# MALLA REDDY ENGINEERING COLLEGE FOR WOMEN

## Autonomous Institution – UGC, Govt. of India

Accredited by NBA & NAAC with 'A' Grade

NIRF Indian Ranking, Accepted by MHRD, Govt. of India | Rank band 6th to 25th, National Ranking by ARIIA

Maisammaguda, Dhulapally, Secunderabad – 500 010, Telangana

**A.Y : 2020-21** **VOL.2**

Under

Student Chapter IEEE, IETE & Technical Association Electropheenix

# ELEKTOR

**HALF YEARLY TECHNICAL MAGAZINE**

## DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

# E E E

www.mallareddyecw.com

## DEPARTMENT VISION

- To develop competitive industry ready electrical engineers by establishing traditions, which will foster creativity and growth of excellence to effectively meet the technological requirements..

Vision

## DEPARTMENT MISION

- To develop proficiency by imparting application oriented knowledge and inculcate analytical thinking to solve the technological problems associated with analyzing, designing and testing electrical systems.

Mission

## ABOUT THE DEPARTMENT

The Department of Electrical & Electronics Engineering is accredited by NBA, with an intake of 60 students. The Dept. has state of the art laboratories with latest softwares like MATLAB, ORCAD, SCI LAB, PSPICE and Multisim. We have well qualified faculty members. Several faculty members have received their best teacher awards from institutions of International repute and have been working on research and development projects and regularly publish their work in international journals and conferences. EEE department faculty teams attained patent rights for their technological innovations. The Dept. established IEEE, ISTE student chapters under which it organizes National Level Technical Symposium -FUTURE SASTRA & State Level Technical Symposium- MEDHA every academic year. The Dept. organized National conference on "Emerging Trends in Electrical Systems & Engineering" NCETESE, International Conference on "Emerging Trends in Electrical Systems & Engineering"(ICETESE) every year since 2014, The Dept. organizes Faculty Development Programmes, Refresher courses and workshops in different streams and Student Development Programmes like Workshops, intra college conferences, Industrial visits , Guest lectures and our students actively participate in hackathon programmes conduct at state and National level. Our students are actively participated and won prizes in curricular activities organized by other colleges. The Dept. also organizes regular student seminar sessions of two hours per week for I to IV B.Tech student to enhance their all round performance.

The Dept. also offers value added certification Courses on oxford, Microsoft, CISCO certification through Oxford University, Microsoft Innovation Centre and CISCO Networking Academy respectively. The College Offers Campus Recruitment Training Programmes in collaboration with TIME and FACE Institutions. The Department also publishes the Registered Journal "International Journal of Research in Signal Processing, Computing and Communication-System Design (IJRSCSD) with an ISSN: 2395-3187.

## PO'S

| | | |
|---|---|---|
| PO1 | Engineering knowledge | An ability to apply knowledge of mathematics (including probability, statistics and discrete mathematics), science, and engineering for solving Engineering problems and modeling |
| PO2 | Problem analysis | An ability to design, simulate and conduct experiments, as well as to analyze and interpret data including hardware and software components |
| PO3 | Design / development of solutions | An ability to design a complex electronic system or process to meet desired specifications and needs |
| PO4 | Conduct investigations of complex problems | An ability to identify, formulate, comprehend, analyze, design synthesis of the information to solve complex engineering problems and provide valid conclusions. |
| PO5 | Modern tool usage | An ability to use the techniques, skills and modern engineering tools necessary for engineering practice |
| PO6 | The engineer and society | An understanding of professional, health, safety, legal, cultural and social responsibilities |
| PO7 | Environment and sustainability | The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental and demonstrate the knowledge need for sustainable development. |
| PO8 | Ethics | Apply ethical principles, responsibility and norms of the engineering practice |
| PO9 | Individual and team work | An ability to function on multi-disciplinary teams. |
| PO10 | Communication | An ability to communicate and present effectively |
| PO11 | Project management and finance | An ability to use the modern engineering tools, techniques, skills and management principles to do work as a member and leader in a team, to manage projects in multi-disciplinary environments |
| PO12 | Life-long learning | A recognition of the need for, and an ability to engage in, to resolve contemporary issues and acquire lifelong learning |

## PSO'S

**The graduates of the department will attain:**

**PSO1:** Analyze, Design and Implement application specific electrical system for complex engineering problems, Electrical And Electronics Circuits, Power Electronics and Power Systems by applying the knowledge of basic science, Engineering mathematics and engineering fundamentals

**PSO2:** Apply modern software tools for design, simulation and analysis of electrical systems to engage in life- long learning and to successfully adapt in multi disciplinary environments

**PSO3:** Solve ethically and professionally various Electrical Engineering problems in societal and environmental context and communicate effectively

## PEO'S

**PEO1-PROFESSIONAL DEVELOPMENT**

To develop in the students the ability to acquire knowledge of Mathematics, Science & Engineering and apply it professionally within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability and sustainability with due ethical responsibility.

**PEO2-CORE PROFICIENCY**

To provide ability to identify, formulate and solve engineering problems with hands on experience in various technologies using modern tools necessary for engineering practice to satisfy the needs of society and the industry.

**PEO3- TECHNICAL ACCOMPLISHMENTS**

To equip the students with the ability to design, experiment, analyze and interpret in their core applications through multi disciplinary concepts and contemporary learning to build them into industry ready graduates.

**PEO4- PROFESSIONALISM**

To provide training, exposure and awareness on importance of soft skills for better career and holistic personality development as well as professional attitude towards ethical issues, team work, multidisciplinary approach and capability to relate engineering issues to broader social context.

**PEO5- LEARNING ENVIRONMENT**

To provide students with an academic environment and make them aware of excellence, leadership, written ethical codes and guidelines and the life-long learning to become a successful professional in Electrical and Electronics Engineering

# MESSAGES

## Founder Chairman's Message

**Ch. Malla Reddy**

Founder Chairman, MRGI
Hon'ble Minister, Govt. of Telangana State

MRECW has made tremendous progress in all areas and now crossing several milestones within a very short span of time and now I feel very happy to know that the students and faculty of the EEE department of MRECW are bringing out the volume-2 of the Technical magazine Elektor in A.Y 2020-21. As I understand this magazine is intended to bring out the inherent literary talents in the students and the teachers and also to inculcate leadership skills among them. I am confident that this issue will send a positive signal to the staff, students and the persons who are interested in the educational and literary activities

## Principal's Message

I congratulate the department of EEE, MRECW for bringing out the second issue of the prestigious half yearly department technical Magazine Elektor under A.Y: 2020-21, I am sure that the magazine will provide a platform to the students and faculty members to expand their technical knowledge and sharpen their hidden literary talent and will also strengthen the all round development of the students. I am hopeful that this small piece of literary work shall not only develop the taste for reading among students but also develop a sense of belonging to the institution as well. My congratulations to the editorial board who took the responsibility for the arduous task most effectively. I extend best wishes for the success of this endeavor.

**Dr. Y. Madhavee Latha**

Principal

## HOD'S MESSAGE

It is an occasion of great pride and satisfaction for the department of EEE, MRECW to bring out the second issue of the half yearly of the Technical magazine Elektor under A.Y:2020-21, it gives me immense pleasure to note that the response to the magazine has been over whelming. The wide spectrum of articles gives us a sense of pride that our students and faculties possess creative potential and original thinking in ample measures. Each article is entertaining interesting and absorbing. I applaud the contributors for their stimulated thoughts and varied hues in articles contributed by them..

**Prof. N. Raveendra**

HOD

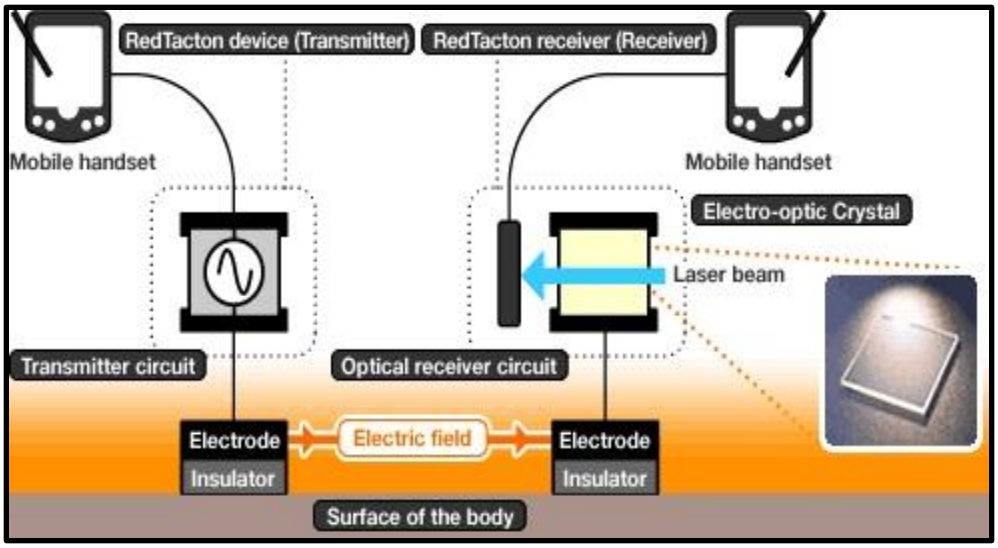
## FACULTY ARTICLES

# BLOCK CHAIN TECHNOLOGY


A block chain is a system of recording information in such a way that makes it difficult or impossible to change, hack or cheat the system. A block chain is essential a digital ledger of transaction that is duplicated or distributed across the entire network of computer systems on block chain. Block chain is a type of DLT in which transactions are recorded with an immutable cryptographic signature called a hash. The goal of block chain is to allow digital information to be recorded and distributed, but not edited, in this way block chain is the foundation for immutable ledgers, or records of transactions that cannot be altered, deleted or destroyed. It is expected that block chain will expand the scope of usability in many more sectors including finance data analysis, and the Internet of things with the advent of 5G.Usage of block chain system in different sectors a part from crypto currencies and NFTs can easily save time, money and can solve many problems. Although the block chain technology is older than Bit coin, it is a core underlying component of most crypto currency networks, acting as a decentralized, distributed and public digital ledger that is responsible for keeping a permanent record (chain of blocks) of all previously confirmed transactions. As a distributed ledger technology (DLT) the block chain is intentionally designed to be highly resistant to modification and frauds (such as double-spending).

**IGE ROHINI**
**Asst. Professor**

# RED TACTON




RedTacton is a user-friendly persuasive technology that establishes a communication between people and objects in a closer proximity. This paper proclaims model of a human area networking technologies that enables communication by means of “Touching”. Human Area Networking transmits with mobile terminal and terminals that are embedded in environment. Redtacton technology was implemented to overcome the weak radio signals, data speeds and security –risks on unwanted signal interceptions. Here, human body is the transmitting medium supporting IEEE 802.3 half-duplex communication at 10 Mbits/s. Redtacton uses the minute electric field generated by human body as a medium to transmit the data. In, this paper it implies that RedTacton technology is based on the principal of Human Area Networking. Red Tacton technology is an electronic future where information can be accessible whenever and wherever needed at our finger tips. Some of the communication equipment that is required to Provide this immediate access to information will be Incorporated into our attire. Just as a quick look at today's wristwatch saves a trip to the nearest clock; a glance at tomorrow's wristwatch will replace finding a terminal to check e-mail. Red Tacton is a new Human Area Networking technology which was introduced by Nippon telegraph and Telephone Corporation (NTT’s) that uses the human body surface is a high speed and safe network transmission path. Red Tacton is a Break-through technology that enables reliable high-speed HAN for the first time.

**A. RAVI KUMAR**
**Asst. Professor**

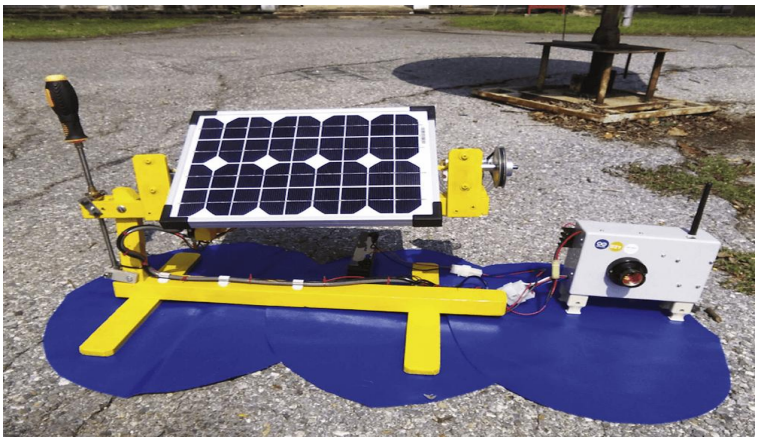
STUDENT ARTICLES

# SATELLITE RADIO


Maybe you have heard of the Smart Grid on the news or from your energy provider. But not everyone knows what the grid is, let alone the Smart Grid. "The grid," refers to the electric grid, a network of transmission lines, substations, transformers and more that deliver electricity from the power plant to your home or business. It's what you plug into when you flip on your light switch or power up your computer. Our current electric grid was built in the 1890s and improved upon as technology advanced through each decade. Today, it consists of more than 9,200 electric generating units with more than 1 million megawatts of generating capacity connected to more than 300,000 miles of transmission lines. Although the electric grid is considered an engineering marvel, we are stretching its patchwork nature to its capacity. To move forward, we need a new kind of electric grid, one that is built from the bottom up to handle the groundswell of digital and computerized equipment and technology dependent on it—and one that can automate and manage the increasing complexity and needs of electricity in the 21st Century. The Smart Grid represents an unprecedented opportunity to move the energy industry into a new era of reliability, availability, and efficiency that will contribute to our economic and environmental health. During the transition period, it will be critical to carry out testing, technology improvements, consumer education, development of standards and regulations, and information sharing between projects to ensure that the benefits we envision from the Smart Grid become a reality. The benefits associated with the Smart Grid include.

M ROSHINI
17RH1A0236

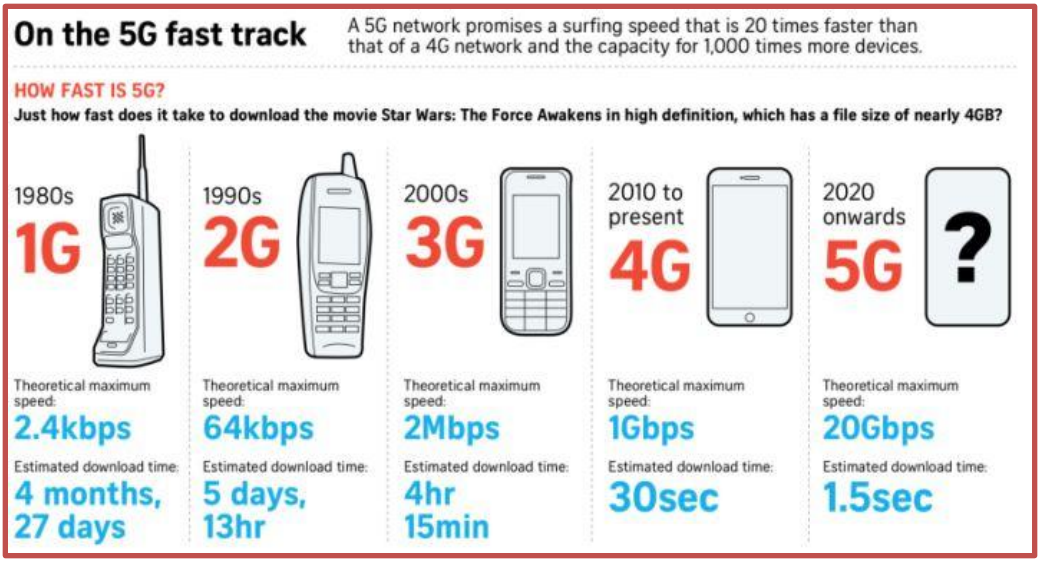
# SOLAR TRACKER



Renewable energy solutions are becoming popular Maximizing output from solar system increases efficiency Solar panels are of fixed type which lower the efficiency maintaining vertical direction between light and panel maximizes efficiency. The invention of Solar tracking system helps up to improve the performance of PV solar system in a simply way .Used relative method of sunlight strength. **solar tracker**, a system that positions an object at an angle relative to the Sun. The most-common applications for solar trackers are positioning photovoltaic (PV) panels (solar panels) so that they remain perpendicular to the Sun's rays and positioning space telescopes so that they can determine the Sun's direction. PV solar trackers adjust the direction that a solar panel is facing according to the position of the Sun in the sky. By keeping the panel perpendicular to the Sun, more sunlight strikes the solar panel, less light is reflected, and more energy is absorbed. That energy can be converted into power. olar tracking uses complex instruments to determine the location of the Sun relative to the object being aligned. These instruments typically include computers, which can process complicated algorithms that enable the system to track the Sun, and sensors, which provide information to a computer about the Sun's location or, when attached to a solar panel with a simple circuit board, can track the Sun without the need for a computer.

**G SINDHU**
**17RH5A0209**

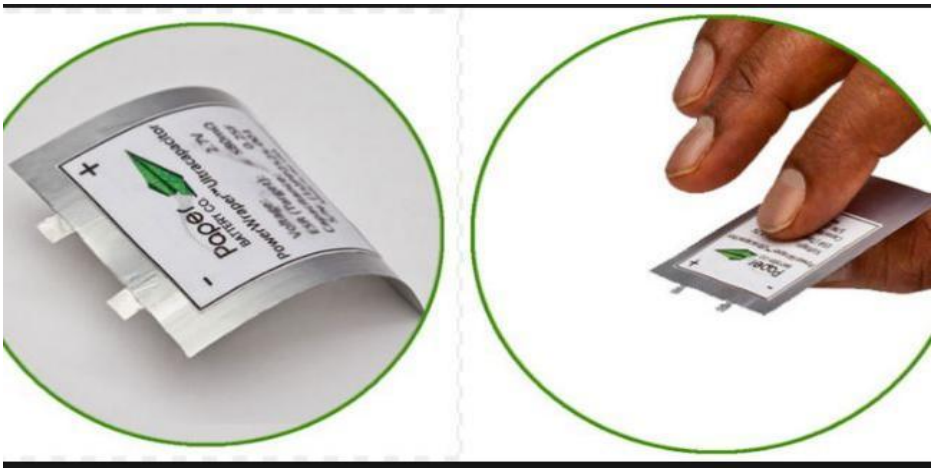
# 5G MOBILE TECHNOLOGIE




5G (5th generation mobile networks or 5th generation wireless systems) is a name used in some research papers and projects to denote the next major phase of mobile telecommunications standards beyond the upcoming 4G standards(expected to be finalized between approximately 2011 and 2013).Currently,5G is not a term officially used for any particular specification or in any official document yet made public by telecommunication companies or standardization bodies such as 3GPP,wimax forum or ITU-R. New 3GPP standard releases beyond 4G and LTE Advanced are in progress, but not considered as new mobile generations. The implementation of standards under a 5G umbrella would likely be around the year of 2020. 5G technology stands for 5th generation mobile technology. Ensuring the promises of reliable and efficient communications brings new challenges to the design of 5G products. 5G connectivity requires high throughput, low latency, and exceptional coverage at a reasonable cost, all while reducing energy consumption. As networks and applications grow, the precise simulation of antennas in their environment is the key to developing the next generation of broadband products. Altair 5G simulation solutions support and enable the innovation and deployment of wireless connectivity technology improving communication, assuring compatibility, and reducing energy consumption and emission.

**B. SINDHU**
**19RH1A0212**

# PAPER BATTERY



A paper battery is a thin, flexible energy production and storage device that is formed by combining carbon nanotubes with a conventional sheet of cellulose-based paper. In addition to being disposable, paper batteries may be folded, cut or otherwise shaped for different applications without any loss of integrity or efficiency. As sensors are increasingly being embedded in everyday objects, there has been a corresponding need for alternative power sources in the Internet of Things (IoT). The high cellulose content and lack of toxic chemicals in paper batteries make them both biocompatible and environmentally friendly, especially when compared to the lithium ion batteries used in many present-day electronic devices. A paper battery is engineered to use a spacer formed largely of cellulose. It incorporates nanoscopic scale structures to act as high surface area electrodes to improve conductivity. In addition to being unusually thin, paper batteries are flexible and environmentally friendly, allowing integration into wide range of products. Their functioning is similar to conventional chemical batteries with the important difference that they are non-corrosive and do not require extensive housing. Recently, researchers at the State University of New York printed thin layers of metals and polymers onto a paper surface that contains freeze-dried exoelectrogens, a type of bacteria that can transfer electrons outside the bacteria's cellular walls. Any type of bio-liquid can be used to revive the exoelectrogens and activate the paper battery by allowing bacteria to pass through cell membranes and make contact with external electrodes.

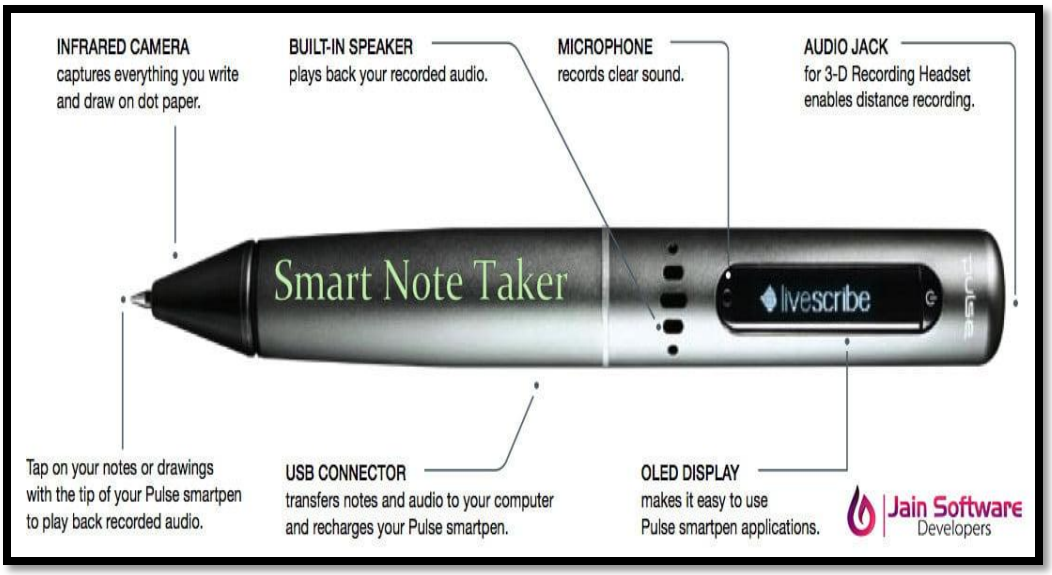
**G . VAROODHINI**
**17RH1A0240**

# PROJECT LOON

Project Loon is a pilot project developed by Google LLC. It is aimed at providing the internet by using balloons that would trace the earth. Let us have a look at interesting facts about Project Loon. Project Loon was developed with the aim of providing economic internet access across the world. It is a research and development (R&D) project that is developed by Google. In 2008, Google was wondering about acquiring Space Data Corp that specializes in sending balloons in the air that were used to provide connectivity to Oil Companies and truck drivers in the US. This, however, did not materialized. The equipments used for project loon are envelope, parachute, and electronics. The Internet is required to connect people in different parts of the world. The vitality of the internet allows for innovations in technologies. There are several parts of the world that still do not possess internet connectivity (such as rural and distant areas). The project loon targets such parts of the world and others that have been hit by natural calamities, and allows them internet connectivity. The project Loon makes use of software algorithms to determine the position of the balloons and where it needs to go so that it is always in the right direction. Because The Balloons always stay above ground level it was necessary that they use a renewable kind of energy. They use solar cells and wind energy for power themselves. The Loon design comprises three parts which are the envelope, solar panels, and equipment.

A SIRI
19RH1A0201

# SMART NOTE TAKER




With the help of Smart Note Taker, people will be able to write notes on the air, while being busy with their work. The written note will be stored on the memory chip of the pen, and will be able to read in digital medium after the job has done. This will save time and facilitate life. In order to meet the technical requirements of the product we need Operating System Like Windows or Linux in order to implement software part of the project, Displacement Sensors to recognize the displacement of the pen in three dimensions, parallel cable to communicate with computer, software to solve the displacement …The smart note taker provides facility to people who want to make notes quickly. It can be used in many ways. This technology provides people with a facility of writing notes in the air while being busy in their work. The written notes are stored in the memory chip of pen and will be able to read in a digital medium after the conversation. This reduces time and facilitates life. Apart from this, it is also proved to be very useful for blinds who think and write freely. It is also very useful in telephonic conversations between two people where there is a need for note-taking. It's also useful especially for instructors in presentations. The instructors may not want to present the lecture in front of the board. The drawn figure can be processed and directly sent to the server computer in the room.

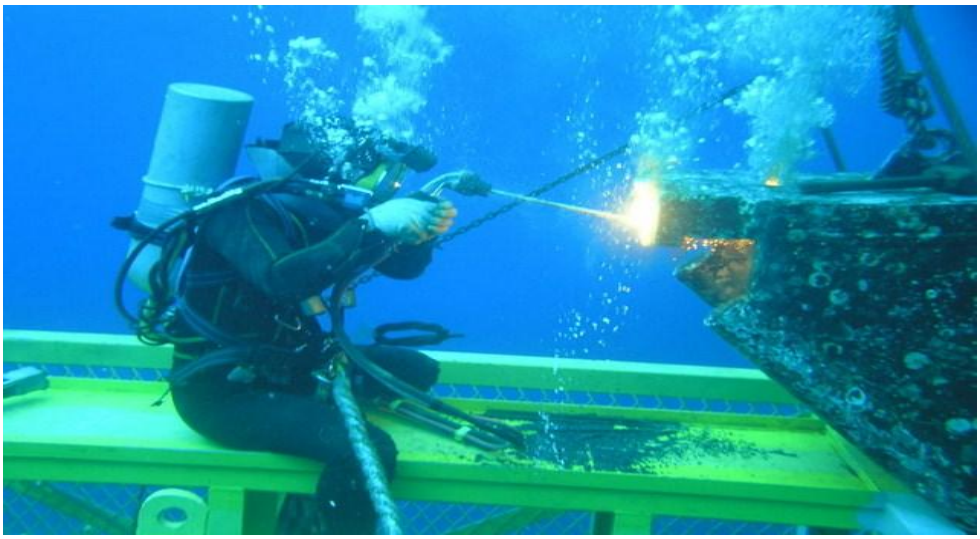
**G . SOUJANYA**
**18RH5A0210**

# WEARABLE COMPUTERS


A wearable computer is any small technological device capable of storing and processing data that can be worn on the body. Wearable computers are designed for accessibility and convenience, as well as improvements to workplaces by making information quickly and readily available to the wearer. Common examples of how wearable's are worn include on wrists as watches or jewelry, around necks similarly to a lanyard or necklace, on the user's head, in the user's shoe or carried in a bag. Wearable devices continue to evolve and become more efficient, manageable and adaptive to the everyday needs of users. As the technology behind human-computer interaction improves, devices are created and updated to integrate seamlessly into users' lives. Something as common as a Smartphone is considered wearable technology because it can be clipped onto clothing or held in a bag. Devices that monitor health can keep track of attributes such as sleep patterns, exercise and heart rate. Some popular examples of wearable devices include the Apple watch, Google glass. Wearable designers can also rely on us for a rich set of security solutions targeting different use cases. Our OPTIGA Trust family offers a broad selection of hardware-based trust anchors supporting embedded authentication and device protection. Specific family members such as OPTIGA™ Connect Consumer and OPTIGA™ Authenticate S were designed to extend secure cellular connectivity to wearable's and to protect against counterfeit replacement parts by giving each device a unique ID respectively. The SECORA™ Connect family brings secure NFC capabilities to wearable tech.

**B KEERTHANA**
**19RH1A0211**

# UNDER WATER WELDING



The purpose of this Seminar is for general knowledge only on how “underwater welding” is carried out. Safety is also emphasized here as we are dealing with two types of activities, Diving and Welding. One must remember that underwater welding is a different world, and so special precautions are adhered to for maximum safety of the welder/diver. Welding is an unavoidable process of modern engineering? Civil, electrical, mechanical, automobiles, marine aeronautical? in all branches. It is used in fabrications and erections in infrastructures and installations. It joins metals or thermoplastics. Forming a pool of molten mass? The weld puddle? And allowing it to cool to become a strong joint is the basis of the process of welding. For repairing to be carried out underwater, there is a separate process. That is called underwater welding. If damaged ships are to be repaired, underwater welding is the basic technology to be used. It is a highly-specialized profession? More employed in the oil or shipping industry and also in the defense operations. Underwater welding process is categorized into two divisions.1.Wet-welding2.Dry welding. In dry welding, a hyperbaric chamber is sealed around the structure to be welded. The chamber is then filled with gas (typically a mixture of oxygen and helium) to expel the water and create a dry atmosphere for the weld to be performed. The chamber needs to be pressurized to the right level to prevent welders from suffering from decompression sickness while working. However, there are instances where welder-divers don’t have access to a hyperbaric chamber or when urgency means that a repair needs to be done immediately. In these instances, wet welding may be used instead. Wet welding relies on the release of gaseous bubbles.

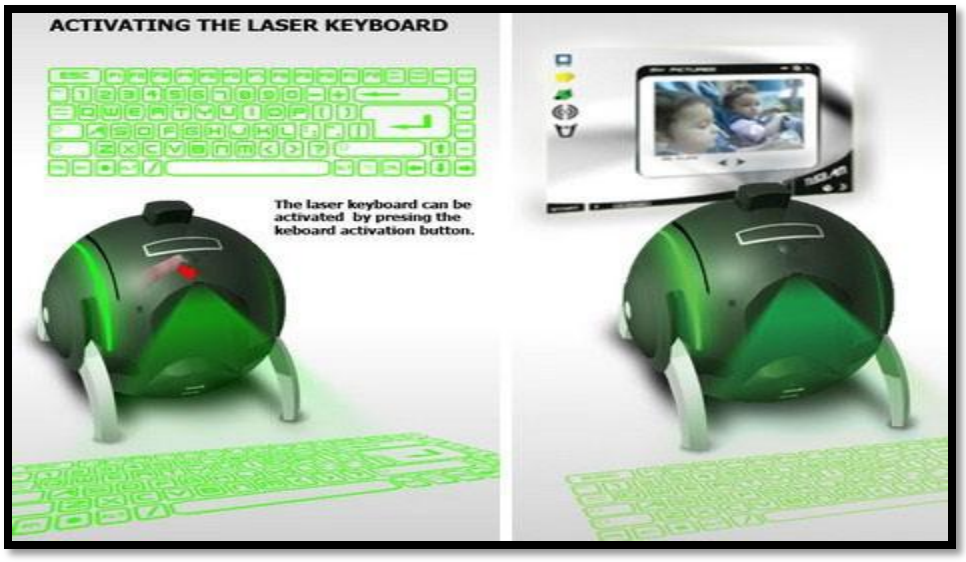
**N ANUSHA**
**18RH1A0236**

# FLYING CAR

The Urban Aeronautics Hawk is a proposed flying car designed by Rafi Yoeliin Yavne, Israel, being built by Metro Skyways Ltd., a subsidiary of Yoeli's privately held company, Urban Aeronautics. The firm claims to have flown the car to a height of 90 cm (3ft), and that greater heights are possible. The X-Hawkand it smaller unmanned version, the Tactical Robotics Cormorant, would be used in search and rescue operations where a helicopter would be useless, or at least very dangerous, such as evacuating people from the upper stories of burning buildings, or delivering and extracting police and soldiers while very close to structures, narrow streets, and confined spaces, with a projected size similar to that of a larger. The X-Hawk is a vertical take-off and landing (VTOL) aircraft with no exposed rotors, configured as a tandem-fan, turbine powered vehicle. Pilots will use a fly-by-wire multi hannel flight control system, with automatic stabilization, to help control the aircraft and maintain level flight. The ducted fan design allows the car to achieve the speed and manoeuvrability of a helicopter. Metro Skyways Ltd. (MSL),a subsidiary of Urban Aeronautics Ltd., led in developing the X-Hawk and exercises exclusive license of manned air-taxi(civil),air-rescue, and medical evacuation markets. Another subsidiary, Tactical Robotics Ltd. (TRL) has taken the lead in developing the Cormorant (formerly Air Mule) and exercises exclusive license s in unmanned military and national security markets.

**A ANUDEEPTHI**
**17RH1A0238**

# AI-BASED ON E-BALL TECHNOLOGY




The E-ball is a sphere shaped computer concept which is the smallest design among all the laptops & desktops have ever made. The PC concept features all traditional elements like mouse, keyboard, large screen display etc. All in an innovative manner. The E-Ball is a sphere shaped computer concept which is the smallest design among all the laptops and desktops have ever made. This PC concept features all the traditional elements like mouse, keyboard, large screen display, DVD recorder, etc, all in an innovative manner. E- Ball is designed to be placed on two stands, opens by simultaneously pressing and holding the two buttons located on each side. After opening the stand and turning ON the PC, pressing the detaching mouse button will allow you to detach the optical mouse from the PC body. This concept features a laser keyboard that can be activated by pressing the particular button. There is no external display unit, a projector will pop up by pressing and holding the button and focus the computer screen on the wall which can be adjusted with navigation buttons. If there is no wall around, the paper sheet holder, divides into three pieces like an umbrella just after popping up, will help to focus the desktop on a paper sheet.

**CH. SREEJA**
**18RH5A0208**

## IMPORTANT WEBSITES

www.ieee.org/india

www.engineering.careers360

www.technologyreview.com

www.mathworks.in/products/matlab/

www.microwaves101.com/

www.eee.utoronto.ca/student-life-links

https://www.eee.org/

Science Commons.org

MathGV.com:

http://www.engineeringchallenges.org/

http://engineering.stanford.edu/announcement/stanford-announces-16-online-courses-fall-quart

http://www.tryengineering.org/

http://www.engineergirl.org/

http://www.discoverengineering.org/

http://www.eng-tips.com/

http://electricalbaba.com

http://efymagonline.com/

http://circuitglobe.com

www.techdoct.com

www.howstuffworks.com

http://nptel.iitm.ac.in

http://www.opencircuitdesign.com/

http://www.futuresinengineering.com/

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**EAMCET CODE** **MRCW**

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