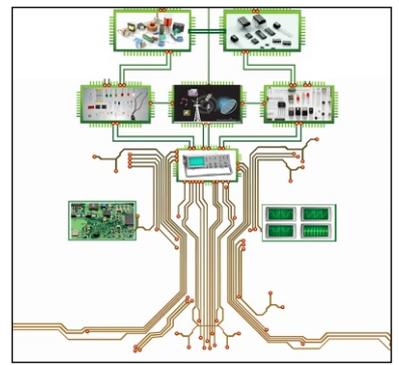


ELECTRONICA

Newsletter

Department of Electronics & Communication
Engineering



Volume 4

Issue 2

June - 2019

Vision and Mission of the Institute

Vision

- To be one of the premier Institutes of Engineering and Management education in the country.

Mission

- To provide Engineering and Management education that meets the needs of human resources in the country.
- To develop leadership qualities, team spirit and concern for environment in students.

Objectives

- To achieve educational goals as stated in the vision through the mission statements which depicts the distinctive characteristics of the Institution.
- To make teaching-learning process an enjoyable pursuit for the students and teachers.

Vision and Mission of the Department

Vision

- To be a renowned department for education in Electronics and Communication Engineering in Karnataka State, moulding students into professional engineers.

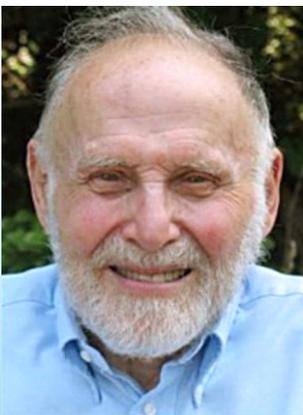
Mission

- To provide teaching - learning process in Electronics and Communication Engineering that will make students competitive and innovative to adapt to needs of industry and higher learning.
- To imbibe professional ethics, team spirit and leadership qualities to succeed in changing technological world.
- To inculcate empathy for societal needs and concern for environment in engineering design and practice.

Program Education Objectives

After 2/3 years of graduation, the students will have the ability to:

- Analyze, design and implement solutions in Electronics and Communication Engineering and adapt to changes in technology by self/continuous learning.
- Engage in higher learning and contribute to technological innovations.
- Work with professional ethics as an individual or as a team player to realize the goals of the project or the organization.
- Work with respect for societal values and concern for environment in implementing engineering solutions.



This edition of Electronica is dedicated to *Arthur Ashkin*, an American Scientist who was awarded the Nobel Prize in Physics for invention of Optical Tweezers and their application to biological systems in 2018 at the age of 96 becoming the oldest Nobel Laureate.

What's inside...

- Articles
- Crossword
- Department Events
- Student Achievements
- Staff Achievements

And more...



Vidyayamruthamashnute

B. N. M. Institute of Technology

(Approved by AICTE, Affiliated to VTU, Accredited as Grade A Institution by NAAC.)

All UG branches - CSE, ECE, EEE, ISE & Mech.E Accredited by NBA for academic years 2018-19 to 2020-21 & valid upto 30.06.2021

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From the Editors' Desk

Dear Readers,

The Department of Electronics and Communication Engineering, BNMIT is delighted to present you the 2019 Summer Edition of "ELECTRONICA", the Department Newsletter.

Since the age of time, mankind has advanced into newer realms and phases due to the advent of Technology and its adoption. The dawn of civilization was based on inter-communication and technology has accelerated that. Education, Learning, Exploration, Innovation are key assets that humanity possesses to improve technology. Coming together as a community to change the world and make an impact to create better lives and raise the standard of living is what life and technology is all about. Thus, we here at Electronica proudly present the 2019 Summer Edition ELECTRONICA by the Department of Electronics and Communication Engineering, BNMIT.

Over the years, the Editorial Team of ELECTRONICA has been proud to provide a platform that aligns itself with the goals of Technological Advancement. The greatest phenomenon that the world can experience is all of humanity uniting with a purpose; and that purpose is improving our planet. Change does not begin on a massive scale, change begins with actualization of mindsets to discuss new avenues and implement things that have never been done before. It has always been a good idea to promote the environment of shared learning because when a person creates something that is good then many people coming together create even better.

ELECTRONICA strives to enable students to explore their ideas. Creating thought experiments and having progressive discussions are key to technological advancements. Dream, Learn, and Do – Dream Big, Learn Always, and Just Do. ELECTRONICA provides a platform for students to bring out their creative and innovative ideas in the field of their choices and have honest representation for them – improving their own paths to the realization of dreams. This is what really drives humanity forward.

The Editorial Team is indebted to its contributors for making ELECTRONICA, a content-rich newsletter with topics of great interest, enabling a higher level of curiosity for our readers.

Editorial Team

About the Department

The Department of Electronics and Communication Engineering started in the Year 2001. The Department has two programs; B.E and M.Tech (VLSI Design and Embedded Systems), affiliated to VTU. The Department is NBA accredited for three academic years (2018-21). The Department has a VTU recognized Research Centre with thirteen registered candidates pursuing their doctoral degrees. The Department has a team of highly qualified and dedicated staff with teaching, research and industrial experience. Well-equipped laboratories with State-of-the-art infrastructure and class rooms with LCD projectors provide enhanced learning environment to cater to the budding engineers of tomorrow.

Skill Development Programmes, Faculty Development Programmes, workshops, seminars, industrial visits and invited talks are regularly organised in the Department for students and staff to provide continuous learning and knowledge and skills upgradation. Academic performances of the students are excellent with fourteen university ranks from the inception. The students do innovative projects, internship training in industries and academic projects in reputed organizations, regularly participate in inter-college and intra-college technical, cultural & sports events and regularly bring laurels to the Department.

Dr. P.A. Vijaya
Professor & Head, Dept. of ECE

Graphene: An Insulator? A Superconductor? Or Both!

It isn't rare for humans to behave at two opposite extremes, but does graphene face the same situation? Yes, researchers at Harvard University and MIT have found that graphene can behave both as an insulator and also a superconductor. An insulator completely blocks the flow of electrons whereas a superconductor allows the flow without any resistance. The behaviour of strongly correlated materials, in particular, unconventional superconductors have been studied extensively for decades but is still not well understood. So, how is it possible for one material, to behave as an insulator and a superconductor? Two research papers, "Correlated insulator behaviour at half-filling in magic-angle graphene super-lattices" and "Unconventional superconductivity in magic-angle graphene super lattices" authored by Pablo Jarillo-Herrero suggest that it is possible for graphene to possess two extreme properties.

Researchers experimented with two graphene sheets and tested its behaviour under bias and zero bias condition. To study the electronic properties, researchers created two sheet super lattices by exfoliating a single flake of graphene from graphite. Then half the flake is picked up using a glass slide coated with sticky polymer.

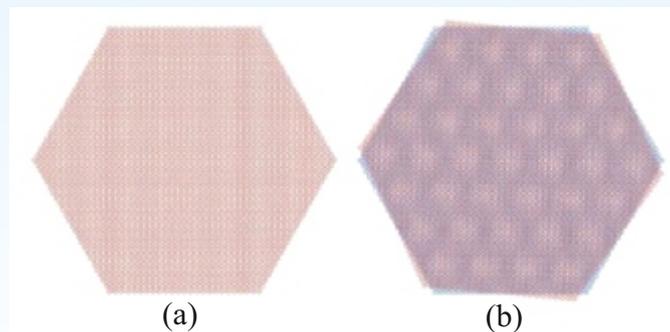


Figure 1: a) Two Graphene sheets aligned b) Two graphene sheets are rotated at the "magic angle"

Under zero-bias condition, when two graphene sheets are rotated at the "magic angle" they tend to behave similar to Mott Insulators (a class of materials that conduct electricity under conventional band theories but are insulators when measured especially at low temperatures). When voltage is applied, it was found that at a certain level, the electrons broke out of the insulating state and flew without any resistance, which researchers believe to be acting as a superconductor. The magic angle is said to be at 1.1 degrees and Pablo Jarillo-Herrero suggested that it is time to have more sophisticated and highly accurate instruments to measure such critical angles. He also said that if there is a deviation of even 0.2 degrees, no superconductivity or Mott insulation appears.

As researchers have found a way to manipulate the electronic properties of Mott Insulator-like material and turn it into a superconductor, the applications of this material are yet to be seen. There is a need for state-of-art instruments which will accurately predict the magic angle for the presence of this dual property in graphene. This will open the doors to new quantum devices such as graphene transistors that will switch on (superconducting) and off (insulating). This discovery has been named the "Physics World 2018: Break-through of the Year" by the Institute of Physics.

Rakshith B.V. VIII 'B'

The Concept of Digital Twin Technology

In this new age, where technology is proliferating at an expeditious pace, breaking barriers and constraints at an unprecedented velocity, we as engineers need to be proficient enough to keep up with the disruptive technologies which are at play. A decade back, terms like Artificial Intelligence (AI), Machine Learning and Deep Learning (ML/DL), Internet of Things (IoT) and Big Data Analytics were sporadically heard. But fast forward to the present, these terms are thrown around in a recurrent, frequent and perpetual manner. These technologies have revolutionized the contemporary techniques and have brought about a manifold increase in the efficiency, standards and features of the present-day products. Another such technology, to bring about a transformation in this digital age that drives the innovation in the technological space is the Digital Twin Technology.

Digital twin integrates Internet of Things, Artificial Intelligence, Machine Learning and Software Analytics with Spatial Network Graph to create living digital simulation models that update and change as their physical counterparts change. When we design machines for a connected world, the traditional engineer's toolbox can look rather empty. We need a new set of manufacturing and construction tools to meet the new realities of software-driven products fuelled by digital disruption. Thankfully, the advent of Digital Twin offers engineers a technological leap 'through the looking glass' into the very heart of their physical assets. Digital twin gives us a glimpse into what is happening, or what can happen, with physical assets now and far into the future. What this means is that a digital twin is a vital tool to help engineers understand not only how products are performing, but how they will perform in the future. Analysis of the data from the connected sensors, combined with other sources of information, allows us to make these predictions.

“Digital Twin is an integrated multi-physics, multi-scale, probabilistic simulation of built vehicle or system that uses the best available physical models, sensor updates and fleet history, etc., to mirror the life of its corresponding physical twin”. In plain English, this just means creating a highly complex virtual model that is the exact counterpart (or twin) of a physical thing. The connected sensors on the physical asset collect data that can be mapped onto the virtual model. A digital twin continuously learns and updates itself from multiple sources to represent its near real-time status, working condition or position. Anyone looking at the digital twin can now see crucial information about how the physical thing is doing out there in the real world. Digital twins possess some of the characteristics which set them apart from other technologies, namely connectivity, homogenization, reprogrammable and smart, modular, and they leave digital traces.

The applications of Digital Twin Technology are immense and myriad. The digital twin is disrupting the entire Product Lifecycle Management (PLM), from manufacturing to service and operations. Nowadays, PLM is very time consuming in terms of efficiency, manufacturing, intelligence, service phases and sustainability in product design. A digital twin can merge the product physical and virtual space, thus enabling companies to have a digital footprint of all their products, from design to development and throughout the entire product life cycle. Healthcare is recognized as an industry being disrupted by the Digital Twin Technology. The availability of technologies makes it possible to build personalized models for patients, continuously adjustable based on tracked health and lifestyle parameters. This can ultimately lead to a virtual patient with having detailed description of the health state of a patient along with previous records. Furthermore, the digital twin enables individual's records to be compared to the population in order to easily find patterns with detail. The biggest benefit of the digital twin on the healthcare industry is the fact that healthcare can be tailored to anticipate on the responses of individual patients. In the Automotive Industry, an engineer can test crucial components (Ex: Car braking mechanism), by running a computer simulation to understand how the system would perform in various real-world scenarios. This method has the advantage of being a lot quicker and cheaper than building multiple physical cars to test.

The Digital Twin Technology is still in its infancy but it has colossal and expansive scope in the future. Digital Twin is already helping organizations stay ahead of digital disruption by understanding changing customer preferences, customizations and experiences. It means businesses can deliver products more rapidly, with higher quality, from the components, to the code. Yet the promise of digital twin can still go further. The use of cognitive computing increases the abilities and scientific disciplines in the digital twin. Technologies and techniques such as Natural Language Processing (NLP), machine learning, object/visual recognition, acoustic analytics and signal processing are just a few features augmenting traditional engineering skills. The future for Digital Twin Technology is bright indeed.

Chandu B. VIII 'B'

Artificial Intelligence in Speech Recognition

Over the past decades, extensive research has been carried out on various possible implementations of Automatic Speech Recognition (ASR) systems. The most renowned algorithms in the field of ASR are the Mel-Frequency Cepstral Coefficients (MFCC) and the hidden Markov models. However, there are also other methods, such as Wavelet-Based Transforms, Artificial Neural Networks and Support Vector Machines, which are becoming more popular.

Speech recognition is a major topic in speech signal processing. Speech recognition is considered as one of the most popular and reliable biometric technologies used in automatic personal identification systems. Speech recognition systems are used for variety of applications such as multimedia browsing tool, access centre, security and finance. It allows people to work in active environment to use computer. For a reliable and high accuracy of speech recognition, simple and efficient representation methods are required. According to literature, the methods such as zero crossing extraction and the energy level detection are applied to the recorded speech signal for voiced/unvoiced area detection. The detected voiced signals are applied for segmentation. Further, the MFCC method is applied to all of the segmented windows. The extracted MFCC data are further used as inputs for neural network training.

Some of the Best Voice Recognition Technologies

Baidu: A technology from China, Baidu focuses on Internet-related services and Artificial Intelligence (AI). This voice recognition technology is the amalgamation of deep learning, computer vision, speech recognition and synthesis, natural language understanding, data mining, and Business Intelligence (BI). It relies on deep learning algorithms that include the training of multi-layered virtual networks of neurons to recognize patterns for huge data. The Baidu mobile app enables users to search using voice and comes with voice-assistant called Duer. Voice queries are more popular in China because it is more time-consuming to input text and because some people do not know how to use Pinyin.

Siri: The “Hey Siri” feature enables users to invoke hands-free modes of communication. Siri works much better in iOS7 than it did in earlier versions. Siri responds faster, understands more, and speaks more naturally. If you look at a webpage or app, you can say, "Remind me about this," and Siri will know what you are looking at and adds a reminder. You can even add time or place and you no longer have to copy/paste something or describe exactly what you want.

Microsoft Cortana: Cortana is the virtual assistant created by Microsoft for several products. It is a free digital assistant that can send reminders, keep your notes and lists, take care of tasks, and help you manage your calendar. This app can provide notifications based on location, schedule a meeting, attach photos to a reminder and much more. When Office 365 or Outlook is used, Cortana can remind you about the commitments outlined in an email. Similar to other smartphone assistants, Cortana will find a quick answer for your search queries and can even help find things you're passionate about like your favourite restaurant and provide other suitable recommendations.

In conclusion, Voice recognition using Artificial Intelligence has come a long way, from Thomas Edison's invention of the first dictation machine in 1879, to Apple inc. announcing Siri in 2011, and with the upcoming technologies, which have the potential to transcend the traits of Artificial Intelligence; Speech recognition will become much better and easier.

Srikanth, IV 'B'

5G Bytes: Millimeter Waves Explained

High-frequency millimeter waves will greatly increase wireless capacity and speed of future 5G networks. The term mmWave refers to a specific part of the radio frequency spectrum between 24GHz and 100GHz, which has a very short wavelength. This section of the spectrum is pretty much unused, so mmWave technology aims to increase the amount of bandwidth available to a greater extent. Lower frequencies are more heavily congested with TV and radio signals, as well as current 4G LTE networks, which typically sit between 800 and 3,000MHz. Another upside of this short wavelength is that it can transfer data even faster, though its transfer distance is shorter.

Today's mobile users want faster data speed and more reliable service. The next generation of wireless networks-5G promises to deliver that and much more. Currently, 5G is still in the planning stages and companies and industry groups are working together to figure out exactly what it will be. They all agree on the matter that the number of mobile users and their demand for data would rise and 5G must handle far more traffic at much higher speeds than the base stations that make up today's cellular networks.

In order to achieve this, wireless engineers are designing a suite of brand-new technologies. Together, these technologies will deliver data with less than a millisecond of delay (compared to about 70 ms on today's 4G networks) and bring peak download speeds of 20 gigabits per second (compared to 1 Gbps on 4G) to users. At this moment, it's unclear which technologies will do the most for 5G in the long run but a few early favourites have emerged. The front-runners include millimeter waves, small cells, massive MIMO, full duplex and beam forming.

Millimeter Waves

Today's wireless networks have run into a problem: More people and devices are consuming more data than ever before but it remains crammed on the same bands of the radio-frequency spectrum that mobile providers have always used. That means less bandwidth for everyone, causing slower service and more dropped connections. One way to get around that problem is to simply transmit signals on a whole new swath of the spectrum, one that's never been used for mobile service before. That's why providers are experimenting with broadcasting on millimeter waves, which use higher frequencies than the radio waves that have long been used for mobile phones.

Millimeter waves are broadcast at frequencies between 30 and 300 gigahertz, compared to the bands below 6 GHz that were used for mobile devices in the past. They are called millimeter waves because they vary in length from 1 to 10 mm, compared to the radio waves that serve today's smartphones, which measure tens of centimetres in length. Until now, only operators of satellites and radar systems used millimeter waves for real-world applications. An example of construction of millimeter-wave automotive radar sensor is shown in Figure 2. Now, some cellular providers have begun to use them to send data between stationary points, such as two base stations. But using millimeter waves to connect mobile users with a nearby base station is an entirely new approach.

There is one major drawback to millimeter waves, though—they can't easily travel through buildings or obstacles and they can be absorbed by foliage and rain. That's why 5G networks will likely augment traditional cellular towers with another new technology, called small cells.

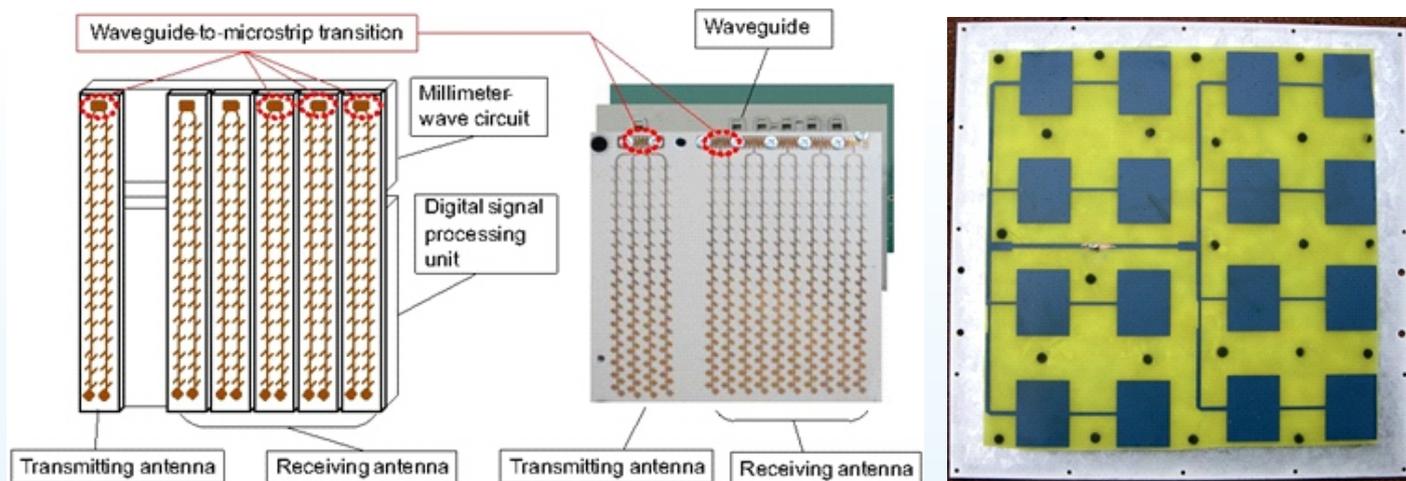
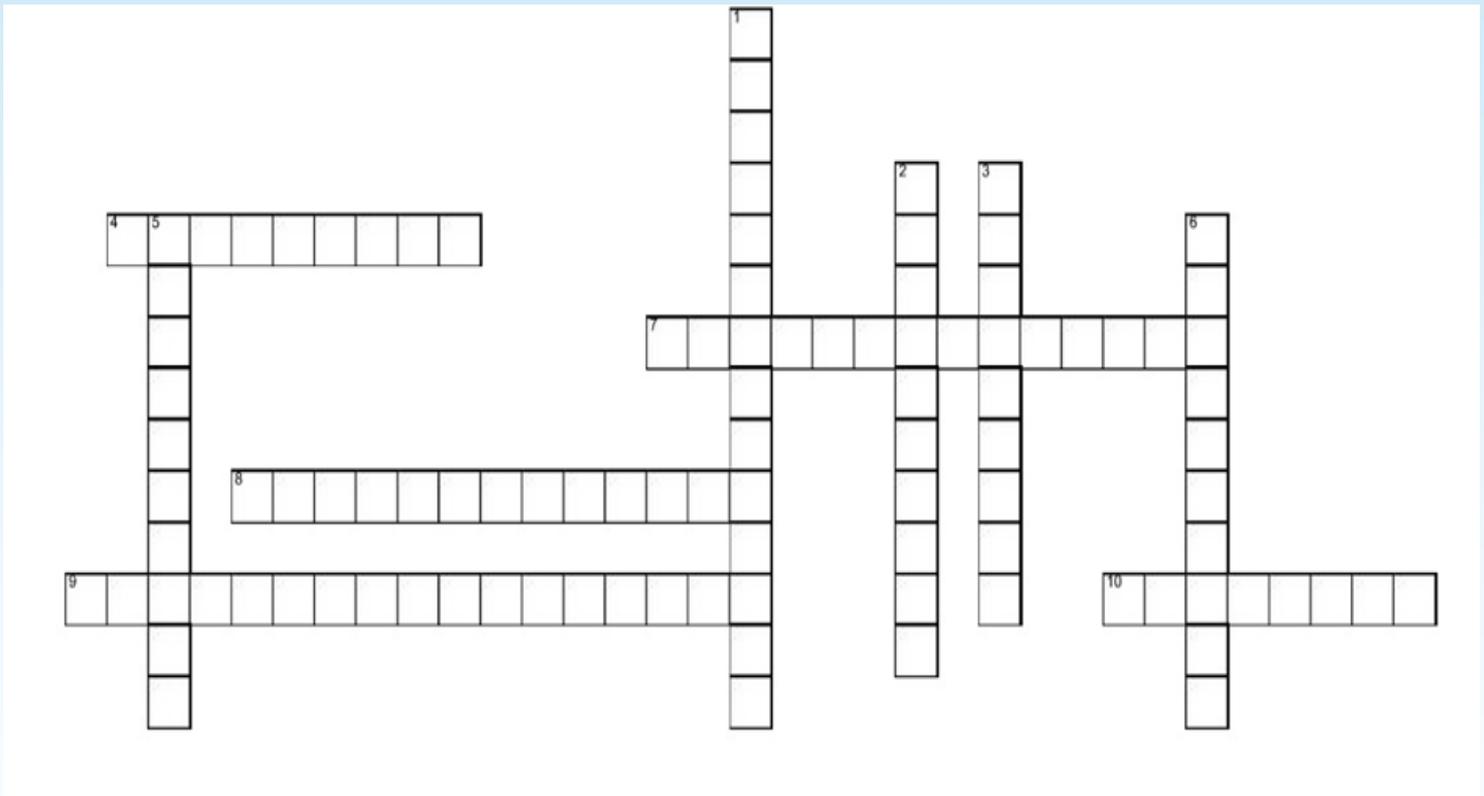


Figure 2: Construction of millimeter-wave automotive radar sensor

With millimeter waves and other 5G technologies, engineers hope to build the wireless network that the future smartphone users, VR gamers, and autonomous cars will rely on every day. Already, researchers and companies have set high expectations for 5G by promising ultralow latency and record-breaking data speeds for consumers. If they can solve the remaining challenges and figure out how to make all these systems work together, ultrafast 5G service could reach consumers in the next five years.

MmWave technology is a cornerstone of upcoming 5G networks, allowing for faster data speeds and much higher bandwidth than ever before. The technology has limits, mostly in terms of area and susceptibility to obstruction, but it works. Carriers and equipment vendors like Samsung and Qualcomm claim it works really well.

Crossword



Across

4. This Nobel laureate is obsessed with smell and is best known for her work on Olfactory Receptors and Olfactory System
7. Won the Nobel Prize, Körber European Science Prize, and Karl Spencer Lashley Award in the same year
8. A recipient of National Medal of Technology and one of two women to be awarded a Nobel Prize in a scientific field in the same year
9. Went to Cornell University where Genetics was still a new discipline in the 1920s and won Thomas Hunt Morgan Medal, Louisa Gross Horwitz Prize, Nobel Prize in Physiology or Medicine
10. First Chinese Woman to win the Nobel Prize in any category

Down

1. Advocate for World Peace, President of the Pugwash Conferences on Science and World Affairs and also a recipient of the Royal Medal
2. The most Curious Nobel Laureate
3. First woman to win the Nobel Prize in Physiology or Medicine
5. Discovered the first-ever artificially created radioactive atoms and her mother was also a Nobel laureate
6. Worked just for the fun of doing physics and contributed to Nuclear Physics

DOWN

1. Dorothy Hodgkin
2. Marie Curie
3. Gerty Cori
5. Irene Curie
6. Maria Mayer

ACROSS

4. Linda Buck
7. May-Britt Moser
8. Frances Arnold
9. Barbara McClintock
10. Tu Youyou

Rakshith B.V. VIII 'B'

Quotes:

- The Science of today is the technology of tomorrow - Edward Teller
- Keep your eyes on the stars, and your feet on the ground - Theodore Roosevelt
- Tell me and I forget, teach me and I remember, involve me and I learn - Benjamin Frankiin
- If you want to Shine like a Sun, first Burn like a Sun - Dr. A. P. J. Abdul Kalam

EVENTS ORGANIZED BY THE DEPARTMENT

- Talk on “**Village Boy to Entrepreneur**” by Sri S. Janakiraman, Chairman, Nuvepro Technologies, Bengaluru was organized under ISTE Student Chapter, BNMIT on 24th April 2019.
- “**Industrial Visit**” to Pyro Ecogreen Technologies Pvt. Ltd, Kanakapura was organized in association with ISTE student Chapter-BNMIT for 6th Semester students on 10th April 2019.
- “**Industrial Visit**” to Schneider Electric. – Attibele Industrial area, Bengaluru was organized in association with EAC-ED Cell, BNMIT for 4th Semester students on 4th April 2019.
- “**Skill Development Program**” was conducted on “**Machine Learning Techniques for Signal and Image Processing**” by industry experts Mr Venugopal, Mr. Pranav and Mr. Nitin Kuma during Feb – May 2019.
- “**Skill Development Program**” was conducted on “**VLSI-FPGA and ASIC Synthesis**” by industry expert Mr. K. V. Kumaraswamy during Feb – May 2019.
- “**Skill Development Program**” was conducted on “**IoT and its Applications**” by industry experts from Preva Systems during Feb – May 2019.

STAFF ACHIEVEMENTS

- Nineteen faculty members from the department of ECE have completed NPTEL Certification course examination during Jan-Apr 2019.
- N.Sheshaprasad and Bhanu Prashanth presented a paper titled “Studies on feed dependent characteristics of Patch antenna for wireless body area networks” in ICNEWS 2018, International Conference on Networking, Embedded and wireless Systems, BMSCE, 27-28 Dec 2018 and won **Best Paper Award**.
- Mrs. Vrunda Kusanur, Mrs. Sujaya B L and Mrs. Rashmi S Bhaskar completed Comprehensive Viva of their PhD.

STAFF PUBLICATIONS

- Vrunda Kusanur, Veena S Chakravarthi and Siddalingayya G published a paper titled "Smart Urban Rooftop Greenhouse with WSN based Precision Technology" in International Conference on Agriculture, Food and Biotechnology, Singapore, 23-25 Jan 2019.
- Shubha Rao K and Veena S Chakravarthi published a paper titled “Analysis of power conversion Efficiency of buck converter operating in continuous current mode” in Journal of Emerging Technologies and Innovative Research (ISSN: 2349-5162), Volume 6, Issue 2, pp.588-593, Feb 2019.
- N.Sheshaprasad and Bhanu Prashanth published a paper titled “A Study of UWB Microstrip Antenna parameters for wireless applications” in IConDSC 2019, International Conference on Data Science and Communication, Christ University, 1-2 March 2019.
- Jyoti R Munavalli, Shyam Vasudeva Rao, Aravind Srinivasan and G.G. van Merode published a paper titled “Integral patient scheduling in outpatient clinics under demand uncertainty to minimize patient waiting times” in Health Informatics Journal, Online First, March 8th, 2019.
- Shubha Rao K and Veena S Chakravarthi published a paper titled “Design and Performance analysis of digital control laws for low power high frequency switching power supply,” in IEEE 2nd International Conference on Power and Energy Applications (ICPEA 2019), Singapore, 27-30 April 2019.

- Rekha P, Bindu S and Subodh Kumar Panda published a paper titled "An active device-JFET for sensing Jasmine aroma" in IJCSE, Volume 7, Issue.4, pp.1054-1059, Apr-2019.
- Shubha Rao K and Veena S Chakravarthi published a paper titled "High-resolution DPWM for DC-DC buck converter using sigma-delta modulation techniques" in 7th International Conference on Applied Science, Engineering and Technology, Sri Sairam Engineering College, Anekal, Bangalore, 2-3 May 2019.
- Keerthi Kulkarni and Dr. P. A. Vijaya presented a paper titled "Analysis of multi-spectral images using spectral angle mapper algorithm for land cover classification" in 7th International Conference on Applied Science, Engineering and Technology (ICASAT-19), Sri Sairam College of Engineering, Bangalore, 2-3 May 2019.

STUDENTS' ACHIEVEMENTS

- Abhigna R of VIII Semester ECE was awarded "**Best Outgoing Student of BNMIT 2018-19**" by Cognizant.
- Raksha Ramkumar of VIII Semester ECE was awarded "**Star Achiever**" by Accenture.
- K. Neela Harshitha of VIII Semester ECE was awarded "**Best Outgoing Student 2018-19**" by the Department of ECE.

Technical Achievements

- Deeksha More, Divya S, G Kalyani and Gowthami have won the "**Best Project Award**" for "Automatic Segregation of Waste using Robotic ARM" and Amogha Lokesh, Anup Surahonne, Harshita Lokesh and Arjuna C Reddy for "Smart Campus Navigator" –VIII Sem BE. (A Section)
- Raghavendra D S, Rishab Bhansali and Vishnu Prasad Bhat have won the "**Best Project Award**" for "Detachable Smart Faucet" and Nagaraj B Jayi, Rahul S Rathod, Pavan kumar H.S. and Karthik J for "Intelligent Security for Indian Army" –VIII Sem BE. (B Section)
- Abhigna R for "Sole - Mate for Blind, Jayashree K for Bridge Monitoring System" and Adithya N Simha for "Design and Simulation of Ultra-Wideband Microstrip Antennas" have won the "**Best Presentation Award**" –VIII Sem BE. (A Section)
- Tejas R Simha for "3D Object Recognition using Artificial Neural Network", Vandana V Rao for "Compressive Sensing Analog Front End Design in 180nm CMOS technology" and Pooja R. for "Lossless Image Compression for Satellite Images" have won the "**Best Presentation Award**" –VIII Sem BE. (B Section)

Paper Presented & Published in Conferences:

- Yasha Jyothi M Shirur, Kritika M Sharma and Aishwarya A published a paper titled "Design and implementation of Efficient Direct Memory Access (DMA) Controller in Multiprocessor SoC" in International Conference on Networking Embedded and Wireless System (ICNEWS-2018) & IEEE Xplore Digital Library, 27- 28 Dec 2018.
- Akhila K, Karuna N and Yasha Jyothi M Shirur published a paper titled "Design and Implementation of Power Efficient Logic BIST With High Fault Coverage Using Verilog" in International Conference on Networking Embedded and Wireless System (ICNEWS-2018)- IEEE Xplore Digital Library, 27-28 Dec 2018.
- Megha P Patil and Dr. Basavaraj I Neelgar published a paper titled "Application of CORDIC algorithm in Rotation mode" in International Conference on Recent Trends in Industrial innovation, Value Engineering & Management Sciences, Dayanand Sagar College of Engineering Bangalore, 29 Mar 2019 - **Jury Best Paper Award**
- Vinaya Singh P and Dr. P. A. Vijaya, Ravikumar published a paper titled "Automatic Vehicle Identification for Multiple Purposes at Toll Collection System" in 3rd International Conference on Design Innovations for 3C's: Compute-Communicate-Control, MVJ College of Engineering, Bangalore, 2 May 2019.

- P D Harshitha and Anuradha J P published a paper titled “AES design based on Secure Double Rate Registers” in 7th International Conference on Applied Science, Engineering and Technology at SSCE, Bangalore, 2-3 May 2019.
- Abhigna. R, Amith K Shinde, Ashwin Sundaresh, Dheeraj. P. R and Dr. P. A. Vijaya published a paper titled “Sole-Mate: Safe path-finding by obstacle detection and distance estimation for the blind” in 7th International Conference on Applied Science, Engineering and Technology (ICASAT-19), Sri Sairam College of Engineering, Bangalore, 2-3 May 2019.
- Rakshitha A, Sathvik R and Keerthi Kulkarni published a paper titled “Optical Character Recognition for Sanskrit Text” in IETE Sponsored Second National Conference on Emerging Trends in Engineering, Science and Technology, RNSIT, Bangalore, 3rd May 2019.
- Harshitha. A and Dr. Yasha Jyothi M Shirur published a paper titled “An Efficient Radix-3 Multiplierless 2D convolution Filter for Visual Search Applications” in 9th International Conference on Recent Engineering and Technology, New Horizon College of Engineering Bangalore, 5th May 2019.
- Megha P Patil, Ashritha M.S and Dr. Basavaraj I Neelgar published a paper titled “Double Precision Trigonometric Calculator using CORDIC Algorithm” in 9th International Conference on Recent Engineering and Technology, New Horizon College of Engineering, Bangalore, 5th May 2019
- Pavan Kumar M P and Dr. Subodh Kumar Panda published a paper titled “Design and Verification of DDR SDRAM Memory Controller Using System Verilog For Higher Coverage” in 3rd International Conference on Intelligent Computing and Control Systems, Vaigai College of Engineering Madurai, 15-17 May 2019.
- Amulya Rao, Vandana Rao, Raksha Ramkumar and Prabhavati P published a paper titled “Compressive Sensing using 180nm Technology” in 4th IEEE International Conference on Recent Trends on Electronics, Information, Communication and Technology (RTEICT), Sai Venkateshwara College of Engineering, Bangalore, 17-18 May 2019.
- Aditya Ranga, Deepika, Deepak and Supriya V published a paper titled “Pesticide Detection in Fruits” in 4th IEEE International Conference on Recent Trends on Electronics, Information, Communication and Technology (RTEICT), Sai Venkateshwara College of Engineering, Bangalore, 17-18 May 2019.
- Amrutha Shree G and Dr. Veena S Chakravarthi published a paper titled “Design of error correction engine based on Flexible Unequal Error Control Code for Flash Memory faults in Space Application” in VSPICE Conference, 23-24 May 2019
- Ashish S, Manjunath P, K S Pratheek, Ashith Kiran Parlakoti and Dr. Bhuvana Suganthi D published a paper titled "Data Embedding using Image Steganography" in International Research Journal of Engineering and Technology (IRJET), Volume 6, Issue 5, May 2019.
- Chandrashekar C, Akshay Nadig Kishan D G and Deepthi M R, Divyashree V published a paper titled "Three Tire Secured Voting Machine" in JETIR, Volume 6, Issue 5, May 2019.
- Vaishnavi R K and Dr. Bindu. S published a paper "Design and Verification of APB Protocol using System Verilog and Universal Verification Methodology" in International Research Journal of Engineering and Technology (IRJET), Volume 6 Issue 5, May 2019.

Participation in Competitions:

- Swetha Holla U and Sri Hari Priya Rai of 4th Semester won first place in the intercollegiate event Corporate Conglomerate sponsored by West Point in Technical fest TATVA 2019, 22-23 Mar 2019.
- Tanish Islam of 8th Semester participated in “CoDecode” during Technorion, nationwide zonal competitions of Techfest in UVCE Bangalore and IIT Bombay 14-16 Dec 2018.
- Pavani K of 4th Semester completed a certification training on “Web and User Interface Development” at Prinston Smart Engineers in Apr 2019.

- IIT Bombay Spoken Tutorial online test was successfully completed by 6th Semester and 8th Semester students. Total 35 students from 8th semester and 99 students from 6th semesters have obtained the certificates in various courses such as Python, Perl, Arduino and Scilab in the month of Apr/May 2019.
- NPTEL courses taken by the following students during Feb-May 2019: KU Prasad Bhat and Anirudha V of 6th A - CMOS Digital VLSI Design, Inchara S of 6th A - Joy of Computing Using Python, Harshita Prasad Rao of 6th A - Introduction to Internet of Things, Gowri K S of 6th A - Biomedical Signal Processing and Darshan Kumar Hegde of 6th A - Multirate DSP.

Sports Achievements

- Rahul R B and Mohammed Ruman of 4th Sem and Rishab V and Vasureddy of 6th Sem participated in Football in Jain University Inter Collegiate (VIE -2019) Tournament, Jain University, Bangalore, 13 Feb 2019.
- Hemanth B of 4th Sem participated in Basketball in Jain University Inter Collegiate (VIE -2019) Tournament, Jain University, Bangalore, 14 Feb 2019.
- Sowndarya S of 4th Sem and Raksha Ramkumar of 8th Sem participated in Table Tennis in Jain University Inter Collegiate (VIE -2019) Tournament, Jain University, Bangalore, 14 Feb 2019.
- Gajaraj B Patil of 4th Sem participated in Table Tennis in Sri Chamaraju Memorial Cricket Tournament, RV College of Engineering, Bangalore, 19 Feb 2019.
- Punith Dinesh and Tejaswini S of 4th Sem participated in Cross country (M&W) in VTU Inter Collegiate Cross Country (M&W) competition, Anjuman ITM Bhatkala, 26-27 Feb 2019.
- Jeevan Aditya and Gajaraj B Patil of 4th Sem participated in VTU Bangalore Central Zone Cricket (M) Tournament, SEA College of Engineering & Technology, Bangalore, 6 Mar 2019.
- Kanakaraj of 6th Sem ECE participated in VTU Inter-Collegiate Zonal Tournament and won runner up place in Volley Ball held at NMIT, Bangalore on 8-9 Mar 2019.
- Girija Unnibhavi of 6th Sem and Sri Hari Priya Rai of 4th Sem participated in VTU Inter-Collegiate Zonal Tournament and the team has won runner up place in Volley Ball held at NMIT, Bangalore on 15-16 Mar 2019.

DEPARTMENT EVENTS



Winners of Best Project Award in VIII Sem Project Exhibition (2018 - 2019) with guides



Winners of Best Presentation Award in VIII Sem Project Exhibition (2018 - 2019) with guides



Sri S. Janakiraman, Chairman, Nuvepro Technologies, interacting with the students during FCD function on 24th Apr 2019

Memento distribution by Prof. Eishwar N. Maanay, Dean to meritorious students during FCD function on 24th Apr 2019



Inaugural function of "Institution of Engineers (India) – Students' Chapter" of Dept. of Electronics and Communication Engineering, BNMIT, Bengaluru, on 3rd May 2019



Prize distribution for Innovative Project Lab (IPL) Winners by Dr. P. A. Vijaya, HoD, ECE during FCD function on 24th Apr 2019



Students at Schneider Electric, Attibele Industrial Area, Bengaluru during Industrial Visit on 4th Apr 2019



Abhigna R of 8th Sem, ECE receiving "Best Outgoing Student of BNMIT 2018-19" award on 20th May 2019

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