

RAMCO INSTITUTE OF TECHNOLOGY

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2019**

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

ABOUT THE DEPARTMENT

The Department of Electronics and Communication Engineering (ECE) is established in the year 2013 with a vision to Develop futuristic technologist in Electronics and Communication Engineering to meet the global challenges and the societal needs of our nation. At present RIT offers a 4-year B.E. ECE programme with a sanctioned intake of 120 students. The Laboratories are equipped with latest technology in the fields of Electronic Devices and Circuits, Digital Electronics, Linear Integrated Circuits, Microprocessors & Microcontrollers, Very Large Scale Integration Circuits, Digital Signal Processing, Communication System, Computer Networks, Optical & Microwave, Embedded Systems that offer opportunities on a wide range of hardware and advanced software packages. In addition to this, the Department has equipped with Research Laboratories such as NI-LabVIEW Research Laboratory, Tessolve Semiconductor Laboratory and Technical Incubation Centre to enrich the knowledge of students and faculty.

The Department encompasses professional associations such as Students Technical Association “Electronica”, IETE, ISTE chapters which provides a platform to learn professional and soft skills. The Department had organized various Value Added Courses, Electronica-Association activities, Workshops, Conference, Guest lectures and Industrial Visits. The students had excelled in both co-curricular and extra curricular activities. The faculty members also contributed their efforts to get sponsorship from FAER, TNSCST etc.

VISION AND MISSION

VISION

Develop futuristic technologist in Electronics and Communication Engineering to meet the global challenges and the societal needs of our nation.

MISSION

- Educate students to become enlightened engineers with the latest know-how to take on the challenges concerned with the society.
- Equip the students with the current trends and latest technologies in the field of Electronics and Communication Engineering to make them technically strong and ethically sound.
- Constantly motivate the students and faculty members to achieve excellence in Electronics and Communication Engineering and Research & Development activities.

PEOs & PSOs

PROGRAM EDUCATIONAL OBJECTIVES (PEOs) :

- Graduates will gain knowledge through continuous learning to enhance competency and career prospects.
- Graduates will be technically competent to design, analyze, develop and implement Electronic and Communication Systems.
- Graduates will apply the basic fundamental concepts in Electronic and related fields to solve general engineering Problems related to societal needs.
- Graduates will be professionals with attributes, passion, positive attitude, ethics and moral values for a successful career.
- Graduates will Communicate effectively and interact responsibly with colleagues, employees, team members, clients and the society.

PROGRAM SPECIFIC OUTCOMES (PSOs) :

After successful completion of the degree, the students will be able to:

- Adapt to emerging trends in Information and Communication Technology by innovating new ideas to solve existing/novel problems.
- Excel in latest technologies of Embedded Systems.
- Design, analyze and develop electronic products in the area of VLSI Design and Communication Systems.
- Contribute as Entrepreneurs in building electronic products.



Electronics & Communication Engineering

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"CRACK" THE GATE

GATE
GRADUATE APTITUDE TEST IN ENGINEERING



GATE is an online national level examination conducted for Master of Engineering (ME), Masters in Technology (MTech) and direct PhD admissions. The exam is jointly conducted by IIT Bombay, IIT Delhi, IIT Guwahati, IIT Kanpur, IIT Kharagpur, IIT Madras, IIT Roorkee and Indian Institute for Science, Bangalore (IISc Bangalore), on a rotational basis on behalf of the National Coordination Board (NCB - GATE), Department of Higher Education, Ministry of Human Resource & Development (MHRD), Government of India. GATE exam will be conducted once in a year in the month of February.

GATE exam consists of 65 multiple choice and numerical questions over a 3-hour duration. It must be noted that the GATE score is valid for three years from the date of announcement of results.

WHY GATE IS IMPORTANT?

The purpose of the GATE exam is to test the students knowledge and understanding of their under Graduate level subjects in Engineering and Science. The GATE score reflects the relative performance level of a candidate. It is also used by several public sector

undertakings (PSU) for recruiting graduate engineers in entry-level (positions, to get Fellowship Programs from CSIR and Scholarships in ME/ M.Tech and many more. Through GATE, candidates can seek admission or financial assistance (for admission) to the Master's programs and doctoral programs in Engineering, Architecture and relevant branches of Science. Qualifying GATE is mandatory for admission to these courses offered at MHRD-supported institutes and other government agencies. These institutes include IITs, IISc, NITs, IIITs, GovernmentFunded Technical Institutes (GFTIs) and other universities in India.

Scholarships through GATE:

In order to promote post graduate programs in India, GATE students are offered a Scholarship/ Assistance ship, where the students are paid Rs 11,800 per month by the MHRD so as to provide financial assistance to the candidates during their degree.

BY
Mr.S.Vijayakumar, AP/ECE
Mr.M.Sathis Kannan, II Year ECE

"CRACK" THE GATE

GATE
GRADUATE APTITUDE TEST IN ENGINEERING



Benefits of GATE Exam (Why GATE?)

GATE score enables students to gain admission to various prestigious PG programs in IITs and IISc such as

- ◆ ME (Master of Engineering)
- ◆ MTech (Master of Technology)
- ◆ Doctor of Philosophy

GATE score can also be used in the following prestigious programs :

1. **Admission in reputed foreign universities** with good scholarships such as

- Aachen university (Germany) - best known for mechanical and automobile engineering
- Technical University of Munich (Germany)
- National University of Singapore

2. **Fellowship programs** in IIMs (equivalent to PhD) with stipend ranging from Rs. 35,000 to 40,000 per month along with a one time grant of Rs. 1,00,000 to 2,00,000

Research Institutes Hiring through GATE

As the times are changing, there has been an increasing scope of recruitment in the R & D departments of various technological companies. In laboratories like Counsel of Scientific and Industrial Research, GATE qualified engineers have been made eligible for the award of Junior Research Fellowship (JRF) and Senior Research Fellowship (SRF). Such fellowships are paid, and the stipend generally is between Rs 15,000-Rs 20,000.

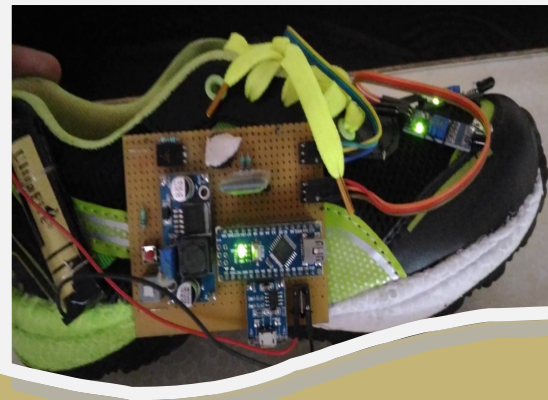
**THERE IS NO ELEVATOR TO
SUCCESS. YOU HAVE TO
TAKE THE STAIRS.**

Smart Shoe for Visually Challenged People

By

Ms.R.PRIYADHARSHINI,

III Year ECE



Introduction:

To know that in world about 1% of the human population is visually impaired and amongst them about 10% is fully blind. The system that is designed consists of sensors and vibrators for sensing the surrounding environment and giving feedback to the blind person to find the position of the nearest obstacles in range. Electronic component is fixed in shoes of users. User will wear shoes for easy mobility. Sensors will sense obstacles, vibrators will vibrate for left/right turn through path. Using smart shoe, blind people need not to be depend on others for mobility. In this work, system is designed which is cheap, a simple friendly user, smart blind guidance system. It is implemented to improve the mobility of both blind and visually impaired people.

Proposed System:

The proposed system will help the blind people to communicate with environment. They can walk independently when they use this product .They can get alert when they go near obstacles, so that they can move and lead their right path. This advanced shoes will be programmable for certain distance measurement and hence the object from that particular distance and a haptic signal. The customer need vibrator hence, at noisy site when blind people can't heard the buzzer then the vibrator indicate them to that some object is near to them.90% of them appreciate this technology and they seek for the cost of the shoe and they ask whether it is for all aged people so the product is made according to that.

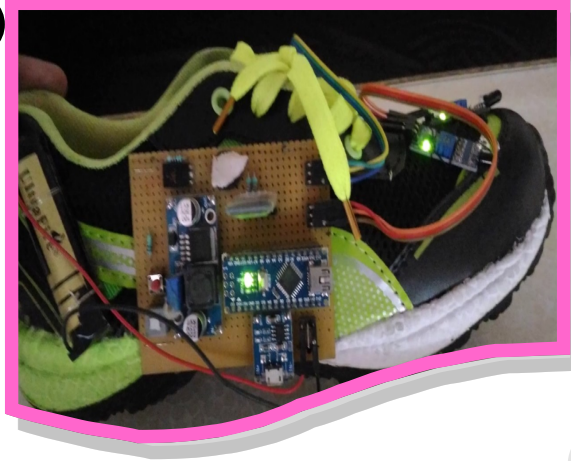


BY Ms.S.PRADEEPA, III YEAR ECE

**DON'T LIMIT YOUR
CHALLENGES.
CHALLENGE YOUR
LIMITS.**

SLICKWORDS.COM

*Smart Shoe for Visually
Challenged
People*
By
*Ms.R.PRIYADHARSHINI,
III Year ECE*



Conclusion:

In order to make use of latest technology, the system is proposed known as smart shoe for the blind and the visually challenged people. Wearable electronic kit is proposed. Main goal of the proposed system is to provide independence and feel comfortable for both blind as well as the visually impaired person. Sensors will detect obstacles and vibrators will vibrate according the direction. Right cultivator will vibrate when right swing should be taken and left shoe will vibrate when left swing should be taken. The approach is to make easy application for visually impaired person to live independently and the customers also agree with that . Nearly 85% of people support the product .



BY
Ms.R.Dhanushya
III Year ECE

Machine Learning Approaches on Medical Imaging for Clinical Psychology and Health Care Applications

Mr.A.Rameshbabu, AP/ECE

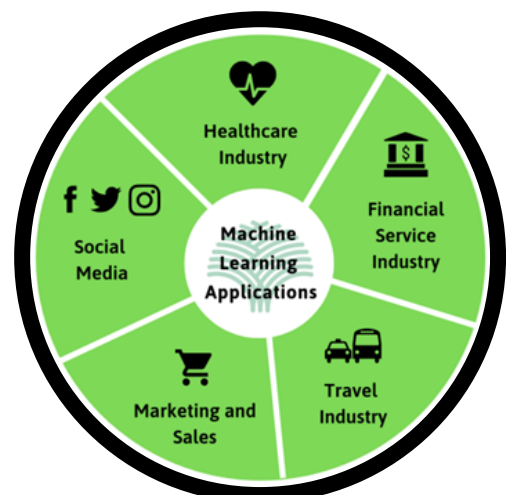
Mr.S.Arunkumar, III Year ECE



INTRODUCTION

Machine learning (ML) is the scientific study of algorithms and statistical models that computer use to perform a specific task without using explicit instructions, relying on patterns and inference instead. It is seen as a subset of artificial intelligence. Machine learning is closely related to computational statistics, which focuses on making predictions using computers. The study of mathematical optimization delivers methods, theory and application domains to the field of machine learning.

Data mining is a field of study within machine learning, and focuses on exploratory data analysis through unsupervised learning.



Machine Learning Approaches on Medical Imaging for Clinical Psychology and Health Care Applications

MEDICAL IMAGING :



Medical imaging is the technique and process of creating visual representations of the interior of a body for clinical analysis and medical intervention, as well as visual representation of the function of some organs or tissues (physiology). Medical imaging seeks to reveal internal structures hidden by the skin and bones, as well as to diagnose and treat disease. Medical imaging also establishes a database of normal anatomy and physiology to make it possible to identify abnormalities. Although imaging of removed organs and tissues can be performed for medical reasons, such procedures are usually considered part of pathology instead of medical imaging.

DEEP LEARNING CONCEPTS IN MEDICAL FIELD:

Deep learning is part of a broader family of machine learning methods based on artificial neural networks. Deep learning architectures such as deep neural networks, deep belief

networks, recurrent neural networks and convolutional neural networks have been applied to fields including computer vision, speech recognition, natural language processing, audio recognition, social network filtering, machine translation, bioinformatics, drug design, medical image analysis, material inspection and board game programs, where they have produced results comparable to and in some cases superior to human experts.



MEDICAL APPLICATIONS:

1) Identifying Diseases and Diagnosis

One of the chief ML applications in healthcare is the identification and diagnosis of diseases and ailments which are otherwise considered hard-to-diagnose. This can include anything from cancers which are tough to catch during the initial stages, to other genetic diseases.

2) Drug Discovery and Manufacturing

One of the primary clinical applications of machine learning lies in early-stage drug discovery process. This also includes R&D technologies such as next-generation sequencing

and precision medicine which can help in finding alternative paths for therapy of multifactorial diseases. Currently, the machine learning techniques involve unsupervised learning which can identify patterns in data without providing any predictions.

3) Medical Imaging Diagnosis

Machine learning and deep learning are both responsible for the breakthrough technology called Computer Vision. This has found acceptance in the Inner Eye initiative developed by Microsoft which works on image diagnostic tools for image analysis. As machine learning becomes more accessible and as they grow in their explanatory capacity, expect to see more data sources from varied medical imagery become a part of this AI-driven diagnostic process.

4) Personalized Medicine

Personalized treatments can not only be more effective by pairing individual health with predictive analytics but is also ripe for further research and better disease assessment. Currently, physicians are limited to choosing from a specific set of diagnoses or estimate the risk to the patient based on his symptomatic history and available genetic information.

5) Machine Learning-based Behavioural Modification

Behavioural modification is an important part of preventive medicine, and ever since the proliferation of machine learning in healthcare, countless start-ups are cropping up in the fields of cancer prevention and identification, patient treatment, etc.

6) Smart Health Records

Maintaining up-to-date health records is an exhaustive process, and while technology has played its part in easing the data entry process, the truth is that even now, a majority of the processes take a lot of time to complete. The main role of machine learning in healthcare is to ease processes to save time, effort, and money.

7) Clinical Trial and Research

Machine learning has several potential applications in the field of clinical trials and research. Applying ML-based predictive analytics to identify potential clinical trial candidates can help researchers draw a pool from a wide variety of data points, such as previous doctor visits, social media, etc.

8) Better Radiotherapy

One of the most sought-after applications of machine learning in healthcare is in the field of Radiology. Medical image analysis has many discrete variables which can arise at any particular moment of time. There are many lesions, cancer foci, etc. which cannot be simply modelled using complex equations.

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- 3) <https://www.geeksforgeeks.org/ml-machine-learning/>
- 4) https://www.who.int/diagnostic_imaging/en/
- 5) <https://www.flatworldsolutions.com/healthcare/articles/top-10-applications-of-machine-learning-in-healthcare.php>

MY GOV
BY
Ms.R.PRIYADHARSHINI,
III Year ECE



Link to refer : <http://mygov.in>

ABOUT MY GOV:

My Gov is a citizen engagement platform founded by the Government of India to promote the active participation of Indian citizens in their country's governance and development. It is aimed at creating a common platform for Indian citizens to "crowdsource governance ideas from citizens". It is very useful for us and to the society. We, the people should interact with the government to convey the information about what is going on and also .As we are engineer, the techniques and our project proposal should reach the society utmost for their beneficial.

MY EXPERIENCE:

The following are the contest which are posted by me in mygov contest :

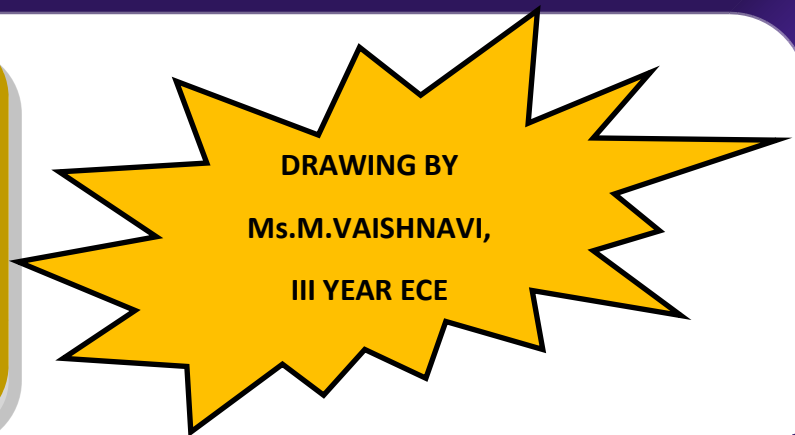
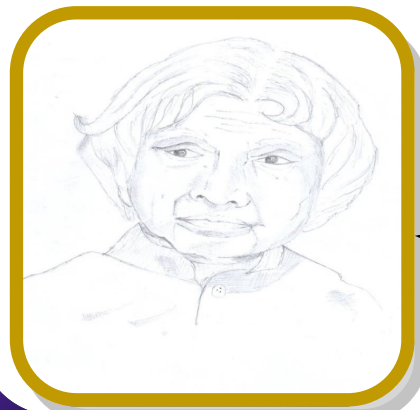


One of my favourite quotes "You must not lose faith in humanity. Humanity is a ocean. If a few drops of the ocean are dirty, the ocean does not become dirty". Gandhiji quotes towards nation development are uncreditable. Salute mahatma Gandhiji. Follow ahimsa. Mahatma Gandhiji believed in truth and non violence. It is the best way to go on and to survive in this world. Gandhiji wanted Indians to be self sustained. I feel that, now the time has come ,that our schools should become the cradle of new India.



LOGO COMPETITION:

I have participated in designing a logo competition via mygov social welfare contest. It helps me to pursue my hobby and I am proud of making this for our united India.



5G

BY

Mrs.G.Gnana Priya, AP(SG)/ECE

Ms.V.Alphina Christy, II Year ECE

INTRODUCTION:

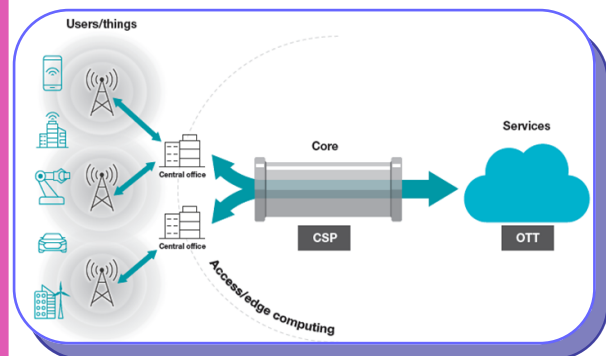
As 5G deployment gains momentum globally, promising ultra-low latency, faster speeds, lower power consumption and many more connections, hardware companies and engineers are preparing their portfolios for 2020 and beyond.

What is 5G?

5G is the communications backbone that will enable revolutionary applications in other markets, including industrial, automotive, medical and even defences. For a world that is becoming increasingly connected with the Internet of Things (IoT), 5G's significant improvements in speed (at least 10 times faster than 4G, up to 10 Gbps), latency (10 times lower than 4G, down to 1 ms) and density (supporting 1 million IoT devices per square kilometre) will make many innovative applications possible – especially those in which security, reliability, quality of service, efficiency and cost are equally important.

5G will connect things to services, with “things” residing in the consumer or enterprise space, and “services” typically residing in the cloud.

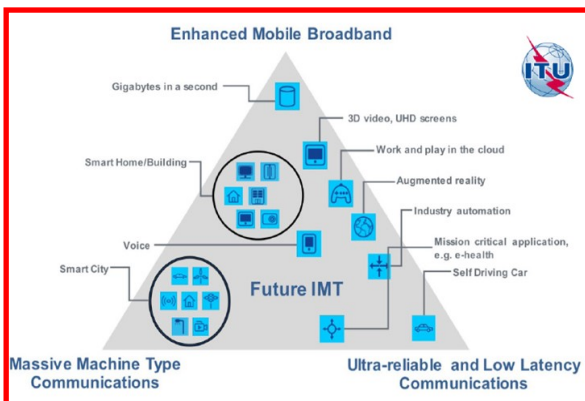
The 5G network will be able to slice flexibly parallel connections, sized to best fit the level of service users request, and offer the best cost/performance compromise. 5G is not just another “G” in the communication standards evolution it is an umbrella term comprising at least three major trends.



5G promises to be everywhere in smartphones, cars, utilities, wearable, hospital operating rooms, large factories, grids and much more moving closer to the concept of smart cities, smart manufacturing and a connected world. Phased rollout 5G New Radio (NR) is linked to LTE-Advanced, which remains an essential part of the 5G platform, to guarantee operation over an existing core network infrastructure.

Characteristics of 5G :

Many network functions have been already virtualized, even during 4G implementation, enabling the public cloud portion of the infrastructure (infrastructure as a service) to grow significantly. However, the pipeline remains firmly in the hands of Communication service providers (CSPs). A symbiotically functioning system requires the establishment and smart management of a proper connection between providers and users. The evolution of these connections will include new technologies like network slicing and edge computing, which are significant new characteristics of 5G.



Key hardware of the 5G future

The 5G network boasts NR access standards and features, making it suitable for several vertical markets with diverse applications. This presents a plethora of hardware needs, including those in apparatuses like active antenna systems (AAS), which evolves the concept of the remote radio head by integrating the antenna. This integration helps meet the 5G challenges of enhanced capacity using space diversity and localized beams, implementing massive MIMO (mMIMO) technology.



Where does 5G go from here?

Recent history in the communications industry shows a 10 year cycle time to upgrade to the next technology. The pace for 5G adoption looks similar, with consequent expectations for its maturity peak. With its high capacity and low latency, 5G will radically change how people and devices connect.

The coming health scare around 5G

The Federal Communications Commission (FCC) called to slow 5G infrastructure deployments until we can figure out the health effects. The organizations refer to “emerging science linking exposure to RF microwave radiation with serious biological harm.” The expansion of the 5G network, intended to enable faster wireless transmission of larger amounts of data, requires the installation of many more antennas in urban areas. In this way, the scientists argue, there is no longer anyone escaping the potentially harmful effects of radiation. After all, we are already exposed to 2G, 3G, 4G and Wi-Fi radiation.

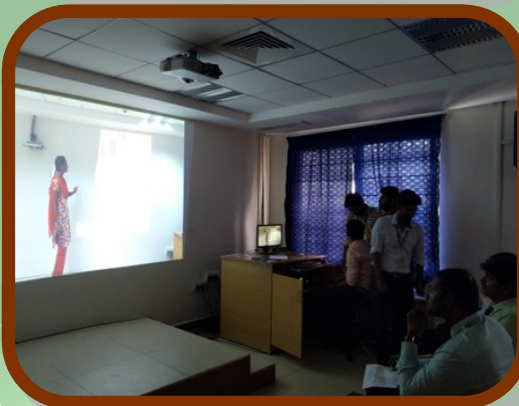
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- 1) www.ti.com/lit/wp/slwy003
- 2) <https://www.computerworld.com/article/3310067/why-5g-will-disappoint-everyone.html>

TECHNICAL FEST ENGINEERS DAY CELEBRATION

The Department of ECE organized a one day technical Fest in the view of Engineering Day Celebration for II and III year ECE students on September 15, 2018. The students were actively participated in various events such as **Project Exhibition**, **Art of Thinking (Video Presentation)** and **Technical MonoAct** to exhibit their talents. This technical fest was organized by Mr.A.Azhagu Jaisudhan Pazhani, AP(SG)/ECE and Mr.R.Deiva Nayagam AP/ECE.

Finally the Technical Fest on Engineer's Day in association with IETE ended successfully. Dr.S.Rajakarunakaran, Vice-Principal/RIT addressed the gathering. During his address address, he motivated the students to improve their technical as well as co-curricular skills. Dr.S.Rajakarunakaran, Vice-Principal/RIT, Dr.S.Kannan, HOD/EEE and Dr.S.Periyanyagi, HOD/ECE distributed the prizes and appreciation certificates to the winners of various events.

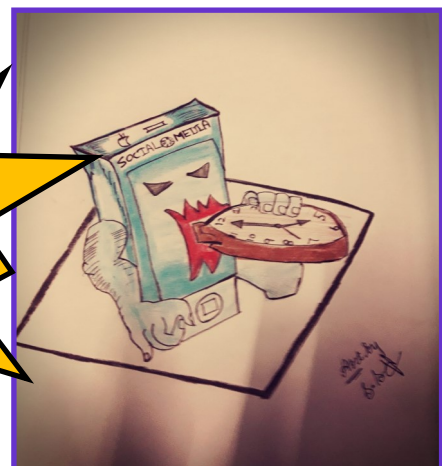


DUMB CHARADES

“RIT ELECTRONICA” conducted an event “DUMB CHARADES” on 12.07.2019. The event co-ordinators are Ms.R.Preethika, IV Year ECE B, Ms.V.Shabarna PonDevi, IV Year ECE B. In this event, each team consists of two members. One technical word is given to any one of the team member, he\she had to act and make another one to identify the correct technical word. Time taken by each team is calculated. Out of all the participated teams, three teams that take the least time to find the technical word will be declared as the winners. The students actively participated in this event.



DRAWING BY
Ms.S.SUGANYA
III YEAR ECE



CONNECTIONS

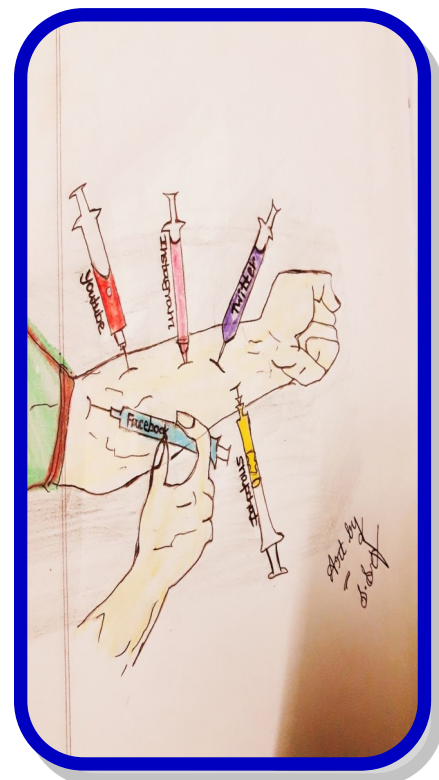
“RIT ELECTRONICA” conducted an event **“CONNECTIONS”** on 26.07.2019. The event co-ordinators are Mr. P.Manikandan, Ms. M.Muthurani and Mr.J.Madhanagopal of IV Year ECE B. In round 1, two images were displayed, the students were asked to find the hidden word behind each image and connect those two words to find the correct technical word. Students have to identify the name and have to write the word in the sheets provided to them. In round 2, technical quiz was conducted for the students to analyse the basic subject knowledge of subjects like Digital Electronics, Electronic Devices, Signals and Systems and Electronic Circuits. . Students have to identify the correct answers and write in the sheet provided to them.



DRAWING BY
Ms.S.SUGANYA
III YEAR ECE

JUMBLE WORLD

“RIT ELECTRONICA” conducted an event “JUMBLE WORLD” on 16.08.2019. The event co-ordinators are Ms.A.S.Uma Dhevi and Ms.R.Preethika of IV Year ECE B. In round I the technical words are jumbled (or) interchanged, students have to identify the correct word. The clue given is the starting letter of the word in upper case. Each team consists of two members. At the end of round I, four teams will be qualified for round II. In round II, three circuit diagrams from Devices, Circuit Theory and Electronic Circuits are given to each team. Students have to identify and write the name of the circuit diagram. Finally, based on the time taken by each team winners are declared. The students actively participated in this event.



“The best way to predict your future is to create it.”

- Abraham Lincoln

DRAWING BY
Ms.S.SUGANYA
III YEAR ECE



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"Success is how
high you bounce
when you hit
bottom."

THE KEY TO SUCCESS
IS TO FOCUS ON
GOALS, NOT OBSTACLES.