IMPETUS'20

INSPIRE . IGNITE . INNOVATE

NO RESISTANCE CAN DROP OUR POTENTIAL

ELECTRONICS
EMPOWER
ENGINEERS
ENSURE
ASSOCIATION
ACCELERATE

MADRAS INSTITUTE OF TECHNOLOGY

TEAM IMPETUS

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Bhuvaneaswari M

Greetings to you!! You have in your hands "IMPETUS 20", the department of Electronics Engineering's official magazine. It would seem a daunting process to labor a magazine year after year, which lives up to the promise of stimulation that the title suggests. Still, given the explosive development of the electronics industry today, this has been an arduous yet pleasant process. "To an optimist, the glass is half full. To a pessimist, the glass is half empty. To an engineer, the glass is twice as big as it needs to be "With access to vast resources and a higher degree of intellect, we can revolutionize the world. We hope to have followed our senior's legacy and satiate the appetite for knowledge of all the ardent engineering students. Our entire team would like to place on record our gratitude and heartful thanks to all those who have contributed, making the effort a success. We truly hope that the pages that follow accounts for an interesting and insightful read.
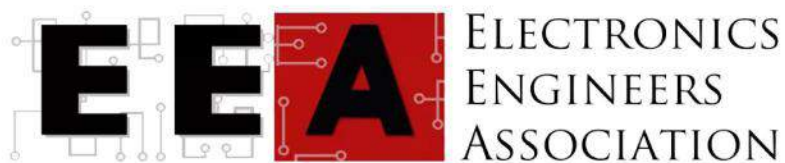Happy reading!

Team Impetus

For any queries, mail us at:
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IMPETUS'20

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EEA ELECTRONICS ENGINEERS ASSOCIATION

IN THE SERVICE OF MIT INDIA

CONTENTS

CONTENTS

MADRAS INSTITUTE OF TECHNOLOGY

In 1949, Shri. C. Rajam, gave the newly independent India - Madras Institute of Technology, so that MIT could establish the strong technical base it needed to take its place in the world. It was the rare genius and daring of its founder that made MIT offer courses like Aeronautical Engineering, Automobile Engineering, Electronics Engineering and Instrument Technology for the first time in our country. Through the 60 years, it has developed into an important centre of engineering education and earned an excellent reputation both in India and abroad.

HOD's Desk

    The electronics department is one of the oldest ones of MIT and the Electronics Engineers Association EEA, known for it's large strength of active student members has continued to improve the engineering skills of students by conducting various workshops, conferences and sessions on new advancements. As an extension to it, I'm very happy that our Department of Electronics Engineering is releasing it's third edition of the annual magazine IMPETUS. Impetus is an assortment of various interesting articles on advancement in the field, interviews, report on the activities on EEA and a wonderful learning platform. It acts as a mirror and acknowledges the diligent work accomplished by the department.

    The magazine amply reveals the calibre of the students and the standard of the faculties. Thus, kudos to the team of Impetus for fabricating the journal and I also invite the readers for their contributions and suggestions in the forthcoming issues.

The first floor of the Instrumentation Engg Block and a part of the RPT Dept. block are also a part of the ECE Dept.

ECE

The Elexians, the dreamers, the innovators.

DEPARTMENT OF ELECTRONICS ENGINEERING

The *ECE* department is one of the oldest departments of MIT having been established in the year 1949. The cutting edge research areas include Communication Technologies, Wireless Communication, Signal Processing, Image Processing, Pattern Recognition, Network Security, Sensor Networks, Optical Communication and VLSI.

The Department is supported by DST- FIST and UGC - DRS - SAP Phase II program.

The vision of the department is to produce globally competitive and socially sensitized graduates in Electronics & Communication Engineering and offers AICTE approved courses for both Undergraduates and Postgraduates.

There are two department buildings with the new one opened in 2015, with a total of 8 Labs for the students. Another building has been recently opened exclusively for promoting projects and research in the area of IoT.

With over 63 projects in 8 months, the ECE Department continues to be the largest department of MIT.

Photos by Sai Akash (2018504069)

COURSES OFFERED

Degree Offered	Name of the program
UG	UG: B.E. (Electronics & Communication Engineering) Full-Time
PG	M.E. (Communication & Networking) - Full Time M.E. (Wireless Technologies) - Full Time and Part Time (Evening) M.E. (VLSI Design and Embedded Systems) - Full Time
PhD	PhD - Faculty of Information and Communication Engineering

ANUSAT

There are a number of sponsored projects carried out by the dedicated faculty and the enthusiastic students of the department.The ground station of the microsatellite ANUSAT is set-up in the Department of Electronics Engineering. ANUSAT designed and developed by task team members drawn from five departments of Anna University (CEG and MIT). ANUSAT was launched on the 20th April, 2009 and re-entry was on 18th April, 2012.

DEPT LIBRARY

The Department has a good library facility in the first floorof the old building. It consists of more than 2100 books sponsored by UGC. Both the faculty and students can it access any time. It also has completed project reports of UG/PG students. The students can make use of the department library to obtain materials and previous question papers for their core subjects and interests. In addition, there is a presentation hall that the students can make use of. Recently, a number of books for competitve exams like GATE, UPSC have also been added.

EEA Electronics Engineers Association

EEA Inauguration 19-20
with Chief Guest Dr. Vaidehi Vijayakumar
Vice Chancellor, Mother Teresa Women's University, Kodaikanal
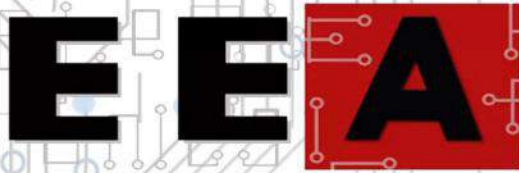
2019 - 2020 EEA Office Bearers
1. Dr. G. Balamurugan, President
   Assistant Professor
2. Mr. Sanjay B (2016504583), Chairman
   ECE Final Year
3. Ms. Krithikha A (2016504549), Vice Chairman
   ECE Final Year
4. Mr. Parthiban K (2017504564), General Secretary
   ECE Third Year
5. Mr. Thirusenthil Kumaran J (2017504595), Treasurer
   ECE Third Year

Electronics Engineers Association is the student body of the Electronics Department. The inter college symposium ELECTROFOCUS and the intra college symposium APOCALYPSE, are organized by EEA.

EVENTS AND SEMINARS IN 2019-2020

12.09.2019	Recent Trends in Electronics & Communication	Dr.Vaidehi Vijayakumar, Vice Chancellor, Mother Teresa Women's University
13.09.2019	Guidance Towards Higher Studies in USA	Mr. Vignesh Solairaj, Head of Capacity Planning, Amazon, Seattle, Washington. Alumni (2013-19)
26, 27.09.2019	IoT for Automation	Mr. Sreekanth Natarajan, Sr. Director, Qualcomm, Dr. Arunvasan, Principal Scientist, TCS Dr.Paventhan, Director, ERNET, Chennai Mr.P. Kaliyappan, Joint Director, CPRI, Bangalore
27.09.2019	Internet of Things - Cyber Security	Mr.P. Kaliyappan, Joint Director, CPRI, Bangalore
23.10.2019	Trends in Vehicle Electronics	Prof. Jing Jou Tang, Southern Taiwan University of Science and Technology, Taiwan
28.11 to 4.12.2019	Skill Development in C Programming	Mrs. Vijayalakshmi.B, Teaching Fellow, Computer center, MIT campus
17.12.2019	5G Evolution	Mr. T. Senthil Kumar, Sub-Divisional Engineer, Bharat Sanchar Nigam Limited (BSNL)
19.12.2019	IoT and WSN for Health, Home Management and Smart City	Prof. Dr. Subhas Chandra Mukhopadhyay, Professor, Macquarie University, Australia
10.01.2020	Evolution of Embedded Systems	Prof. Ramalingam Sridhar, Associate Professor, University at Buffalo, USA
14.01.2020	Research Activities at Purdue University	Prof. Daniel Leon Salas, Associate Professor, Purdue University, Indiana

For more about EEA and it's activities, look up: http://www.mitindia.edu/en/ece-eea

IoT for Automation on 26 & 27.09.2019 with Mr. Sreekanth Natarajan, Sr. Director, Qualcomm, Dr. Arunvasan, Principal Scientist, TCS, Dr.Paventhan, Director, ERNET, Chennai, Mr.P. Kaliyappan, Joint Director, CPRI, Bangalore

Trends in Vehicle Electronics, 23.10.2019 with Prof. Jing Jou Tang, Southern Taiwan University of Science and Technology, Taiwan.

5G Evolution on 17.12.2019 with Mr. T. Senthil Kumar, Sub-Divisional Engineer, Bharat Sanchar Nigam Limited (BSNL)

Evolution of Embedded Systems on 10.01.2020, with Prof. Ramalingam Sridhar, Associate Professor, University at Buffalo, USA

Research Activities at Purdue University on 14.01.2020 with Prof. Daniel Leon Salas, Associate Professor, Purdue University, Indiana

Placement Training on C Programming on 9 &10, Jan 2020 conducted by M.E Second year (VLSI Design and Embedded Systems) students, co-ordinated by Dr. S. P. Joy Vasantha Rani, Associate Professor, Department of Electronics Engineering.

CENTRE FOR EXCELLENCE IN INTERNET OF THINGS (C-IoT)

The "Digital India" Launched on 1 July 2015 by Indian Prime Minister Narendra Modi, calls for strengthening the potential of our country by making the country digitally empowered in the field of technology. This includes creating innovative applications and enhancing our capabilities which will aid in the technological growth of our nation. Internet of Things (IoT) is a potential domain with such capabilities. Since, IoT ecosystem is in the infancy stage in our country, there is a plethora of research opportunities in this domain.

Madras Institute of Technology (MIT) campus of Anna University has established Centre for Excellence in Internet of Things (C-IoT), an initiative taken by Government of Tamil Nadu. Department of Electronics Engineering and Department of Instrumentation Engineering of MIT campus have jointly developed the centre with a funding support of Rs. 5 Crore from Tamil Nadu Government. The C-IoT was inaugurated by Honourable Vice Chancellor of Anna University Dr. M.K. Surappa on 04/09/2019.

VISION & MISSION:

To open numerous avenues in terms of knowledge enhancement, employability, entrepreneurship, institute-industry collaboration, indigenous product development and global recognition. Design and Development of products / solutions for domains such as agriculture, healthcare, water quality, aerospace, automobile, automated metering, power, energy, oil & gas, using IoT technology and thereby establish a state-of-the-art national facility. Initiate applied industrial research in the domains such as smart city, smart home, smart health, water quality, aerospace, automobile, smart metering, power, energy, oil & gas. Reduce import dependency on IoT components and promote indigenization

INFRASTRUCTURE TO BE ESTABLISHED TO CREATE R & D AMBIENT:

- 6LoWPAN Laboratory
- Sensor Development Laboratory
- Analytics Laboratory (Cloud/Data/ Process Data)
- Wireless Technologies Laboratory
- Wireless Sensor Laboratory
- Industrial IoT Laboratory
- Instrumentation System Design Laboratory
- Advanced Embedded Systems Laboratory
- Cloud based Automation Laboratory
- Industrial / Process Automation Laboratory
- Computer Simulation Laboratory
- Project Laboratory

POTENTIAL APPLICATIONS:

- Smart cities
- Smart Agriculture
- Smart industrial automation
- Smart Habitat monitoring
- Smart Animal Husbandry

Mentored by:
DR. P.T.V. Bhunaneswari

INTERNET
← OF →
THINGS

Automation with IoT

IoT has already gained adoption in several areas within the automotive sector. Some of the most interesting applications of IoT in the automotive industry can be categorised as follows:
• In-vehicle infotainment
• Predictive maintenance
• Security, surveillance and safety
• Data analytics and dashboard reporting
• Real-time monitoring
• Cognitive insights for management

The Connected Vehicle Ecosystem

As newer innovations in IoT-enabled vehicles achieve economies of scale and customer acceptance, the nature of business is likely to keep changing. The inclusion and participation of analytics software vendors, applications service providers, and infrastructure stakeholders will play a greater role in the system and lead to a redistribution of roles in the industry. Automakers will be faced with a number of challenges in this transformation and need to take a number of steps to reinforce their core value propositions as the ecosystem of connected cars evolves.

As IoT becomes more fully realized, connected vehicles can stay in continual, real-time communication with the surrounding connected ecosystem. Using high-speed mobile connectivity, connected cars interact with other vehicles and sensors on the road to create a smoother and safe journey.

The systems that exist in vehicles today, like automatic parking and rerouting to avoid congestions are the building blocks to future solutions for vehicle to vehicle communication, vehicle to infrastructure or even vehicle to everything.

Vehicle to infrastructure communication technology could soon be streaming diagnostic data to your auto service center and helping you locate and reserve vacant parking spots. Next, vehicle to vehicle communication technologies, powered by high speed, high-bandwidth in-vehicle networks, cameras, and radar, will allow cars to locate each other, avoid collisions, streamline traffic and become autonomous in just a few years.

Advantages

• Fuel tracking
• Speed control
• Vehicle usage analytics
• Car leasing solutions
• Fleet and driver management
• Traffic management,
• Workload management
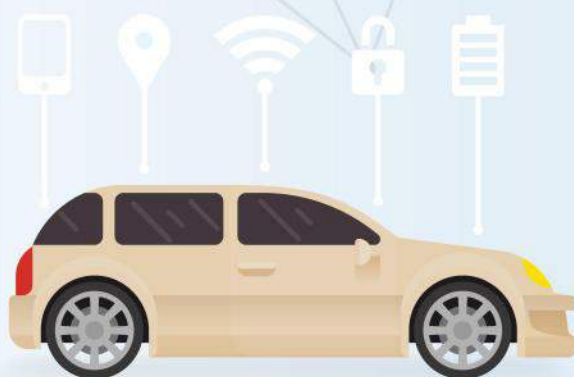
Key Challenges for the Industry

• Technological changes will affect the distribution of value in the automotive industry.
• Automakers must overcome the related organization and technical challenges effectively
• Suppliers need to adapt to succeed
• Connected cars technology needs to be safeguarded against cyber attacks.

Sourced by:
P Sakthi Karunya (2018504597)
R Mukundhan (2018504034)
T Duke Daffin (2018504529)

THE SCIENCE OF
HYPERLOOP

HYPERLOOP brings airplane speeds to ground level, safely. Passengers and cargo capsules will hover through a network of low-pressure tubes between cities and transforming travel time from hours to minutes.Hyperloop Transportation Technologies, also known as HyperloopTT, is an American research company formed using a crowd collaboration approach,based on the Hyperloop concept, which was envisioned by Elon Musk in 2013.

HyperloopTT's technology breakthrough is a next generation passive magnetic

Article by Prakash Murugan N(2018504580)

levitation system. It's called Inductrack. Magnets arranged in a Halbach array configuration enable passive levitation over an unpowered but conductive track. And as capsules move through the low pressure environment, they use very little energy on route, thanks to the reduced drag forces. The Inductrack system was tested and validated on a full-scale passive levitation track. HyperloopTT improved the technology and optimized it for a low pressure environment by testing it in various environmental conditions.

Hyperloop replicates high altitudes in a low pressure environment inside the tube system by removing most of the air with vacuum pumps, which drastically reduces the drag forces. Reports claim that theHyperloop pod made it to 355 kilometers per hour (220 miles per hour),Musk said a few updates could get the pod to half of the speed of sound, which he estimated at past 500 kilometers per hour, which means we could travel from chennai to bangalore in less than an hour(50min approx).Musk's proposal suggested average capacity would be 840 passengers per hour with pods holding 28 people departing every 2 minutes which is remarkable indeed.

The HyperloopTT station is also energy-efficient, creating a transit hub for the community and most importantly an urban center. The dynamic uses of space include places where passengers can go to access services, experiences, and goods while other spaces are devoted to enhancing passengers' psychological experience.

Because the opposite of forward, isn't reverse, it's stagnation. And if we are going to tackle the world's largest problems of overpopulation, traffic congestion, and pollution then we need to do more than take a step forward. We need to take a leap forward, and do it at hyperspeed.Though this technology requires large investment (approximately 65 billion) in the respective countries to launch, it is the most efficient and fastest means of transport and could be a great solution for traffic congestion in densely populated urban spaces.

This concept envisioned by Elon musk actively welcomes startups from all over the world, one remarkable thing is that the Avishkar team from centre for innovation(CFI) -IIT MADRAS was the only Indian team to represent in the "SpaceX Hyperloop Pod competition".

Scan the above QR code to know more.
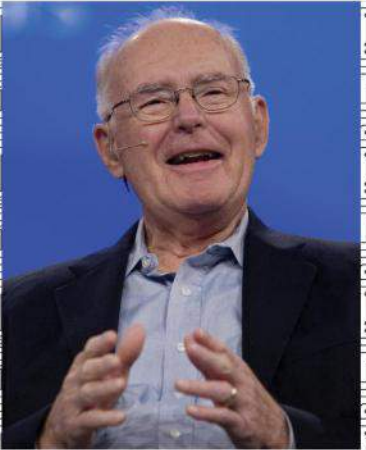
Gordon Moore
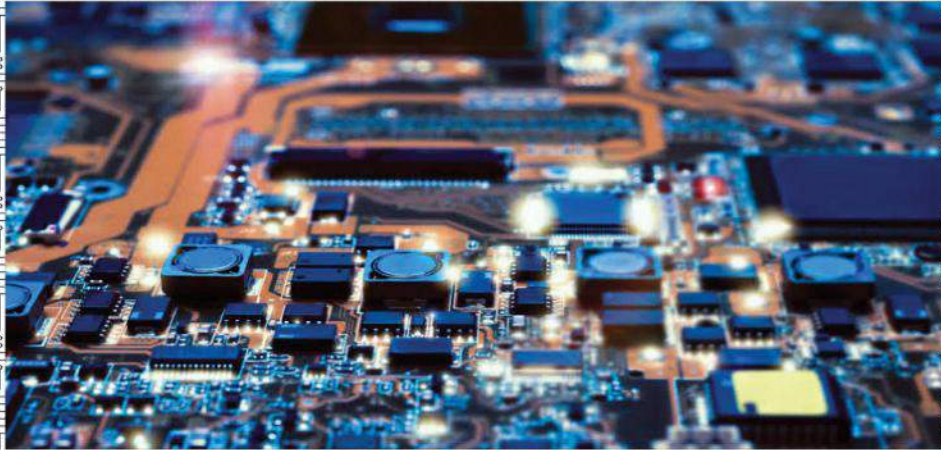
MOORE'S LAW

IS THE ELECTRONICS INDUSTRY SHRINKING?

In 1965, Gordon Moore (co-founder of Intel) proposed that the number of transistors on a silicon chip would double every 2 years. A transistor is a device capable of amplifying, filtering and directing an electrical gain using source, drain and a gate. Using a transistor, we can start doing complex logic systems. An electronic chip (IC)is a combination of millions of transistors to form a network comparable to neurons of the human brain. Unlike Mathematical laws, for every 18 months Moore's law broke out, a transistor would be half the size of current transistors.

Major factors in slow rate of growth in the processor power:

(i) Electrical leakage: Transistors have become more powerful as they got smaller, but today transistor have become as small as 10nms that the channel that carries the electrical current through the transistor cannot always contain it, resulting in a leakage.

(ii) This also results in dissipation of more heat from billions of transistors which can cause defect for the whole integrated chip. So, the processor need to reduce the amount of voltage intake.

- Subash PM
2018504617
Janakiraman E
2018504540

(iii) The cost of cooling the large data centres is a major problem economically, it might not be the physical challenge to bring the end of Moore's law but the lack of demand of small transistors. Hence, today manufacturers are finding ways to continue the growth in computing power without solely relying on smaller transistors. So for overcoming this problem, the effective approach is the adaption of multiprocessor, so we can use two or more chips instead of one.

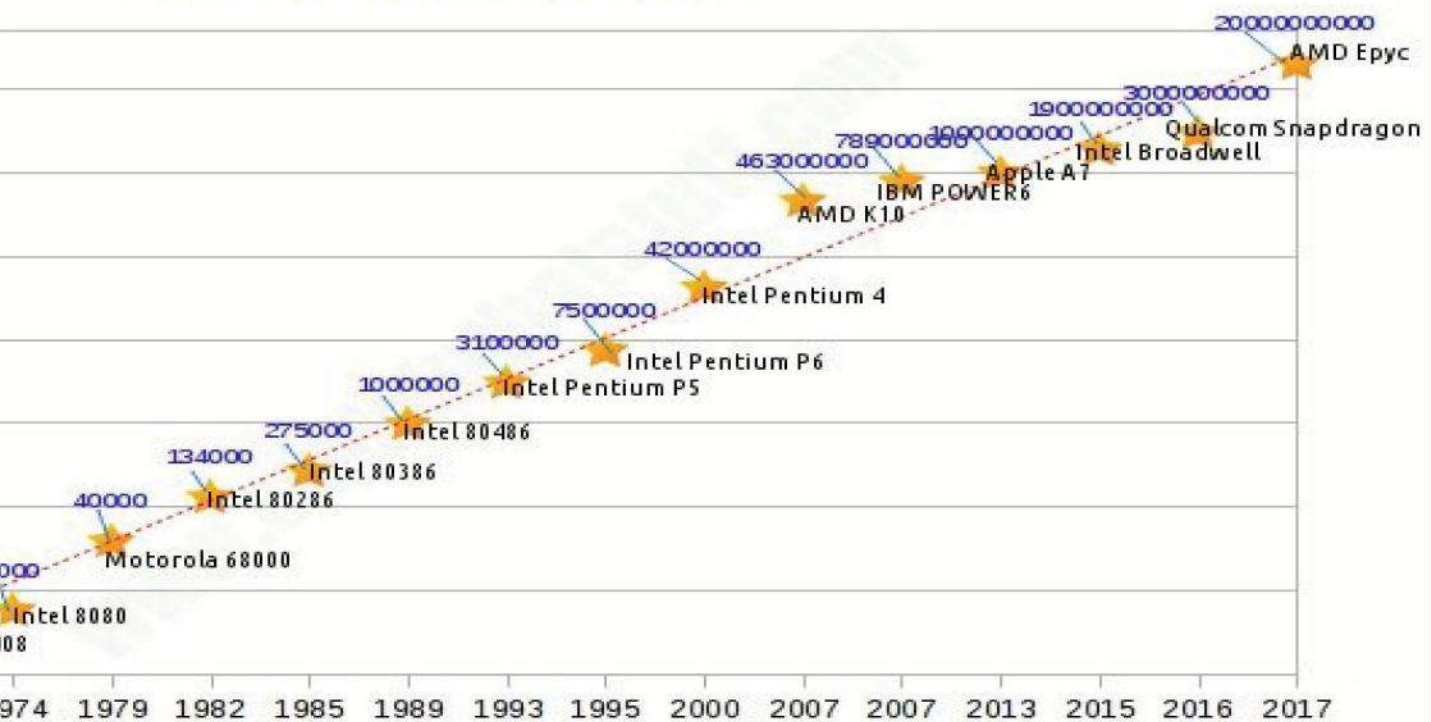Cloud storage isn't storing data literally in cloud. It is the way of storing data in data centres through cloud(internet) e.g. Google data centre. In early days, we used to have heavy hard disks and storage devices. The advancement of technology has paved the way for storing the data in cloud storage. Cloud storage has reduced the limitations of storage space for individuals in lower cost and hence it has become a competitive business for leading MNC's.
The idea was first proposed by American Computer Scientist J.C.R. Licklider. He came up with the idea of connecting systems of different locations to share and store information, he named it ARPANET which evolved to become internet.

50 Years of Moore's law

Year	Transistor count	Chip
1974	6000	Intel 8080 / 8080
1979	40000	Motorola 68000
1982	134000	Intel 80286
1985	275000	Intel 80386
1989	1000000	Intel 80486
1993	3100000	Intel Pentium P5
1995	7500000	Intel Pentium P6
2000	42000000	Intel Pentium 4
2007	463000000	AMD K10
2007	789000000	IBM POWER6
2013	1000000000	Apple A7
2015	1900000000	Intel Broadwell
2016	3000000000	Qualcom Snapdragon
2017	20000000000	AMD Epyc

Cloud storage may be an advancement in internet usage for development. Today we scarcely hear the words pendrive, memory cards and storage devices. Because most of the big data are stored and shared in Google drive or something similar to it. Will this be a threat for electronics manufacturers? Compact discs are almost nowhere today. May be every storage device will face the same in future.

However, we cannot simply store data in the air (may be in future but not now), we need data storage devices for storing the data in large scale. Hence storage is dependent on electronic storage devices. MNC's like Amazon, Google, Facebook are working on manufacturing their storage data centres and Integrated chips without depending on Intel, IBM, AMD etc. Hence there will never be an end for the Electronics Industry and it'll always rule the world.

No to "Battery low"

Ever regretted waking up, finding your charger plugged in but not switched on? Disturbed when a 'Battery low' notification pops up, amidst an Ilayaraja's song? Panicked being lost on a trip with dead mobile? The red bars on the mobile phone are always annoying. But what if charging is no more an issue to worry about? Simultaneous Wireless Information and Power Transfer (SWIPT) systems would make it possible in the near future. In the conventional communication systems, Radio Frequency (RF) signals are used for transferring information. The transmitter embeds information in the RF signals and the receiver retrieves the information on receiving the signal. Whereas the SWIPT system packs both information and power in the RF signals, i.e The RF signals no more carry only the information but also the power. The receiver on receiving the signal also harvest power in addition to retrieving information. The harvested power is used to recharge the device, thus eliminating the necessity of charging the device. Though the idea of SWIPT systems was formulated in the early 2000s, devising an ideal theoretical model is still a challenging task. SWIPT system requires a completely new design of transmitting pulse, input distribution of symbols, transmitter and receiver circuit as the optimization criterion is not only achieving the maximum rate transfer but also maximum power harvest in the receiver. Additionally, inculcating the various non-linear effects observed in the practical energy harvester circuits into the theoretical model had been another intricate task. Thanks to upcoming Artificial intelligence and novel Deep learning approaches this task is being solved and the researchers are slowly moving towards an ideal model. SWIPT systems are also a prominent technology in 5G networks particularly aiming to implement Simultaneous Wireless Information and Power Transfer in IoT devices with smaller power requirements. Days are not far when you won't be surprised, not finding a charger unboxing a new phone.

Abdur Rahman,
EEA Chairman (2016-17)
Master student,
Freidrich Alexander University, Erlangen, Germany,
2013 Batch, MIT.

Employability options for Engineers

An electronic engineering degree appears to lead in some fairly obvious directions - to the electronics industry. However the options are much broader than this, both within the engineering industry and outside it. We will look into some of the options available.

INDIAN ENGINEERING SERVICES(IES):

Indian Engineering Services or IES are civil services. Union Public Service Commission (UPSC) conducts this examination. The IES examination is known as the Engineering Services Examination (ESE). People who are selected through IES examination are responsible for the techno-managerial affairs of the Government of India. These people are known as civil servants. They are recruited based on the merit list of the IES/ESE examination.

PSU'S THROUGH GATE:

PSUs like BHEL, ONGC, WBSEDCL, HPCL, MDL, IOCL, BPCL, NTPC, DDA, Power Grid, etc. fill vacancies through GATE score. GATE cut off for PSUs is very high, and therefore one must score extremely well to be considered for these vacancies in PSUs. So, PSU through GATE is an excellent idea for aspirants who want to achieve big in life.

CSIR- JUNIOR RESEARCH FELLOWSHIP:

Council of Scientific & Industrial Research (CSIR), India, a premier national R&D organization, is among the world's largest publicly funded R&D organization. Every year CSIR takes in many junior researchers through GATE. An interview will be conducted before the final admission.

But to be eligible for the interview the aspirant must possess a valid and a good GATE score. The number of intakes depends upon the number of research projects available. The junior researchers work on live projects and get a monthly stipend.

OPPORTUNITIES IN DEFENCE:

There is vast scope of joining indian army, navy or indian air force as an engineer. You can join defense services by following ways:

1. UES : Through this scheme, you have to face direct interview and after getting success you will be called for SSB. You can appear for this in your 3rd year and 4th year.
2. EKT : Through this scheme you have to give a written test. After completing this stage you will be called for SSB.
3. SSC (short service commission) : In this scheme, you have to appear for written test. After clearing the written test you will be called for AFSB. Actually in this scheme, you will be commissioned for 15 years in the force.

The Army offers both permanent and short service commissions. Permanent commission (PC) is granted through the Indian Military Academy (IMA), Dehradun and Short Service Commission (SSC) is granted through Officers Training Academy (OTA), Chennai. When you opt for 'PC', you are basically looking at a permanent career in the Army. SSC is a wonderful option for all those of you who aspire to serve in it for a few years. It gives you the option of joining the Army, and serving it as a commissioned officer for five years. Once your tenure is over, you are allowed to opt for PC. Alternatively, you can also ask for a five years extension and can choose to resign from your post any time during this period.

- Puvisha. S
2017504066

A TIMELINE OF SATELLITES

1975

ARYABHATTA

Aryabhata, the first satellite built by India to conduct experiments in X-ray astronomy, aeronomics, and solar physics

ROHINI TECHNOLOGY PAYLOAD

It was a 35 kg (77 lb) experimental spin stabilized satellite that used 3W of power and was launched on 10 August 1979 from SDSC

1979

APPLE

Apple, India's first Geostationary satellite, was an experimental communication satellite launched by ISRO with a C-band transponder.APPLE stands for Ariane Passenger PayLoad Experiment

1981

INSAT

INSAT is a series of multipurpose geostationary satellites launched by ISRO to satisfy the telecommunications, broadcasting, meteorology, and search and rescue operations

1983

CHANDRAYAAN-1

Chandrayaan-1 detected evidence of a hydrogen-oxygen chemical bond, the lunar water and examined radioactive elements on the surface which reflected presence of ice on the moon.

2008

ANUSAT

The satellite was integrated and tested at MICSAT, the MIT Chromepet clean room. It carried an amateur radio store and forward communications system.

2009

MANGALYAAN

It is India's first interplanetary mission and it made it the fourth space agency to reach Mars.It made India the first Asian nation to reach Martian orbit.

2013

CHANDRAYAAN-2

Chandrayaan-2 consists of three components: the Orbiter, the Lander (Vikram) and the Rover (Pragyaan).Chandrayaan 2's algorithm is wholly developed by India's scientific community.

2016

G-SAT 30

India's high-powered communication satellite was successfully launched from French Guiana.-Master Control Facility (MCF) in Karnataka took over the command and control of the satellite vehicle.

2020

HOW CLOSE ARE WE TO 5G?

5G! 5G! 5G! Wherever you go, you see this name. So what's the fuss about?
Ever dreamt of Augmented Reality, autonomous cars, faster internet services where you can download a stranger things season within seconds... How far are we from realizing it? Not so far.....
Now we are headed towards 5G which can handle a thousand times more traffic and 10 times faster than 4G LTE. 5G is just the fifth generation of wireless technology. So experts can't explain 5G because they aren't sure what it is. Contrary to popular belief, 5G cannot be brought into real-time be tweaking 4G. It requires a whole new source, execution, and implementation. But the common features expected out of the 5G network would be: It should support 1 million connected devices per sq.km, Downlink of 20Gbps and uplink of 10Gbps, Low latency of 4 ms, Improved bandwidth. We have four major carriers working on the technology currently Verizon, AT&T, Sprint and T-Mobiles each working on their models. The top technologies in 5G are:

MILLIMETER WAVES: Our smartphones use specific frequency of radio waves which are typically under 6Ghz but these frequencies are starting to get crowded and carriers could fit only so much. As more devices join, they give slower services and dropped connections. As a new real estate, the researchers are experimenting on the new millimeter waves those fall between 30-300 GHz.This provides more bandwidth. But there is a catch, millimeter waves tend to be blocked by obstacles like buildings and absorbed by plants and rain. They cant cover long-range, unlike the 4G signals.

SMALL CELLS: The inadequacy of the millimeter waves is overcome by the small cells. Currently, we have large high powered cell towers to broadcast over long distances of even 70km. But the 5G range can be as low as 5-12km. Small cells solve this problem. Using thousands of low power mini base stations closer together than towers, say for every 10km, forming a sort of relay team. For eg., as you move behind an obstacle the device would switch from the current small cell to the next nearby small cell base station that is in better range allowing you to be connected. Verizon, T-mobiles, and AT&T are working on the above technologies. Qualcomm and Jio in India are working on this.

MIMO: 4G base stations have about a dozen ports in the antenna. But here in 5G, we use MIMO: multiple inputs and multiple outputs with 100s of ports to handle various cellular signals and traffic. The problem with this would be the serious interference of thousands of signals from 100s of ports. Beamforming is used in avoiding that. Nokia, Sprint and Airtel are working on MIMO technology on a larger scale. Full Duplex is another system being researched.

Interesting facts:
·5G can bring interactive cars which are self-autonomous, make IoT easier, VR more efficient and AR more possible, automated surgeries.
·5ge is not 5G. If your phone shows 5ge it is not a 5G equivalent. 5G requires separate hardware i.e. new mobile phones like Samsung Galaxy S10, One Plus 7, Motorola Z3.
·5G cities have been set up in various places like Capetown, Chicago, Maldives, London, Beijing, etc.
·5G is not going to be cheaper but somewhat closer to 4g connections.

On a note to end, though we have identified the technology, the large scale implementation and commercial usage of 5G is almost a decade away. However, Samsung is currently working on 6G and Japan is said to be working on 7G though no one is sure what 7G actually is.
Have ideas on it? Let us know...

Sai Jayasree S
2018504595

Internships

ANAND SAI M
201650405O

Internships provide you a foundational skill for a career. It helps you sample a field in the real world and help decide if it is the right fit for you. Moreover, it also helps build your contacts through networking which can lead to many more opportunities. I am Anand Sai.M, a final year student of the Electronics department and I did my internship at Swelect Energy systems. Swelect is a solar power systems company that manufactures Solar PV Modules, Solar PCUs, Servo Stabilizers, Structural and Electrical Balance of Systems (BOS). They also provide custom solar solutions for their clients.

During the course of the internship, I had been to their head office as well as a project site. First, at their office, I learnt the corporate hierarchy and various products and services the company provides. The working environment was friendly, yet productive. I did rounds with their sales marketing and R and D teams, to understand the functioning and works of each department in the company. After that, I was assigned under a site engineer to oversee the installation project for one of their clients. The installation was of a 1MW plant for office space in Chennai. The site was mapped and the optimal layout of the panels was sketched. The solar panels were bought and fit. The various hurdles and problems on fitting were overcome with very clever solutions. The solar panels were then installed and their output was sent back to the gird, so the office would get some relief in their electricity bill.

There are three main types of residential solar electric power systems: grid inter-tied; grid inter-tied with battery backup; and off-grid. These three broad types vary in how closely connected they are to the traditional power utility infrastructure, known as the grid. Each type has strengths that determine how suited they are to your needs. A grid inter-tied solar power system is directly connected to the home and to the traditional electric utility grid. Grid inter-tied systems allow the homeowners to get power from either the home electric system or the utility grid. A grid inter-tied solar power system is also connected to the traditional utility power grid and adds battery-backup to the system. The addition of a battery backup enables the system to balance production and demand and protects against power outages. An off-grid residential system is completely disconnected from the traditional electric power grid. Without a connection to the utility grid, batteries are essential to balance periods of excess production and excess demand.

This internship helped me build my confidence, taught me about the fascinating intricacies of the corporate world. It's a great addition to my resume and helps me build contacts in the field. As an intern, I got the chance to work hands-on in a professional environment and the learning experience was one of a kind. I encourage every student to try and exploit any and every chance to do an internship of any kind. At the very least it helps to figure out what one wants and more importantly does not want while making decisions in their career.

Disconnect, in order to get connected…

-M.Pravallika, 2019504548

Buzz… Buzz… Buzz… The smartphone which has become a technical part of our body, right from the wakeup call till the dreamy night, but yet we complain that we're exhausted with the selfie updates, posts, status and lot more. We groan when our phone buzzes when we're out for lunch with our friend, and finally, we're completely saturated with technology, yet we continue to invite it to the dinner table. We scroll our eyes when catchy internet headlines are zoomed on us. We keep staring at our mobiles when our parents share their day at the office or home.

Knowing that it discomforts us in future with many health issues, we are still making it a part of us. Out of all these, we continue to have it with us before we sleep instead of our prayer beads. We are all actually in an assumption that life is becoming simpler with the advancement of technology, but wait a moment…don't you think it's actually getting worthless?

Distance in terms of texting has become too close, but far in terms of relationships. The smell from the brown mother earth before the cottony clouds pee, the wonderful colours of the butterflies shattered in a rainbow, the smell of old books in a library, a huge laughter right from the kith and kin of a family at the dinner table, the delicious puddings and savouries made by grandma, the tickling jokes of grandpa are all of no matter in the present busty day.

We all need to connect to the online world to remain tuned to the world outside, but never let technology eat up every precious moment of ours. Take time to talk to yourself, read, learn, meditate, discover and above all take time to love. When we look back we realize we have missed the beauty and colour of life. Your tech part of the body will surely be with you every single moment but not the heart-touching moments of life. Arise and awake to make your life wonderful.

INTERVIEWS

SENIORS

A few seniors, passed-out and final year have taken their time to give us some pointers and some first-hand advice on internships, Placements, Skills and also about our college, so take your time to go through the treasures of experience.

"BE OPEN TO ANY OPPURTUNITY "

Tirumalasri V, (2016504601), a final year ECE student has completed her internship at IIT Madras. She has been placed at Caterpillar as an Assistant Electronics Engineer.Let's see what she has got to share with us.

Could you brief us about your Internship?

I did my internship at IIT Madras and it was for a duration of two months. I was assigned a project in the Magnonics domain.

What are the Skills Required for an ECE Student?

This depends on the domain that you have chosen and the project you'll be working on. Being familiar with Python and certain simulation software helps.

How was your Experience as an Intern?

I learned a lot of things, technical and non-technical, and so I would say that the experience was overall very satisfactory.

What's your next step after the Internship?

I've been placed as an Assistant Electronics Engineer in Caterpillar. I will be interning there in the final semester before starting full time from July.
Do you wish to pursue Higher Studies?
I would like to do it but I don't see myself pursuing it in the immediate future.

What advice would you like to give to juniors?

Aagh, I hate giving or taking advice, so I'll try my best to sound-wise. Be open to any opportunity that comes your way. Make a conscious effort to simplify things. Do not feel guilty for blowing some steam off when you feel stressed out.

Interviewed by Sairushan A.

> **"BE PROCESS ORIENTED. HOW YOU APPROACH A PROBLEM IS MORE IMPORTANT THAN GETTING THE RESULT."**
>
> **-SHARADA PRASAD**

What company are you placed in and what does it do?

I'm placed at Latentview Analytics. It is a data analytics company that has clients that include Google and Paypal. My job role is a data analyst.

So, who is a data analyst?

A data analyst is a person who receives a huge chunk of data to be worked on. He has to overview the market scenario, check out for anomalies and patterns and give business solutions to the tech giants that consult his company.

How was the experience for you this placement season?

I made it to the interview rounds of Citicorp and Caterpillar but wasn't selected. This made me ask myself what I really wanted. I liked ECE but I wasn't passionate about it. Because I craved something even more. Ever since I was a child, I always had this growing passion inside of me to play with datasets. The love of working with data was unbridled for me. I decided to specifically target data analytics company from thereon. I was successful at Latentview. I realised the past rejections were harsh but it was for the greater good.

Speaking of happiness while pursuing passion, what would be your advice to your juniors about their goal?

Technical skills can be equipped over time. But, developing soft skills can only be done through good habits. How you present yourself in an appealing way, jotting together your thoughts with coherence and all that. I'd request each of you to be broad minded so that you can pursue what your heart really wants. Develop your skillsets for what you want in life, and work towards it.

Can you share about your interview experience?

The interview process was fun and smooth. The prelims were like a CAT- based question paper that also had negative marking. Post that, it was very easy. There was GD, three technical interviews and one HR interview after that. The interviewers didn't test my core ECE skills, rather they gave a bunch of guesstimation problems and tested my problem solving skills.

Sharada Prasad (2016504038)
Inteviewed by Duke Daffin T

What are the skills we need to improve while attending such an interview?

As I said before, soft skills and technical skills complement each other. Specifically, for my interview, I had already done a course on Udemy on Data Visualisation with Tableau. One of the questions I got in the interview is to estimate how many pizza orders a Domino's restaurant located in Adayar is going to get on a Sunday night. As far as data analytics is concerned, the result doesn't matter. How you approach the problem, what all factors you consider to be impactful on the end result, identifying that is crucial

Finally, you've reached the end of a 4 year long journey How do you feel now with lots of friends, experiences and a passionate job in hand?

The only words I can think of are relief and happiness. College was a roller coaster ride where I dealt with a lot of new things in my life. My friendship circle is smaller than what people think. I will miss college a lot when I leave. It has provided to me a lot and above all, it gave me a platform to express my talents, be it speaking or writing or art.

" MY ONLY STRENGTH WAS ACADEMICS. I UTILISED IT WELL. "

- SRUTI

How did you feel when you got an internship in Samsung?

I was on cloud nine when I heard that I got an internship offer from Samsung. In the previous batches, it was very hard to get internship as very few companies came calling. I wanted to work only in core companies. Initially, MNCs like Microsoft and Samsung came, but I was rejected. The one which I got was Samsung semiconductor. It felt good when I cleared the first round in this company. From CEG and MIT, I was the only one from my department to be chosen in hardware sector.

Describe your internship experience.

My internship was in Bengaluru. I was the only one from the hardware sector. Many of the interns there were from top institutes like IITs, Delhi University. Amidst such people, I felt scared. Those guys tend to have more exposure compared to us. However, it was a very friendly environment.

Keeping in mind of the tests required to get the internship, how were your preparations?

Like all students, I just started my preparations when the date for the first-round test was announced. I used to maintain my notes very well.

After the announcement of the first-round test date, I just took my old notes and revised the required topics.

How was your interview?

Many are scared of interviews, but there is nothing to be freaked out about. It was just like a normal conversation. I was asked about some basic concepts which I had learnt in the previous semesters. I was mainly interviewed on the topic of Digital Electronics. The interview could be divided into parts: Technical and HR. Technical part consists of academics. HR part is like a normal conversation, whose sole purpose is to test your communication skills

How important are the subjects studied in the early semesters?

The subjects which a student studies in his early semesters should be given the utmost importance. These are like the basics. Even in the interviews and tests, many companies tend to concentrate on these subjects. Each subject is a fundamental for each domain. For example, Signals and Systems is a pre-requisite in the field of communication, while those interested to work in the Digital side have to be strong in Digital Electronics.

How did you build a good profile to attract a company like Samsung?

My only strength was academics. I utilised it well. The internship experience played a major part. It will be a huge boost in your resume. Maintain a decent CGPA. Perform well in the first-round tests, and the other rounds will be a piece of cake

What do you want to do after engineering?

Now, I am placed in the same company. Presently, I do not have any idea regarding higher studies. I just want to attempt GATE to test the skills which I have obtained from engineering.

What do you want to advice your juniors for them to attain success?

Have an interest to learn. Be attentive in class. By listening to the lectures, 50% of the work is over. Do not skip classes. You will be able to gain more knowledge in class than anywhere else. Never think life is easy. Sow a seed of hard work now and you can reap the fruits later.

Sruti L Shridhar (2016504593)
Interviewed by Abdur Rahman Sheriff.

Our college alumnus **Arun Kumar** (2015504054), who is currently doing his Masters in Robotics at University of Maryland, has thrown some light on the preparation procedures and admission processes for pursuing MS abroad.

In a college where students are focused on getting placed, what made you sure to pursue masters?

It comes down to my interest in Robotics from school days. Even for my UG I wished to take up Robotics. It wasnt a last minute decision. Since my area of interests requires a speialisation I went for it.

According to you, Why should a UG go for higher education instead of taking up a job immediately?

The simplest idea would be that what a undergrad earns after five years of experience would be the initial pay for a post graduate. Think about it,if you are ready to spend 2 years, then it all comes handy.

What are the initial preparations one must go through prior to applying in Foreign colleges?

I would suggest starting the preparations for GRE, TOEFL or IELTS by the end of your second years. While IELTS is mandatory for European countries, TOEFL thrives in US. After this, figure out your area of interest and the course programme suited for it. Make sure you choose the right college.

How is the admission process? What is the admission procedure?

Since I applied for universities in US, I will brief about their procedures. Most of their universities have two intakes one during fall (around august) and another during the spring (december-january). Our ideal time would be the fall one where the no of intakes is higher. The admission procedure starts by december and you would get your results by march based on which you can plan your further plans. You would need to prepare a statement of purpose and letter of recommendations from our professors.

What are the most commonly faced difficulties?

Obviously very different from our theoretical conventional techniques. There would be more assignments, quizzes rather than tests. Be prepared for a practical, application based learning experience. Attendance matters a lot there. You'll have very few hours of college for PG, so be sure not to skip them.

What do you think is the major obstacle stopping students from going for their masters?

Everyone knows it's the financial constraints that creates a set back. But if you are ready to risk it, it's all that matters. It's expensive but if you are meritorious enough, you can secure a scholarship.

Finally, some words of wisdom for your juniors.

Explore the college to the fullest.Make sure to have a good CGPA. Utilise the leisure hours for learning something interesting. Identify your field of interest and start working on it. The earlier the better. All the best.

Interviewed by Sai Jayasree S and Mukundhan R.

"IDENTIFY YOUR FIELD OF INTEREST AND START WORKING ON IT."

- ARUN KUMAR

APOCALYPSE '19

Work the Network
Networking Concepts and Logical thinking.

A. SAIRUSHAN
2018504596

R. MUKUNDHAN
2018504034

Binary Battle
Design and Analysis of Digital Electronics.

KAVIN. S
2017504541

NISHANTH. R
2017504024

Circuitology
Circuit Theory and Electric Circuits.

V. ARAVIND KANNAN
2017504509

KAMAL RAAJ B
2017504537

Title Event
The contest for the Mr. and Ms. Remnant titles.

MR REMNANT
RAGHUL. P
2017504571

MS REMNANT
AARTHI A.K.R
2017504001

MADRAS INSTITUTE OF TECHNOLOGY
ELECTRONICS ENGINEERS ASSOCIATION **EEA**

APOCALYPSE-19

WORK THE NETWORK

CONNECT TO THE GATEWAY
ON

SEPTEMBER 27 1PM - 3:30 PM

S SEPTEMBER 28

EEA.MIT

NIKITH 7032885

MADRAS INSTITUTE OF TE
ELECTRONICS ENGINEERS ASSOC

APOCALYPSE-19

BINARY BATTLE

ITCH YOUR AMPLIT

"MEASURE THE CURRENT
AT
CIRCUITOLOGY
ON
PRELIMS SEPTEMBER 27 1PM-3
FINALS SEPTEMBER

pocalypse 19
September 27-28

MR & MS REMNANT
TITLE EVENT

FOR

The Winners of the

Events

Mu Pros and Cons
Microprocessors and Microcontrollers.

KAVIN. S
2017504541

NISHANTH. R
2017504024

Silicon Siege
Analog Electronics and Operational amplifiers.

V. SARAVANAN
2018504047

S.A. SRIKEERTHIVASAN
2018504612

Line Follower
Autonomous Line Following Bot.

T. DUKE DAFFIN
2018504529

S. SATHIYA MURTHI
2018504604

Liaise the Link
Analog and Digital Communications techniques and
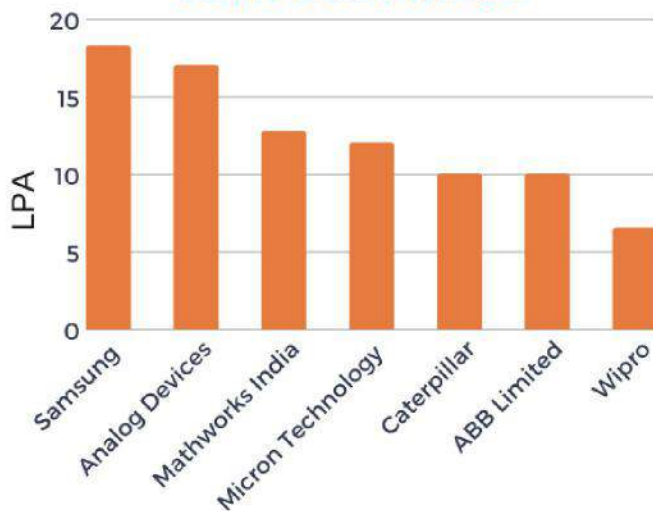Signal Processing.

P. SRINIVASAN
2018504614

P.M. SUBASH
2018504617

September

27-28

2019

APOCALYPSE '19

Placement Statistics

accenture   **Cognizant**   **Infosys**   **TATA** CONSULTANCY SERVICES

CORE COMPANIES

Bar chart — LPA (y-axis 0 to 20) for: Samsung, Analog Devices, Mathworks India, Micron Technology, Caterpillar, ABB Limited, Wipro

TOP RECRUITERS

	UG	No. of Students
Accenture		21
Cognizant		15
Infosys		5
	PG	
Cognizant		5
Infosys		2
TCS		2

HIGHEST-PAYING COMPANY IN 2019 - 2020

DE SHAW	33.5
Cure Fit	31
QE Securities	30
Adobe systems	22
Wells Fargo	20
Bank of New York Mellon	17
Visa Inc	15
Amazon	13
Citicorp	12
Fidelity Investments	12

UG donut chart: 2017 — 71, 2018 — 81, 2019 — 90

PG donut chart: 2017 — 8, 2018 — 10, 2019 — 11
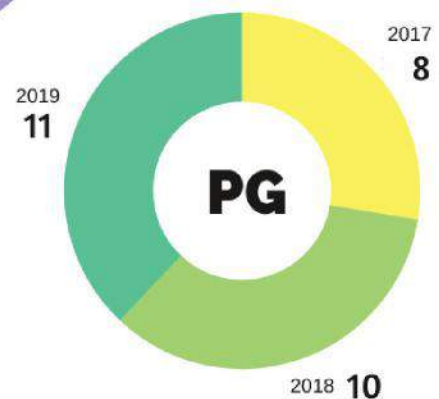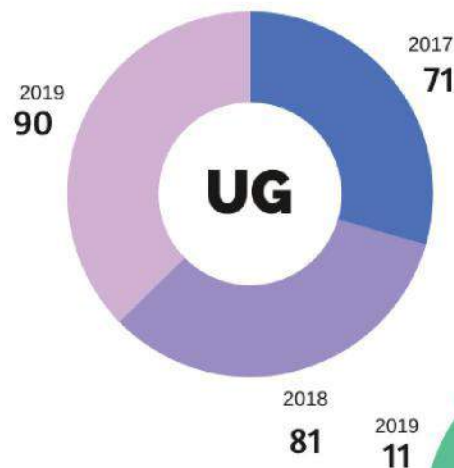
The Department of Electronics being the largest in MIT attracts a lot of recruiters across India and around the globe. Both Undergraduates and Postgraduates are getting placed in Core fields as well as in Software fields. Our students are playing a vital role in the progress of various companies. Additionally, many graduates are pursuing their Master's Degree in Premier Institutes both in India and abroad.

cure.fit   Adobe   amazon   VISA   citi

Distinguished Alumni
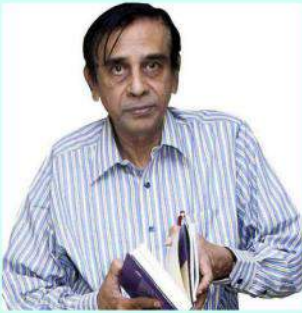
SUJATHA RANGARAJAN (1935-2008)

Bharat Electronics Limited in Bangalore,
Supervised the design and production of the electronic voting machine (EVM) during his tenure at Bharat Electronics Limited (BEL), which is currently used in elections throughout India.

HEMA GOPAL

Bachelor of Technology (B.Tech.)Electronics, MIT, 1981 Batch
Vice President (Apr 1985 – Present Employment Duration34 yrs)
Head BFS Delivery, Global Head IBM Centre Of Excellence
Advisor Management consulting at KPMG India
https://in.linkedin.com/in/hema-gopal-68a3602a

DR. K.B. CHANDRASEKHAR

Founder, CEO, and Chairman of the Board of Jamcracker. Co-founder and Chairman of the Board of e4e Inc., a Business Services company and Chairman, Svapas innovations, an incubator for startups. He was Chairman of Aztec Software and Technology Services Limited. Dr. Chandra established the Anna University – K.B. Chandrasekhar Research Centre (AU-KBC Research Center) in 1999 at the Madras Institute of Technology (MIT) campus of Anna University.
http://www.thechennaiangels.com/chandrasekar-kb-jamcracker/

DR. B.SUNDAR RAJAN

B.Tech Electronics (1979 - 1982)
Professor at Indian Institute of Science
Department of Electrical Communication Engineering,
Indian Institute of Science, Bangalore 560 012, India
https://ece.iisc.ac.in/~bsrajan/
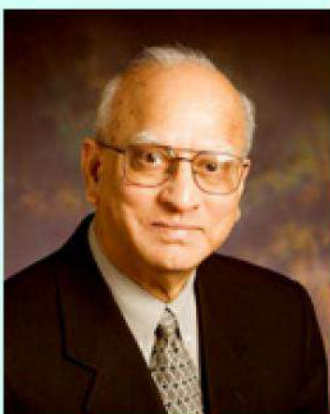
NANNAPANENI NARAYANA RAO

D.M.I.T. (Electronics) (Batch:1952 - 1955)
Professor, ECE Department, University of Illinois at Urbana-Champaign (UIUC). He carried out research in the area of ionospheric propagation and authored the undergraduate textbook, Basic Electromagnetics with Applications (1972), and six editions of Elements of Engineering Electromagnetics, published by Prentice Hall.
http://faculty.ece.illinois.edu/rao/nutshell.html

PROF S.V. RAGHAVAN

D.M.I.T. (Electronics) (Batch:1971 - 1974)
Vice Chancellor - Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya. Retired Professor, IIT, Madras (1981 - 2016). Scientific Advisor Committee to Cabinet, New Delhi Government of India (2009 - 2015). Advise Government of Tamil Nadu on integrated planning of TamilNet and BharathNet (2018 - present).
https://www.linkedin.com/in/profsvr/?originalSubdomain=in

DR. SHUBHA KADAMBE

Sr. Engineering Fellow at Raytheon Space and Airborne Systems, El Segundo, CA. Dr. Shubha Kadambe obtained her PhD EE from the Univ. of Rhode Island in May 1991.
Program officer at Office of Naval Research, Arlington, VA
Technical Director, Rockwell Collins (2007 - 2013)
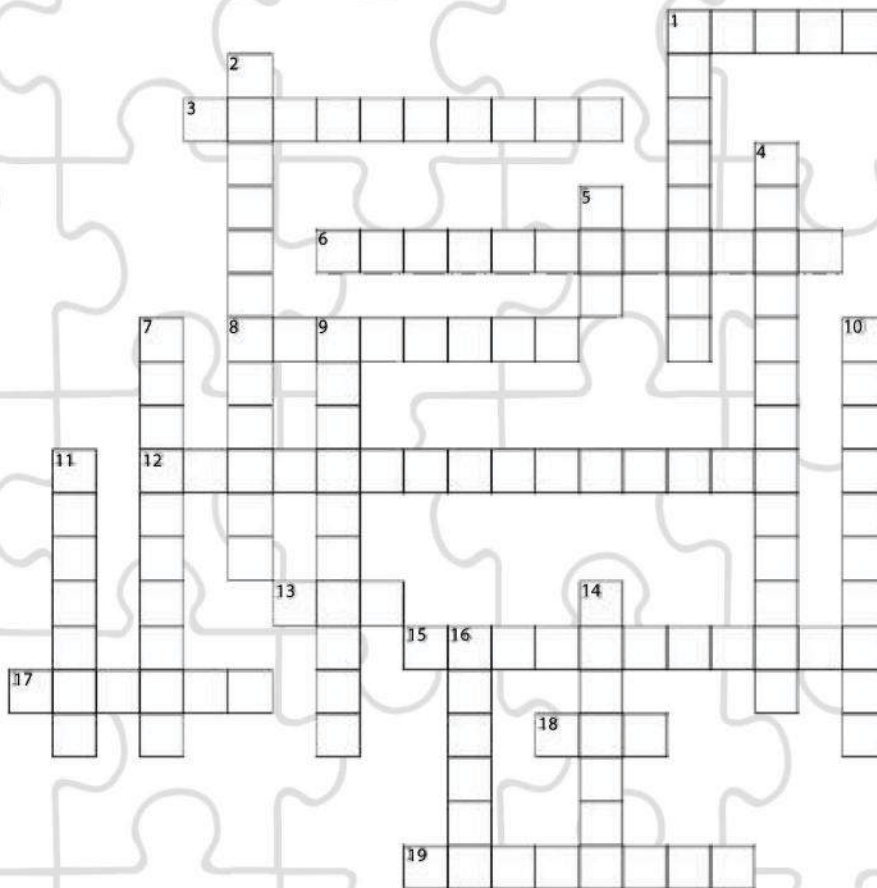Program Officer, Office of Naval Research (2006 - 2007)
https://www.linkedin.com/in/shubha-kadambe-3248566/

2017-19 PG

2015-19 UG

CROSSWORD

Across

1. These are not contained inside ROC

3. For LTI system to be both causal and stable all poles should be included inside this in 2-plane

6. This is the measure of the spread of spectral density

8. This refers to collection of all sample functions

12. PSD for a fourier transform pair with this function

13. This frequency function at zero frequency gives the area under autocorrelation

15. This operation between a function and its time reversal give autocorrelation

17. ROC in Z-transforms take this shape in Z-plane

18. For a random process its mean is constant and autocorrelation is independent of time, then it is called

19. Z-transform of one unit advanced impulse will not converge at this point in z-plane

Down

1. PSD of a WSS process is always

2. Covariance is zero when two random processes X(t) and y(t) are

4. For this random process the future values of sample function can be predicted based on its past values

5. This is one of the function which give the complete statistical characteristics of random signals

7. This function is a measure of interdependence between two random variables

9. This signal is random in nature

10. If two random processes are then the cross correlation between them is zero

11. These random processes have all time averages of sample function equal to corresponding ensemble averages

14. This discrete random process represents the number of times that some event has occured as a function of time

16. Autocorrelation of a random process is maximum at this point

Answers:
Across:
1. poles 3. uniticircle 6. rmsbandwidth 8. ensemble 12. autocorrelation 13. psd 15. convolution 17. circle 18. wss 19. infinity
Down:
1. positive 2. uncorrelated 4. deterministic 5. pdf 7. covariance 9. stochastic 10. orthogonal 11. ergodic 14. poisson 16. origin

QUIZ

1) Which type of transmission uses the shortest waves?
a) GSM telephony
b) CB radio
c) VHF radio
d) Satellite TV

2) ISO, UPC and GS1 are the abbreviations of what?
a) Barcodes
b) Communication systems
c) Navigation systems
d) IP Addresses

3) What was the name of the first commercial car radio?
a) Radiola
b) Motorola
c) Blaupunkt
d) Electrola

4) What technique are these parking sensors using?
a) Radar
b) Echo sounding
c) Infrared ranging
d) Electromagnetic induction

5) Which device converts electricity into acoustic energy?
a) Microphone
b) Headphone
c) Amplifier
d) Preamplifier

6) John Bardeen, Walter Houser Brattain and William Bradford Shockley received the Nobel Prize in Physics in 1956 for the invention of:
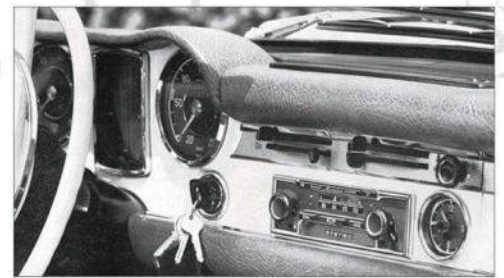a) Dimmer
b) Resistor
c) Optical fiber
d) Transistor effect

7) In 1953, Samsung began producing its first product. What?
a) Telephones
b) Sugar
c) Computer memory
d) Integrated circuits

8) What does HTC stand for in the HTC Corporation name?
a) High Tech Computer
b) Hanoi Telephone Communication
c) Hybrid Telephone Casing
d) High Temperature Cooling

- Duke Daffin T
2018504529

ANSWERS
1)(d)
2)(a)
3)(b)
4)(b)
5)(b)
6)(d)
7)(b)
8)(a)

REBUS RIDDLES!

Rebus riddles are basically little pictures, often made with letters and words, which cryptically represent a word, phrase or a saying. Test your ingenuity and knowledge with these rebus puzzles. Get your thinking cap dusted off and start working!

1 gsegesggegsg

2 LINE UP => EILN PU

3 0022334455...
blame blame

4 C HIJKLMNO

5 (clock showing G D O L)

6 _____et

7 P WORLD R (T above, I below)

8 HOROBOD

9 what must

10 ABCDEFGHIJKLMNOPQRSTUVWYZ
QQQQQQQQQQQQQQQQQQ

11 XQQQQQME

12 travel / ccccccc

- J. Mathumitha
2018504558

ANSWERS:
1.Scrambled eggs   2.Line up in alphabetical order   3.No one's to blame   4.Sea water (C H to O)
5.Time is gold   6.Blanket   7.Trip around the world   8.Robin Hood (ROB in HOOD)
9.What goes up must come down   10.No excuse (no X Qs)   11.Excuse me (X Qs ME)   12.Travel overseas

photo by Dhanvanth Raman, Auto Dept.

EIGHTEEN
AWESOME stuff

– Sai Jayasree S (2018504595), Sakthi Karunya P (2018504597)

[01] Madras Institute of Technology is the first self financing engineering institute in India with due credits to its founder Mr. Chinnaswami Rajam. The motto remains" In the service of India"

[02] MIT is accredited by NBA, NAAC, NIRF INDIAN Ranking, AICTE offering 9 UG programmes,15 PG programmes, M.Phil, M.S and Ph.D programmes.

[03] Anna University has been awarded the status of Institute of Eminence, IoE in the year 2019 making it one of the 9 universities to get the status in the entire nation.

[04] The first Director of the institute being Mr.K.Srinivasan (1960-1971) and the first Female Dean being Prof. Dr. S. ThamaraiSelvi(2011-2015).

[05] MIT garnered the Best College Award from ISTE in 1999 and continues to keep its rapport so far.

[06] And ofcourse, there's...

Abdul Kalam

and the newly renamed Abdul Kalam Lecture Hall Complex

[07] Electronics, one of the oldest departments, holds Prof. Dr. Fillipowsky (1950-1956) as first HoD and Prof. V. Vaidehi Ph.D (2006-2009) as first female Hod.

[08] Electronics, Computer science, Instrumentation, Information technology are a few of the departments with female HoDs.

[09] Electronics is the largest department housing 700 UG, 220 PG students, 37 Teaching and 14 non teaching staffs.

[10] MIT confines 19 Central facilities including Exam Cell, Entrepreneurship Development, Siemens COE, MIT museum, Health Centre, Computer Centre, etc.

[11] MIT has two research centres within it's AUKBC and CASR - Centre for Aerospace research.

[12] MIT has 19 student organisations including Athaeneum ,PDA ,Ted club, etc, that are funded by the institute.

MIT

[18] *Anusat*

A research microsatellite designed by the staff and students of MIT, remains a proud achievement of the department.

[13] MIT offers M.Phil programmes in applied sciences and humanities.

[14] There's MIT employees housing society, Staff recreation club, Employees Co-Operative thrift and credit society to enable employee friendly working environment.

[15] The length of the MIT road, which runs through the college is about 650 metres.

[16] The ECE department has symposiums like Apocalypse in every odd semester and Electrofocus in the even semester.

[17] The clubs have symposiums like Carte Blanche, Rotofest, Persofest, etc.