brain, implantable electrodes that deliver an electrical current are used for a technique known as deep brain stimulation, which is often used to treat Parkinson's disease or epilepsy. These electrodes are now controlled by a pacemaker-like device implanted under the skin, which could be eliminated if wireless power is used.

Wireless brain implants could also help deliver light to stimulate or inhibit neuron activity through optogenetics, which so far has not been adapted for use in humans but could be useful for treating many neurological disorders. Currently, implantable medical devices, such as pacemakers, carry their own batteries, which occupy most of the space on the device and offer a limited lifespan. Adib, who envisions much smaller, battery-free devices, has been exploring the possibility of wirelessly powering implantable devices with radio waves emitted by antennas outside the body. Until now, this has been difficult to achieve because radio waves tend to dissipate as they pass through the body, so they end up being too weak to supply enough power. To overcome that, the researchers devised a system that they call "In Vivo Networking" (IVN). This system relies on an array of antennas that emit radio waves of slightly different frequencies. As the radio waves travel, they overlap and combine in different ways. At certain points, where the high points of the waves overlap, they can provide enough energy to power an implanted sensor. "We chose frequencies that are slightly different from each other, and in doing so, we know that at some point in time these are going to reach their highs at the same time. When they reach their highs at the same time, they are able to overcome the energy threshold needed to power the device," Adib says.

With the new system, the researchers don't need to know the exact location of the sensors in the body, as the power is transmitted over a large area. This also means that they can power multiple devices at once. At the same time that the sensors receive a burst of power, they also receive a signal telling them to relay information back to the antenna. This signal could also be used to stimulate release of a drug, a burst of electricity, or a pulse of light, the researchers say. Long-distance power In tests in pigs, the researchers showed they could send power from up to a meter outside the body, to a sensor that was 10 centimeters deep in the body. If the sensors are located very close to the skin's surface, they can be powered from up to 38 meters away. "There's currently a tradeoff between how deep you can go and how far you can go outside the body," Adib says. The researchers are now working on making the power delivery more efficient and transferring it over greater distances. This technology also has the potential to improve RFID applications in other areas such as inventory control, retail analytics, and "smart" environments, allowing for longer-distance object tracking and communication, the researchers say. The research was funded by the Media Lab Consortium and the National Institutes of Health.

BLACK BERRY KEYONE

BUDURA LAVANYA
III YEAR A SEC

The BlackBerry KeyOne is the latest smartphone comeback story of 2017, even if the company behind it is really just China's TCL Communications.

It's touted as the most secure Android phone, pre-loaded with smart, enterprise-level mobile software and, at last, delivers an old-school physical keyboard within a modern enough stainless steel and faux-leather design.

For a few pennies more, an all-black model is also available for the discerning executive (dubbed 'Black Edition'), with a little more RAM and internal storage to boot. This is the reinvented BlackBerry for everyone wholly determined to reclaim a tactile keyboard and BlackBerry Messenger. It works great for typing once you get used to the keys again. We were actually more accurate at typing with it, though we never faster versus using an on-screen keyboard.'CrackBerry' addicts have something to look forward to here. But it's a workaholic. BlackBerry KeyOne is all business in the front *and* back, less of a multimedia party anywhere in between.

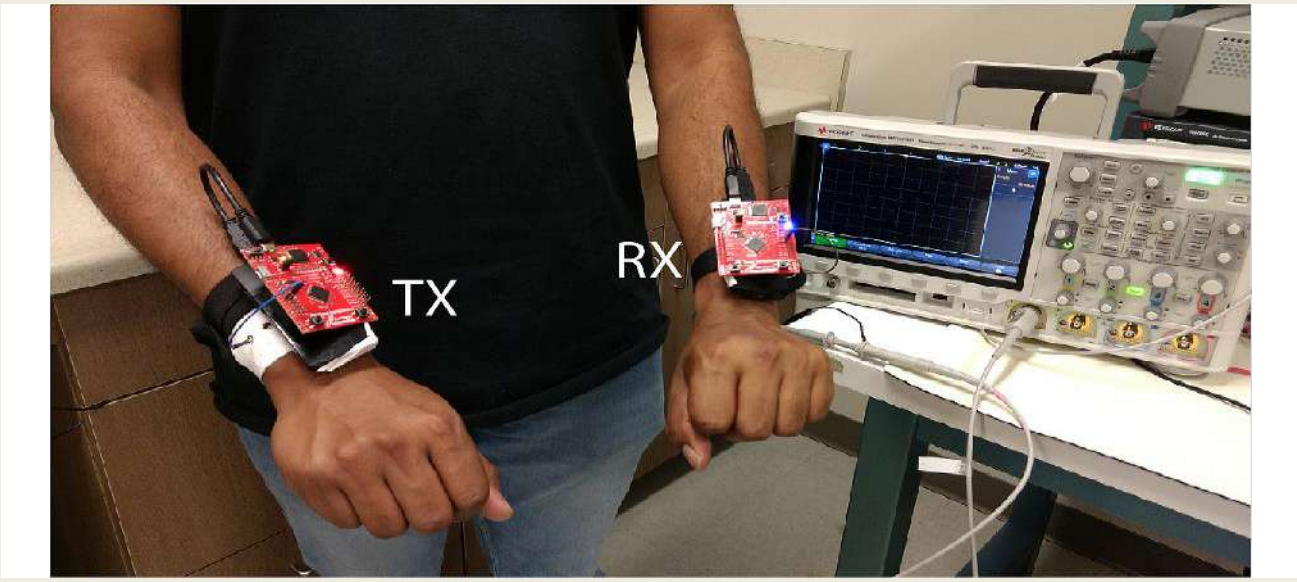
The screen is bright and colorful, but while its 3:2 aspect ratio is great for viewing emails, it leaves you with unsightly black bars on all 16:9 video. It makes movies look really small. The audio comes out through a single bottom-firing speaker, too. It's like this phone clocks out at 5pm sharp when it comes to the fun stuff.

It borrows camera specs from other top-tier top phones, with a 12MP sensor right out of the Google Pixel. Photos are good, though the shared specs only go so far: it doesn't have the same backend camera image stabilization software and its front-end camera app is a mess.

BlackBerry KeyOne is clearly an Android phone that has productivity users in mind. It works as an entertainment device, too, but it’s not the best at it. Sure, it doesn’t have the fastest chipset and a fancy new display, yet it’s one of the best phones at helping you manage day-to-day tasks and will last you the entire day with battery life that lasts more than 24 hours.

What it lacks in top-of-the-line internal chip specs it tries to make up for with unique features like sophisticated software and its physical keyboard. It’s a trade-off that makes it slightly cheaper.

AROMA K.LUCAS
III YEAR A SEC



Researchers in the US have discovered a new way to use the human body as a communication medium for networking electronic devices in and on the body.

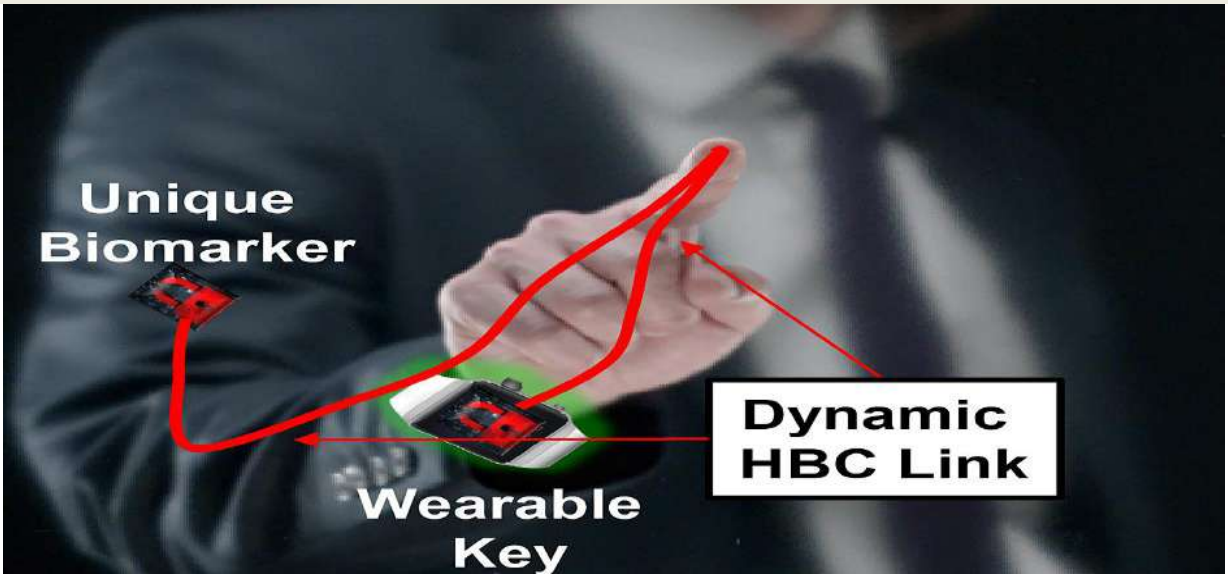
The advance from a team at Purdue University is claimed to be more secure and energy-efficient compared to wireless systems.ShreyasSen, an assistant professor in the Purdue School of Electrical and Computer Engineering, said this allows devices to communicate through the body instead of sending a signal through the airwaves that could be hacked. The technology has several pending patent applications through the Purdue Office of Technology Commercialisation.

“We can achieve secure connectivity within devices in or on the body and even among devices on different humans and machines, at orders of magnitude lower-energy than wireless,” Sen said. “The applications are fascinating.”

Among the possible uses for the human body as a communication network are implanted medical devices, wearable devices, secure payment technology, and authentication applications.

The technology could, for example, enable a Doctor to reprogram a patient's pacemaker or other implantable device without making an incision. The US Food and Drug Administration has recalled nearly a half million pacemakers because of concerns that hackers could gain access to the pacemakers through security loopholes. Using the body as the means to set the pacemakers could prevent such concerns.

Human body communication would be far more secure than a wireless body area network because it is more difficult for an attacker to gain access to the physical signals, Sen said.



"We are enabling the physical medium, but on top of that you have software-based authentication-based protocols. Only if you are part of my trusted group, then I'll give you more information. I may choose to include someone as my trusted group or exchange information with a stranger," Sen said. "With wireless, a criminal can snoop

my signal. By using the body, you are making it harder because the criminal has to come and touch me."

Human body communication also needs orders of magnitude less power than a wireless body area network, leading to a longer lifetime for the battery of implanted medical devices.

According to Purdue University, the technology could also have social applications, by, for instance, letting new friends share contact information or virtual business cards securely through a handshake. Other potential uses include streaming music to a wireless earphone by connecting it to a smartwatch through the body, allowing the earphone to last much longer in a single charge.

NEW LASER MAKES SILICON 'SING'

DAKSHINA J.B
III ECE A SEC

Yale scientists have created a new type of silicon laser that uses sound waves to amplify light. In recent years, there has been increasing interest in translating optical technologies .such as fiber optics and free-space lasers into tiny optical or "photonic" integrated circuits. Using light rather than electricity for integrated circuits permits sending and processing information at speeds that would be impossible with conventional electronics. Researchers say silicon photonics optical circuits based on silicon chips are one of the leading platforms for such technologies, thanks to their compatibility with existing microelectronics."We've seen an explosion of growth in silicon photonic technologies the past few of years," "Not only are we beginning to see these technologies enter commercial products that help our data centers run flawlessly, we also are discovering new photonic devices and technologies that could be transformative for everything from biosensing to quantum information on a chip.

It's really an exciting time for the field."The researchers said this rapid growth has created a pressing need for new silicon lasers to power the new circuits a problem that has been historically difficult due to silicon's indirect bandgap. "Silicon's intrinsic properties, although very useful for many chip-scale optical technologies, make it extremely difficult to generate laser light using electrical current," said Nils Otterstrom, a graduate student in the Rakich lab and the study's first author. "It's a problem that's stymied scientists for more than a decade. To circumvent this issue, we need to find other methods to amplify light on a chip. In our case, we use a combination of light and sound waves."

The laser design corrals amplified light within a racetrack shape trapping it in circular motion. "The racetrack design was a key part of the innovation. In this way, we can maximize the amplification of the light and provide the feedback necessary for

lasing to occur," Otterstromsaid.To amplify the light with sound, the silicon laser uses a special structure developed in the Rakich lab. "It's essentially a nanoscale waveguide that's is designed to tightly confine both light and sound waves and maximize their interaction," Rakichsaid."What's unique about this waveguide is that there are two distinct channels for light to propagate,". "This allows us to shape the light-sound coupling in a way that permits remarkably robust and flexible laser designs."Without this type of structure, the researchers explained, amplification of light using sound would not be possible in silicon.

"We've taken light-sound interactions that were virtually absent in these optical circuits, and have transformed them into the strongest amplification mechanism in silicon," Rakich said. "Now, we're able to use it for new types of laser technologies no one thought possible 10 years ago."

Otterstrom said there were two main challenges in developing the new laser: "First, designing and fabricating a device where the amplification outpaces the loss, and then figuring out the counter-intuitive dynamics of this system," he said. "What we observe is that while the system is clearly an optical laser, it also generates very coherent hypersonic waves."

The research team said these properties may lead to a number of potential applications ranging from integrated oscillators to new schemes for encoding and decoding information. "Using silicon, we can create a multitude of laser designs, each with unique dynamics and potential applications," said co-author Ryan Behunin, an assistant professor at Northern Arizona University and a former member of the Rakich lab. "These new capabilities dramatically expand our ability to control and shape light in silicon photonic circuits."

VIRTUAL REALITY

ANU SHREE.S.R
III YEAR A SEC

What's the Deal with Virtual Reality?

Has all the hype about virtual reality intrigued you? What's going on with this virtual reality stuff anyway?

By now, virtual reality (VR) has probably made it on to your radar screen in some way. Maybe you've only heard about it in bits and pieces, or maybe you've tried it yourself. Whatever the case, virtual reality feels like it could be the new generation of advanced technology.

So, what's going on with virtual reality? How does it work? What impact is it having on your brain?

Though I have tried a virtual reality headset before, I realized I really didn't know that much about it, or what is possible with this technology. I'd never really had virtual reality explained to me in a way I was able to understand.

So, I decided to look into it and found a great video from one of our favorite YouTube channels, The Good Stuff, that takes us into the world of virtual reality, exploring its history, psychology, and why it's so darn fun!

So what do you think, would you give VR a try?

Now, you may have been thinking to yourself how isolating virtual reality seems. As fun as it is to watch your friend crawl around your living room with funny goggles on their face, wouldn't VR be much more fun if more people could be involved and experiencing the same thing?

Luckily, I wasn't the only one with this line of thought, and The Good Stuff created another great video in their series exploring VR that tackles the ultimate in virtual reality, creating a real life Holodeck.

Let's face it, virtual reality has its limitations, but what if you could take off that clunky headset and actually experience new worlds in a real life holodeck.

A New Generation of Uses

I am most excited by all the possibilities that advanced technology like virtual reality present. The opportunities for connecting people across cultures, bringing worlds wonders to our homes, enriching the teaching power of classrooms, and so much more are boundless.

We are only in the early stages when it comes to fleshing out the broader applications for VR, and where it ends up taking us is unimaginable. It is fascinating to think about where this kind of technology will take us in the next 100 years, and the innovative thinkers that will move us forward.

Another beauty of Virtual Reality? It isn't just for kids. Spend a little time with this article to see a wonderful video on how it can help us revisit our memories.

HUMAN IN THE WORLD OF ARTIFICIAL INTELLIGENCE

R. PRIYA

III YEAR B SEC

INTRODUCTION:

The word Intelligence refers to the ability to acquire knowledge and skills. Generally it is associated with the human brain. Artificial intelligence is basically defined as intelligence that is originating from machines. Artificial intelligence is bringing a third wave of evolution on another level to previous evolutionary waves. Coming into applications in a range of areas, AI will offer support to humanity, but at the same time will also encroach on human activity. Artificial intelligence has grown and is no longer used solely in computer science. It has evolved to include other areas such as health, automobile and business applications.

AI WITH ITS BENEFITS AND DRAWBACKS:

One of the areas that artificial intelligence will benefit us is in areas of data analysis. AI can help in noting data patterns that human beings cannot perceive. This can help businesses in targeting the right customers for a particular product. An example is the partnership between IBM and Fluid companies. Fluid is a digital retail company specializing in software solutions. It is utilizing IBM's Watson, which is an artificial intelligence created by IBM, to provide its customers with insightful and relevant product recommendations. This leads to a more personalized and interactive experience while shopping online.

Another aspect of business that AI is changing is customer services. AI could handle the repetitive tasks of customer service jobs. This can be done by using automated switchboards to communicate with clients. AI programs have been developed that not

only respond to what is being asked based upon a manual or by searching on Google but are also able to learn and interact as a human would by the use of human advisors.

The third aspect that AI is likely to influence in business is around product development. AI is shortening the duration of new product launches. This is possible due to the use of Artificial Narrow Intelligence, which involves the manufacturing of machines that can only do a limited number of tasks such as in self-driven cars.

There are real concerns around artificial intelligence causing chaos like the scenarios depicted in Hollywood movies such as Terminator, Robocop, Iron Man and iRobot in the future. However, the exaggeration of Hollywood aside, it could be stated that the risks around artificial intelligence are serious enough to make a number of global thought-leaders anxious. One among them is that the white collar workers are getting replaced by AI. So, we must draw a line in the sand on what should and should not be allowed around the use or development of artificial intelligence. A number of scientists are even working on a 'kill switch' as a fail-safe for in case artificial intelligence goes rogue.

CONCLUSION:

Artificial intelligence is moving rapidly from relevancy in technologically rich areas to impacting every industry in the world. Human development cannot be compared with artificial intelligence development. When one human learns something, only one human learns that thing. When one robot learns something, all robots learn that thing. As a result, it is not long before the birth of Super intelligence, which is an intellect that is a lot smarter than the best human minds in any sector. So in conclusion, the usage, development and governance of artificial intelligence must be spearheaded in a sensitive way at all times.

ELECTRONIC QUIZ

T. PRIYADHARSHINI

III YEAR B SEC

1.Which type of transformer is required to create a 180 degree input to a rectifier?

A.center- tapped secondary B.step-down secondary

C.stepped-up secondary D.split winding primary

2.Thermal shutdown occurs in an IC regulator if

A.power dissipation is too high B.internal temperature is too high

C.current through the devices is too high D.load resistance increases

3.The voltage drop across a series resistor is proportional to what other value?

A.total resistance B.its own resistance

C.wattage ring D.the amount of time the circuit is on

4.With 20 V applied , an 8-ohm resistor is in series with a lamp when the lamp is removed , the voltage will be read across the lamp socket?

A. 0V B.8V

C.12V D.20V

5.If series current doubles,then:

A.resistance is halved B.voltage is doubled

C.voltage is reduced D.resistance is doubled

6.The complex programmable logic device (CPLD) contains several PLD blocks and

A.field-programmable switches B.AND/ORarrays

C.a global interconnection matrix D.a language compiler

7.Once a PAL has been programmed

A.it cannot be reprogrammed B.its outputs are only active HIGHs

C.its outputs are only active LOWs D.its logic capacity is lost

8.The electrical energy consumed by a coil is stored in the form of

A.an electrical field B.a force field

C.an electrostatic field D.a magnetic field

9.What type of device consists of a coil with a moveable iron core?

A.solenoid B.reed switch

C.relay D.armature

10.A utility pole transformer used to supply a residential customer with two phases uses:

A.two phases on the primary B.acentre tap on the secondary

C.a separate ground for each phase D.a small coefficent of coupling

ANSWERS:

1. A 2.B 3.B 4.D 5.A 6.C 7.A 8.D 9.A 10.B

TRANSPARENT GAMING CONTROLLER THAT ACTS LIKE A SECOND SKIN

VINODHINI.S
II YEAR C SEC

Scientists at Seoul National University, South Korea, have created a stretchy, skin-like controller, which promises to turn a forearm into a touchpad for gaming, playing music and scrawling notes that appear on a computer screen. The team, led by researcher Chong-Chan Kim, along with Jeong-Yun Sun, a professor of materials science and engineering, imagines a future where we ditch brittle electrodes for soft, biocompatible technology.

The team developed the panel using a hydrogel made from polyacrylamide, which is a water-soluble acrylic resin, and lithium chloride salts that act like a conductor. Electrodes on both ends of the panel create a uniform electrostatic field. Pressing on it closes the circuit, allowing the current to flow to the touch point. Current meters at each corner pick up the signals and transmit these to a separate controller board that connects to a computer.

RoboFly is first flying-insect micro-robot to go tether less

Slightly heavier than a toothpick, RoboFly was designed by a team at the University of Washington – one member of that team, assistant professor Sawyer

Fuller, was also part of the Harvard University team that first created RoboBee. *That* flying robot receives its power via a wire attached to an external power source, as an onboard battery would simply be too heavy to allow the tiny craft to fly.

Instead of a wire or a battery, RoboFly is powered by a laser. That laser shines on a photovoltaic cell, which is mounted on top of the robot. On its own, that cell converts the laser light to just seven volts of electricity, so a built-in circuit boosts that to the 240 volts needed to flap the wings. That circuit also contains a microcontroller, which tells the robot *when* and *how*to flap its wings – on RoboBee, that sort of "thinking" is handled via a tether-linked external controller.

In its current form, RoboFly can only take off and land, as doing anything else moves its photovoltaic cell out of alignment with the laser. Down the road, though, it is hoped that the laser will be able to track with the robot as it flies, continuously powering it. It's even possible that future versions of the robot might be able to harvest energy from radio frequency signals, using more advanced microcontrollers to autonomously perform tasks in places that traditional larger drones couldn't go.

"I'd really like to make one that finds methane leaks," says Fuller. "You could buy a suitcase full of them, open it up, and they would fly around your building looking for

plumes of gas coming out of leaky pipes. If these robots can make it easy to find leaks, they will be much more likely to be patched up, which will reduce greenhouse emissions. This is inspired by real flies, which are really good at flying around looking for smelly things.

A.LAKSHMI JASMITHA
III YEAR B SEC

As the IoT grows, many believe that the number of cyber-attacks will grow alongside it—but not in terms of attacks on the technology itself. Instead, there is more focus around harnessing connected devices to target the very "building blocks" on which the internet runs. And this threat is very much plausible, because the devices, sensors, vehicles, and machines that make up the IoT have rarely been designed with security in mind.

The term "Botnet of Things" (BoT) refers to compromised IoT devices that are redeployed for cyber-crime, such as DDoS attacks. While hackers have been infecting all sorts of devices for decades, with IoT on the rise and more devices available for sabotage, there is a new opportunity for profit. Because there are so many devices available to be harnessed, a BoT attack where hackers take control of enough connected devices to attack and overwhelm the internet's critical infrastructure is now a growing reality.

Despite the hype in the market, many questions whether the threat is real enough for an *en masse* call to action. With the Dyn attack the only type of BoT attack taking place in the last year, specialists are worried that the hype is too great compared to the reality. Especially when these types of attacks are hard to execute, even by top hackers. It raises one important question—should we be alarmed?

The Botnet of Botnets

Alongside continuous investment and software progress, the main contributor to preventing cyber-attacks will be building devices with security in mind, as demonstrated by Apple®. But alarmingly, more and more mass production of connected devices is happening without paying much attention to security measures. As a result, the most common types of gadgets being targeted are those that are made either cheaply

or where security is an afterthought. For example, many digital video cameras fit the mould of "cheaply" made, whereas TV cameras fit the mould of having security built in as an "afterthought." Most of these devices are running older, terminal software, where vulnerabilities allow things like Mirai to be used.

Some experts are not alarmed by this, as the Dyn attack required 100,000 infected devices and taking control of so many devices on a regular basis is borderline impossible. However, devices that have been part of the Mirai botnet will always be infected. If another attack was to take place, these devices could be called upon as part of the botnet army. Once a device has been infected, it is very difficult to get rid of the virus, making discarding the device the only viable solution.

The Business Impact of BoT

More and more attacks are being perpetrated for profit. This includes simple attacks such as "click fraud", but also more complex attacks like using botnets to guess passwords and for bitcoin mining. There is an entire industry built on stealing and selling personal information and even renting time on botnets. However, these high-volume attacks are hard to conduct and it takes more than "off the shelf" malware to control such great device numbers—it also requires skill. Numerous hackers are attacking IoT and Industrial IoT to increase their reputation in the market and showcase their ability to conduct these types of attacks.

There are also downstream effects to think about. If more companies end up conducting click-fraud, using botnets to make people click through to their website and increase ad traffic, the entire ad-driven revenue platform could suffer.

IoT's Security Pillar is its Software

While the industry is figuring out the best way to handle BoT attacks, there are several things consumers can do to protect themselves from becoming part of the BoT. Ensuring consumers purchase IoT devices from companies that priorities security and changing the password immediately upon setting up the device, are good places to start. Although there are varying statistics in the industry in terms of how fast an IoT device can become part of the BoT, they are all in the neighborhood of five minutes so immediately really does mean immediately!

Enterprises should also make sure they are thinking about setting up their infrastructure in a way where they can be highly flexible. For instance, companies that had a hybrid database approach and ran their own DNS servers could not be impacted by the Dye attack. But the usual security measures, like good patch management practices and tools, should have a strong focus on "detect and remediate."

Ultimately, the main driver of security improvement will be the fear around how IoT devices will be used by hackers for BoT, which will result in manufacturers building better security software into their products.

This fear is also leading to massive investments in cyber-defence, as ISPs, enterprises, and governments start to pay much more attention to the issue. And in the light of the Dye attack, ISPs of all sizes are now collaborating to make their defense walls unreachable.

These investments and the associated intense collaboration acknowledge the fact that the cyber-threat is very real. And while specialists are correct in saying the market's defence is going to improve and mitigate the likelihood of the threat, the market must keep in mind that for now it is vulnerable and has not outmuscled the criminals yet. Which means the prospect of a second botnet attack taking place any moment is entirely plausible.

SHOCK FREE ELECTRICITY

R.LOKEMALA,

II YEAR C SEC

SHOCK FREE CONVERTER

It is an electronic system attached to the main electricity board of the house, which coverts all electrical lines to shock free power lines.

Working of this device can be explained in three stages :

At the input stage a Multiphase change over through Automatic switch is built in.This comprises 3 relays and 3 transformers. Purpose of this mechanism is to automatically provide single phase output from 3 phase input when any phase fails or all the phases are active but we need only single phase output as is the case with most of the domestic appliances.Significance of this phase is that input voltage has been reduced to low output voltage so that it will not cause electric shock.

Output from stage 1 i.e. Multiphase change over through Automatic switch is fed to second stage called Double phase/High Voltage vs. Normal Voltage device. In this device 1 relay and 2 transformers are used. Here in case of high voltage due to mixing

of 2 or more phases of input supply is taken care of. Also if there is any touch by human being at the final output stages on the live wire, its relay immediately switch the phase to no current stage and prevent electric shock.

Output stage 

uses a specially fabricated transformer with winding for both primary and secondary coils.This transformer steps up the voltage to usable voltage of 220 volts.

So when there 
is a contact of human being at the output stage even with the live wire, due to the relay in second stage, electricity circuit becomes open through the relay. Hence there is no electric

shock. If a human being touches both the wires in the output stage, he gets shock. This aspect is found advantageous for domestic purpose for shockproof working of appliances without any loss of current and also applicable for electric heaters etc. drawing high current compared to electric lights etc.

The device can be constructed rugged enough to withstand poor current characteristics that can facilitate its use in conjunction with captive electric generator source too without manual change over and in rural areas where current quality is poor with low voltage, higher fluctuation. This is a very useful device for every household/commercial establishment with electrical installation.

STUDETNS ACHIEVEMENTS AND AWARDS

Some of our students achievements and awards are

Ms.Pooja Sharma *of final year ECE - B received* ***Richard E.Merwin Scholarship Award (Certificate+ IEEE logo Pin)*** *on 19.12.2017.*

A.R.Navinkumar *of III ECE – C secured* ***II place in STATE LEVEL BASKET BALL*** *competition conducted on 30.12.2017*

Iqulas Ameer, Poojasharma.K and **Diviya.P** of ECE final year students secured first price in IEEE students Project Funding Competetion organized by **IEEE Madras Chapter** for the project entitled "**Development Of Robo Hydro-Jetter Cum Cutter For Replacement Of Manual Scavenging**" with the cash award of Rs.15,000/- on 21.04.2018

Yeshwanth.M and SankaraNarayanan.B *of ECE third year Students participated* ***Ingeium Project Display conducted*** *by* ***NIT,Trichy*** *on 01.03.2018.*

John Premkumar S*,*DudigamSriharsha *and* ***Akash D*** *of ECE third year Students participated* ***CVRDE*** *RUBY Programme on 23.02.2018.*

Ms.Pooja Sharma *of final year ECE - B received* ***Best Out Going Student Award During 20th Annual Day held on 17.03.2018.***

Pooja Sharma. K *final year ECE student received the student scholarship "**Grace Hopper Celebration India 17**" on 16th and 17th November, 2017in Bangalore*

P.Velmurugan *of IV-ECE secured* ***Bronze medal*** *in* ***Power lifting, District level***

GALLERY

Shri.R.P.B.Sundaram, *Additional General Manager (Retd.),Bharat Electronics Limited, Fellow Member of IETE awarding the winners of the contest on 27.3.2018*


Robotics and Industrial Automation Training *for ECE students conducted by* ***Spark Automation at SAEC***

Guest Lecture on ***"APPLICATIONS OF ANTENNAS IN REAL TIME"*** *in association with* ***IETE*** *was given by* ***Dr.K.Malathi****, Associate Professor,ECE, College of Engineering, Anna University, Guindy, Chennai on 25.01.2018.*

*Guest Lecture on **"RECENT TRENDS IN RF AND MICROWAVE"** by **Mr.R.Tamilselvan,** Director, Vidhara Secure com, Chennai on 24-07-2017.*

*Guest Lecture on **"PRACTICAL APPLICATIONS OF Electronic Ciruits"** by **Mr.S.Rajamanickam**, Director, Bits and Watts was conducted on 16-08-2017*

*Guest Lecture on **"RECENT TRENDS IN OPTICAL COMMUNICATION IN TELECOM INDUSTRY"** by **Mr.A.Sadagopan**, Retired BSNL Manager was conducted on 08-08-2017*

*Guest lecture by **Dr.K.Malathy** Associate Professor,ECE, College of Engineering, Anna University, Guindy, Chennai in the topic of **Antenna and Wave Propgation** on 25.01.18*

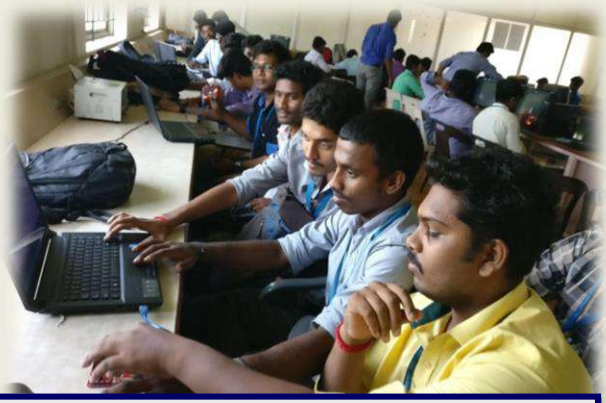
*Guest Lecture by **Dr.N.Gunasekaran**, Former Professor & Head ECE, College of Engineering, Anna University, Guindy, Chennai for II ECE students on 30.01.2018.*

*IEEE International Conference on "**Photonics and High Speed Optical Networks ICPHON 2018**" on 12.04.2018 to 13.04.2018.*

Editorial Board

STUDENT ACTIVITIES

IEEE Students Scholarship Award-Pooja Sharma of ECE III year Student



5 Days Value Added Program for III year Students on C++,JAVA

Sports Activities

STUDENT INNOVATIONS

IoT based Smart Floriculture

IoT based Smart Parking System

S.A.ENGINEERING COLLEGE

(NBA Accerdited &ISO 9001 : 2008 Certified Institution)

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