

Department of Electrical And Electronics Engineering



Technical Magazine

JUL - DEC 2021

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INSTITUTION

Vision of the Institute:

To be a premier center of learning in Engineering and Management education that evolves the youth into dynamic professionals with a social commitment

Mission of the Institute:

M1: To provide quality teaching- learning practices in engineering and management education by imparting core instruction and state-of-the-art infrastructure.

M2: To engage the faculty and students in acquiring competency in emerging technologies and research activities through Industry Institute Interaction.

M3: To foster social commitment in learners by incorporating leadership skills and ethical values through value-based education

DEPARTMENT

Vision of the Department:

“To be recognized for producing meritorious electrical engineers with research proficiency and social commitment”.

Mission of the Department:

M1: Impart quality education with practice-based learning in producing electrical engineers with ethical values.

M2: Encourage the faculty and students to acquire mastery in cutting edge technologies.

M3: Implement research activities with social commitment.

Program Educational Objectives (PEOs)

PEO-I : Acquire a profound knowledge for a successful career in electrical engineering and allied fields

PEO-II :Pursue higher education and involve in research activities of electrical and electronics engineering.

PEO-III : Exhibit intellectual skills ethically and pursue life-long learning with social commitment.

EEE
PBRVITS

**DEPARTMENT OF ELECTRICAL
AND ELECTRONICS ENGINEERING**

Program Outcomes (POs)

1. Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
11. Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Program Specific Outcomes (PSOs)

PSO-1 : Analyze industrial electrical challenges by applying knowledge of fundamental electrical circuits, electronics and drives

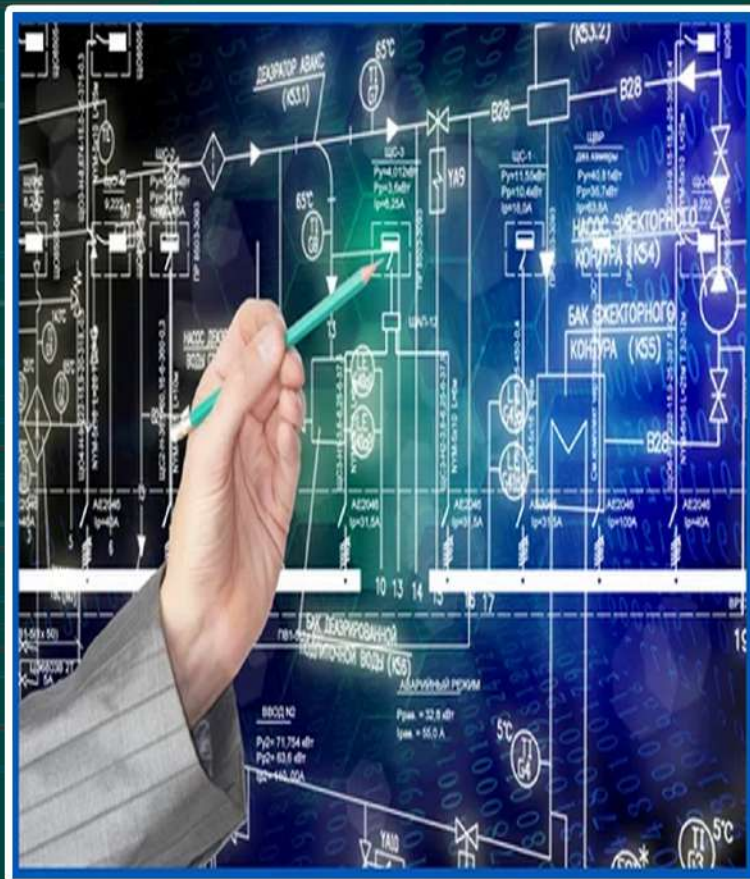
PSO-2 : Apply standard practices in electrical power and control systems with safety and societal considerations.

DEPARTMENT PROFILE

The Department of Electrical and Electronics Engineering (EEE) was established in the years 1998–99 with an intake of 60 and currently running with an intake of 120. It is 21 years old now and one of the most well-established departments in our Institution. It is also offering one post graduate programme with the specialization of Power Electronics with an intake of 30 students.

The Department is known for its esteemed faculty members who are renowned for their path-breaking contributions in the field of electronics and communications. It is well equipped with laboratories, audio-visual facilities and software tools such as Multi Sim, Model Sim, Lab View, HFSS, MATLAB, and Xilinx.

We offer our students an excellent educational experience that combines intellectual rigor and cross-disciplinary breadth. The course contents are periodically updated to introduce new scientific and technological developments. Power Electronics design, Power technologies, hands-on programming, a research focus, and entrepreneurship skills are all part of our signature educational curriculum. The EEE domain is often regarded as a challenging culmination of hardware and software. Our curriculum focuses primarily on the knowledge and skills that emerging engineers need.



PROFESSOR DESK



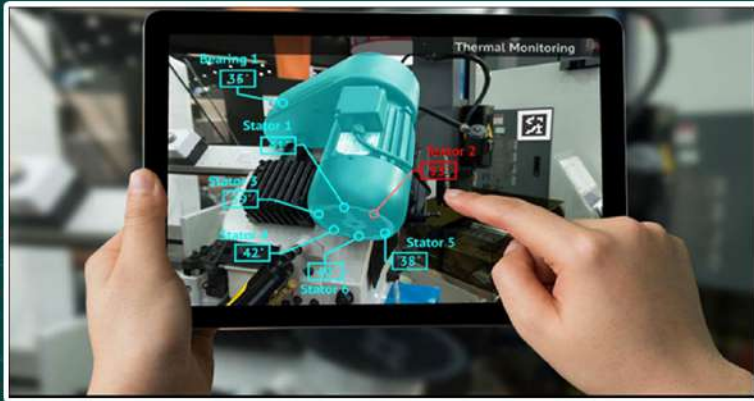
Welcome to the Department of EEE at PBR VITS, Kavali. This magazine will be covering activities conducted by VIDYUTH and technical articles written by students. I am confident that all the faculty members and student community involved with this

this magazine have put their efforts in this in a way that the magazine both entertains and ignites the reader's mind.

I would like to thank the editorial team members for bringing out this magazine regularly. I express my considerable appreciation to all the authors of the articles in this magazine. These contributions have required a generous amount of time and effort. It is this willingness to share knowledge, concerns and special insights with fellow beings that has made this magazine possible.

Dr. V. MadhuSudhana Reddy
Professor & HOD, EEE.

AUGMENTED REALITY



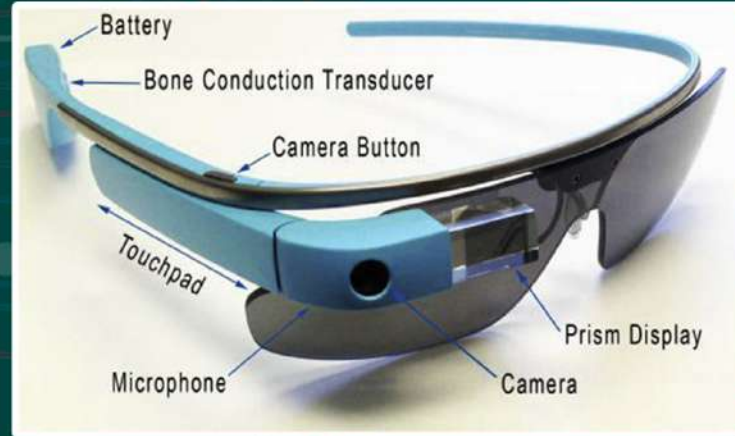
Augmented Reality is a combination of a real and a computer-generated or virtual world. It is achieved by augmenting computer-generated images on real world. It is of four types namely marker based, marker less, projection based and superimposition based augmented reality. It has many applications in the real world. AR is used in various fields such as medical, education, manufacturing, robotics and entertainment. Augmented reality comes under the field of mixed reality. It can be considered as an inverse reflection of Virtual Reality. They both have certain similarities and differences.

This paper gives information about Augmented Reality and how it started. It analyses various types of augmented reality, its applications and its advantages and disadvantages. This paper also gives us knowledge regarding those major threats that augmented reality will face in the near future and about its current and future applications.

It gives us a comparison between the two related topics, Augmented reality and Virtual reality. The following paper also helps us know about the effect of Augmented Reality on the human life

SURE YESWANTH
(18731A0234)

GOOGLE GLASS



Google glass interacts with the world through android operating system. Google glass is a new and up to date technology which includes all options in smart phones and has internet facilities. Virtual reality and augmented reality are the two most commonly used features. Google has developed wearable computer named as optical head mounted display. It works with voice commands and useful for handicapped and disabled. It consists of 4G technology, android system, eye tap, smart clothing and wearable computer. Glass intuitively fits into your workflow and helps you remain engaged and focused on high value work by removing distractions. Using voice commands, you can activate the right application for you at any time.

Access training videos, images annotated with instructions, or quality assurance checklists that help you get the job done, safely, quickly and to a higher standard. Glass can connect you with coworkers in an instant, bringing expertise to right where you are. Invite others to —see what you see through a live video stream so you can collaborate and troubleshoot in real-time. With Google Meet on Glass, meeting participants can experience a first-person view of the Glass wearer's perspective and collaborate with the video meeting in real time.

DASARI PAVAN KALYAN
(19735A0222)

EV BATTERY OF THE FUTURE

The release of the Gogoro Smartscooter in 2015 represented a turning point for electric mobility. With the challenge of energizing the vehicle and delivering an unparalleled riding experience solved, consumers finally had something to get excited about. Five years later, light electric vehicles powered by Gogoro Network™ Smart Batteries are the most popular electric two-wheelers in Taiwan and recognized internationally for their impeccable design.



Gogoro has, from the beginning, envisioned the Gogoro Network and its Smart Batteries as a platform—not just products—which would one day enable vehicle makers to dream up any type of vehicle for all kinds of riders, all on top of one distributed, shared energy platform. Inspired by the possibilities of the Gogoro Network and Gogoro's innovations in battery technology, starting in 2019, major vehicle makers, like Yamaha and Aeonmotor, began developing their own models that seamlessly integrate into the Gogoro Network. A testament to Gogoro's vision of not just creating products people love but their ability to move a whole industry forward. And along the way, the smarts built into the Gogoro Network Smart Battery taught us more than we could have ever imagined. Data collected from Gogoro Network Smart Batteries now inform real-time pricing at GoStations, urban planning in cities

TALAMANCHI SUMATHI
(18735A0225)

POWER QUALITY ANALYZER



A power quality analyzer is used to measure electric power signals to determine the load's ability to function properly with that electric power. Without the correct electric power, electrical equipment may fail prematurely or malfunction. There are many different different factors that contribute to poor quality power. Power quality analyzers, such as any Fluke Series meter, track several electrical parameters, which include AC voltage, AC current power, and frequency. Electrical data parameters include demand and peak demand.

Electrical demand is the actual amount of power that the monitored system uses. Peak electrical demand is the maximum amount of electric power that can be used. Typically, power parameters are measured in watts (W), volt amperes (VA), and volt ampere reactives (VAR). Watts are units of electrical power that indicate the rate of energy produced or consumed by an electrical device. Volt amperes equal the current flowing in a circuit multiplied by the voltage of that circuit. Volt ampere reactives identify the reactive component of volt amperes. Fluke power quality analyzers and power meters detect mystery disturbances, those upsets to a process or sensitive equipment operation that don't seem to correspond to any identifiable source of power disturbance. Such things as ground loops, high speed transients, lightning, and common mode electrical noise come to mind.

R V LAKSHMI PALLAVI
(164N1A0237)

HADOOP TECHNOLOGY



Hadoop is an open-source, java-based implementation of Google's Map Reduce framework. Hadoop is designed for any application which can take advantage of massively parallel distributed processing, particularly with clusters composed of unreliable hardware. For example, suppose you have ten terabytes of data, and you want to process it somehow, (suppose you need to sort it). Using a single computer, this could take a very long time. Traditionally, a high end super computer with exotic hardware would be required to do this in a reasonable amount of time. This was how Tim tackled his problems; let's now have a look at how this story can be compared to big data and Hadoop. Data generation was once limited to a single format. It could be managed with one storage unit and one processor. Data generation gradually started increasing, and new varieties of data emerged. This started happening at high speed, making it more difficult for a single processor to handle. This is similar to how Tim found it difficult to manage alone when he expanded his business. Next in the Hadoop technology tutorial, we will learn all about Hadoop HDFS. HDFS is similar to the Google File System, as it stores data across multiple machines. The data is auto replicated to various machines to prevent the loss of data. In HDFS, data is split into multiple blocks; each of these blocks has a default size of 128 MB.

GUVVALA BHARGAV
(19735A0217)

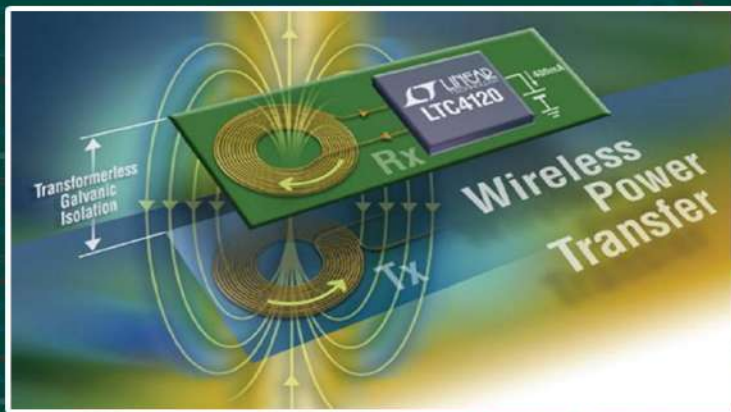
DRONES FOR SMART AGRICULTURE



One of main source of income in of India is Agriculture. The production rate of crops in agriculture is based on various parameters like temperature, humidity, rain, etc. Which are natural factors and not in farmers control. The field of agriculture is also depends on some of factors like pests, disease, fertilizers, etc which can be control by giving proper treatment to crops. Pesticides may increase the productivity of crops but it also affects on human health. So the main aim of this paper is to design agriculture drone for spraying pesticides. In this paper, we are going to discuss different architecture based on unmanned aerial vehicles (UAVs). The use of pesticides in agriculture is very important to agriculture and it will be so easy if will use intelligent machines such as robots using new technologies. This paper gives the idea about various technologies used to reduce human efforts in various operations of agriculture like detection of presence of pests, spraying of UREA, spraying of fertilizers, etc. This paper describes the development of quad copter UAV and the spraying mechanism

NELAPATI SIVAKAVITHA
(19731A0226)

WIRELESS POWER TRANSMISSION



Wireless power transfer (WPT) is the transmission of electrical power without wires and is based on technologies using time-varying electric, magnetic, or electromagnetic fields. WPT is useful to power electrical devices where are inconvenient, or not possible, as is the case of body embedded sensors, actuators, and communication devices. Power can be transferred over short distances (near-field transfer) by alternating magnetic fields and

inductive coupling between coils, or by alternating electric fields and capacitive coupling between metal electrodes. Inductive coupling is the most common method of WPT and is used in charging devices such as smart phones, electric shavers, visual prostheses, and implantable medical devices (cardiac pacemakers, cochlear implants) (Sun et al., 2013; Moorey et al., 2014) For 20 mm distance separation and size of the coil pair, loop diameter, and frequency play a major role in determining WPT performance (Celik and Aydin, 2017).

MARRIPALLI RAVI
(19735A0233)

THE AMBULANCE DRONE



Putting a positive spin on drones, Netherlands' Delft University of Technology graduate Alec Momont designed an actual ambulance drone that helps people in distress. He states that it will decrease emergency response time from 10 minutes all the way down to 1 minute – and we definitely need the speed improvement. So the actual SUPER HERO Alec Moment even received a Frame Public Award last year for this fabulous invention. This life saving device travels up to 100km an hour. It arrives at each and every destination according to coordinates and even comes equipped with supplies. Despite a chronic shortage 6.5 lakh units of blood and its components are wasted because of not being transfused timely.

Drones can overcome all these challenges and save countless lives by supplying blood and other essential supplies within minutes when and where the need arises. This reimagined ambulance concept comes down to a one-person drone modeled after a standard quadcopter, driven by a GPS, pilot, or combination of both, that could be dispatched to an emergency scene with a single EMT. Smaller than the conventional ambulance and helicopter (it is roughly the size of a small car), their drone is designed to be able to land almost anywhere. Once it reaches the scene of an accident, the EMT would deploy, stabilizes the patient, load them up, and send them back to the hospital for further treatment

THATITHOTI SUPRIYA
(19731A0237)

COMPUTER NETWORKING



Computer Networks have become an essential tool in many aspects: human communication, gathering, exchange and sharing of information, distributed work environments, access to remote resources (data and computing power) and many more. Starting from an historical overview, this paper will give an introduction to the underlying ideas and technologies. The second half will concentrate on the most commonly used network technology today (Ethernet and TCP/IP) and give an introduction to the communication mechanisms used. Computer networking refers to interconnected computing devices that can exchange data and share resources with each other. These networked devices use a system of rules, called communications protocols, to transmit information over physical or wireless technologies. Nodes and links are the basic building blocks in computer networking. A network node may be data communication equipment (DCE) such as a modem, hub or, switch, or data terminal equipment (DTE) such as two or more computers and printers. A link refers to the transmission media connecting two nodes. Links may be physical, like cable wires or optical fibers, or free space used by wireless networks

KASI SIVANI
(19735A0227)

SOLAR TREE



Solar Tree is used for placing so many panels in one place and can moving the panels in the sunlight directions. All the power is directed into one inverter. Place attention-getting solar structures on your property to tell the larger story of your efforts in sustainability, and to encourage others to do likewise.

To make your Spotlight Solar —treesll more engaging, we offer a number of options. Integrated lighting, seating, and counters with places to plug in. Branding, signs leading to online content, full graphic wraps, and even augmented reality. Spotlight Solar structures incorporate beautiful solar panels in sculptural forms designed to inspire. Your customers will endorse you, employees will gain pride, and tenants will prefer your property. Place attention-getting solar structures on your property to tell the larger story of your efforts in sustainability, and to encourage others to do likewise. To make your Spotlight Solar —treesll more engaging, we offer a number of options. Get the Solar View app and you'll be able to experience a Spotlight Solar structure on your property in about 30 seconds. Installed pricing is up to the integrator and is based on product selected, site conditions, and other factors. You can expect a fully installed Spotlight solar system to be in the range of \$40,000 to \$80,000 depending on the product chosen and quantity. Tax credits and recoveries can reduce this about 45%.

KANCHARLA HARSHINI
(17731A0271)

IOT BASED HOME AUTOMATION SYSTEM



The concept of Home Automation aims to bring the control of operating your everyday home electrical appliances to the tip of your finger, thus giving user affordable lighting solutions, better energy conservation with optimum use of energy. Apart from just lighting solutions, the concept also further extends to have a overall control over your home security as well as build a centralized home entertainment system and much more.

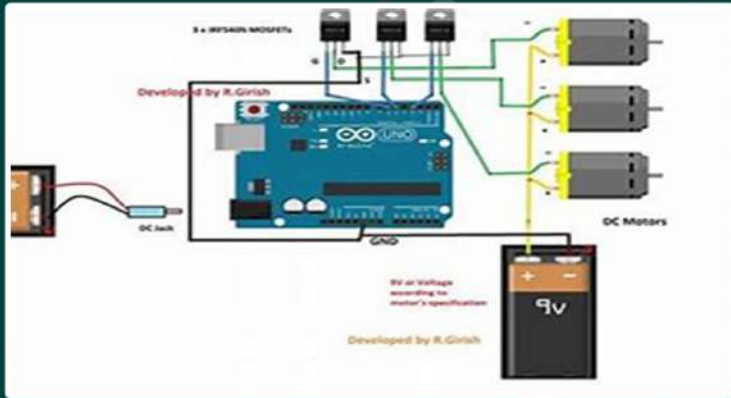
The Internet of Things (or commonly referred to as IOT) based Home Automation system, as the name suggests aims to control all the devices of your smart home through internet protocols or cloud-based computing. IOT or internet of things is an upcoming technology that allows us to control hardware devices through the internet. Here we propose to use IOT in order to control home appliances, thus automating modern homes through the internet.

This system uses three loads to demonstrate as house lighting and a fan. Our user friendly interface allows a user to easily control these home appliances through the internet.

For this system we use an AVR family microcontroller. This microcontroller is interfaced with a wi-fi modem to get user commands over the internet. Also we have an LCD display to display system status. Relays are used to switch loads. The entire system is powered by a 12 V transformer. After receiving user commands over the internet, microcontroller processes these instructions to operate these loads accordingly and display the system status on an LCD display.

ALAVALAPATI VINEESHA
(18735A0208)

WIRELESS SPEED AND DIRECTION CONTROL OF DC MOTOR BY USING RF COMMUNICATION



Every system is automated in order to face new challenges in the present day situation. Automated systems have less manual operation. So that the flexibility, reliabilities are high and accurate. Hence every field prefers automated control system. Especially in the field of electronics automated system are doing better performance. The main idea of developing this project is for providing an efficient and simple method for the control of speed and direction of DC motor using RF (Radio Frequency) technology. Wireless communication is the transfer of information between two or more points that are not physically connected. Distances can be short, such as a few meters for television remote control, or as far as thousands or even millions of kilometers. Among the various wireless technologies like IR (Infra Red), Bluetooth and WLAN, we have chosen RF technology, the main reason being it has a very long range of 3KHZ-300GHZ. It is also not affected by any obstructions. Commercial applications for wireless are door announcers, security and access systems, gate control, remote activation, score board and paging systems. This project uses RF modules, STT-433 MHz Transmitter, STR-433 MHz Receiver, HT12AE RF Encoder and HT12D Decoder. Four switches are provided at the transmitter end, to control the speed and direction of the DC motor which is connected at the receiver side. Two push-to-on switches are provided to rotate the motor in clockwise/counter clockwise direction. One push-to-on switch for increasing/decreasing speed of the motor. One more switch is provided to stop the motor.

P SRAVANI
(18735A0205)

SURVEY OF MICROGRID TECHNOLOGY

A microgrid is a group of interconnected loads and distributed energy resources within clearly defined electrical boundaries that acts as a single controllable entity with respect to the grid and can connect and disconnect from the grid to enable it to operate in both grid connected or island mode. Micro grids can be intended as back-up power or to support the main power grid during periods of high demand. These involve multiple energy sources as a way of incorporating renewable power (such as wind turbines, photovoltaic panels, micro-hydro generators, biomass, fuel cells etc.) and provides flexible and high efficiency platform for distributed generation and renewable energy generation's integration and utilization.

Many microgrid developments carried out in several countries, because microgrid offers many advantages, including better power quality and more environmentally friendly. microgrid development concerned in technology generation, microgrid architecture, power electronics, control systems, protection systems. Micro grid can also reduce power costs, enhance reliability and reduce carbon emissions. In this paper, on the basis of summarizing microgrid's development status all over the world, according to the differences and relations between microgrid and large power system, and considering two operating modes of microgrid, the key issues of microgrid operation management are studied.

It is pointed out that microgrid's stable operation and architecture, among which the dispatch of distributed energy storage and study about microgrid system development using grid tie inverter (GTI) & the advantages and disadvantages of this system should be paid more attention. Microgrid system can implemented using GTI, power transfer can occur from GTI to grid when GTI has power excess and grid supplying power to GTI when GTI power shortage.

PULLAREDDIGARI DEEPIKA
(19735A0223)

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://MathGV.com)

<http://www.engineeringchallenges.org/> <http://engineering.stanford.edu/announcement/stanford-announcements-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>

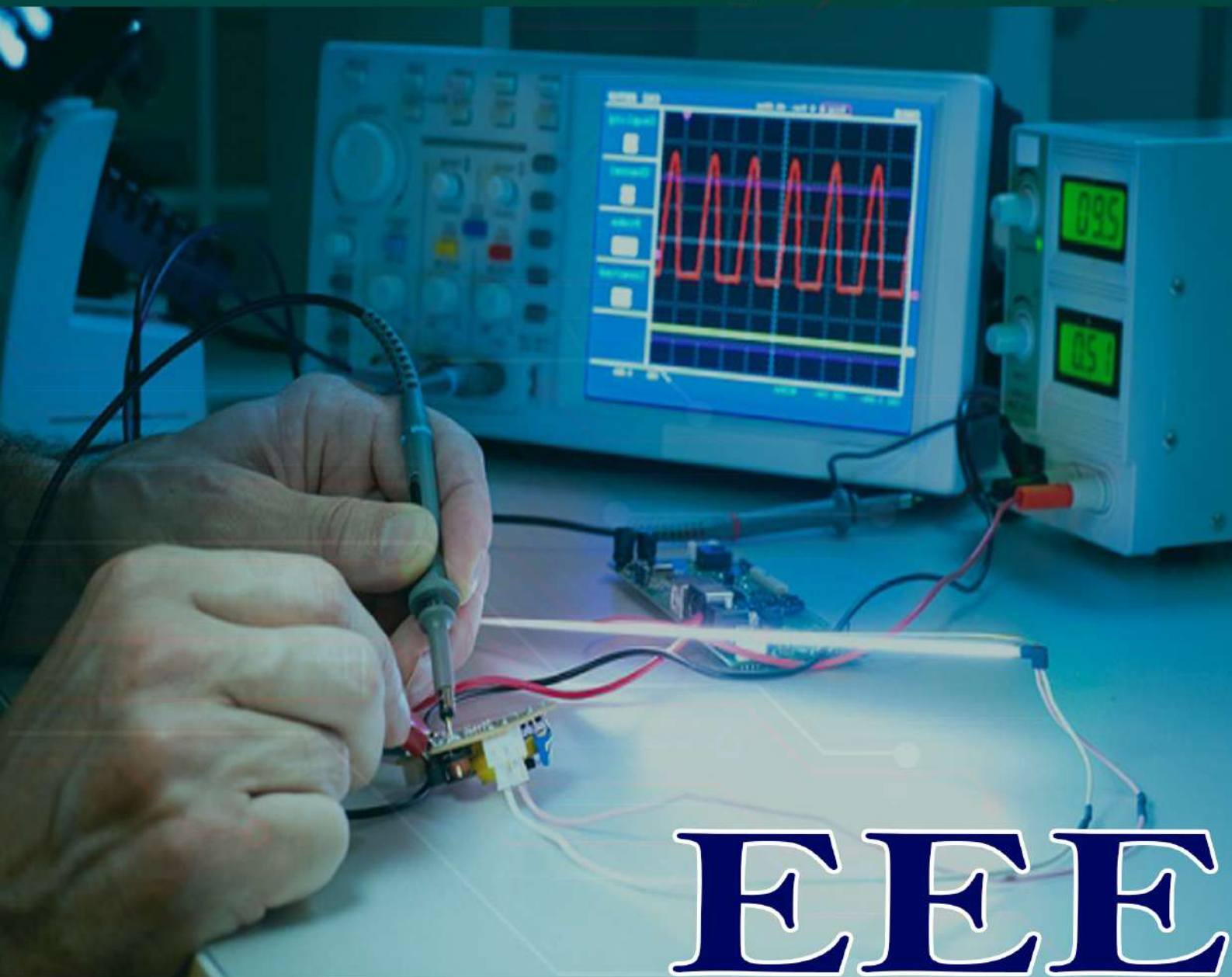
www.techdoct.com

www.howstuffworks.com

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