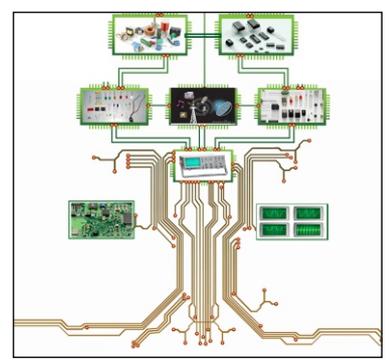


# ELECTRONICA

Newsletter

Department of Electronics & Communication  
Engineering



Volume 6

Issue 1

July - Dec 2020

## 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 to 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



Due to prevailing pandemic situation, this edition of Electronica is dedicated to **Dr. Harvey Alter, Dr. Michael Houghton and Dr. Charles Rice** who were jointly awarded the 2020 Nobel Prize in Physiology or Medicine for their discovery of the Hepatitis C virus.

## *What's inside...*

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

*And more...*



Vidyaamruthamashnuthu

# *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.Engg. 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 Communications Engineering, BNMIT is delighted to present you the 2020 Winter Edition of 'ELECTRONICA', the Department Newsletter.

After the COVID-19 outbreak, it is evident that from AI to robotics, the technology innovations are helping to manage the pandemic to better equip to fight future public health emergencies in a timely, systematic, and calm manner. Advancement in technology is steadily progressing; it will undoubtedly continue to grow exponentially. We humanbeings have to adapt to changes in technology faster and continue to invest in innovation and building the technology systems for better preparedness. Since the inception of the newsletter, the editorial team of ELECTRONICA has been proud to provide a platform that aligns itself with the goals of Technological Advancement. This newsletter is an excellent way for the readers to read about some new technologies emerging at times like this.

Technologic advances, during this century have led to unparalleled improvements in comfort, productivity, and life span. Technology cannot prevent the onset of the pandemics; however, it can help prevent the spread, educate, alert and empower to be aware of the situation, and noticeably lessen the impact. Today, with converging technologies like mobile, cloud, analytics, robotics, AI/ML, 4G/5G, and high-speed internet, it has become possible to test several innovative approaches to pandemic response. Therefore, it is really essential for future engineers to keep up with the technological advancements. Thus, the Department of ECE, BNMIT is pleased to present the 2020 Winter Edition of ELECTRONICA.

ELECTRONICA gives an opportunity to the students to explore and express their interest on the newest developments in the field of electronics. It strives to provide a platform for the students to publish their ideas at a very early stage which further helps them to continue their research with confidence. It also highlights all the technical and extra-curricular achievements of the students, staff achievements and the events organized by the Department of Electronics and Communication Engineering at BNMIT. 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 to our readers.

**Editorial Team**

## About the Department

The Department of Electronics and Communication Engineering started in the Year 2001. Presently, the Department is headed by Dr. P.A. Vijaya. The Department has 2-programs; B.E and M.Tech (VLSI Design and Embedded Systems), affiliated to VTU. The Department has a VTU recognized Research Centre and presently, there are twelve registered candidates who are pursuing 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 LED projectors provide enhanced learning environment to cater to the needs of prodigious engineers of tomorrow.

Academic performances of the students are excellent with twelve University Ranks since the inception. The students do innovative projects, internship training in industries and academic projects in reputed organisations. They regularly participate in inter-college and intra-college technical, cultural and sports events and have regularly bought laurels to the Department. The students participate in hackathons, workshops, quizzes and present/publish papers in reputed conferences and journals.

During lockdown situation and owing to Covid-19, the faculty conducted online classes, using various virtual classroom platform Microsoft teams. Videos recorded for theory courses and laboratory experiments were made online through BNMIT VROOK learning management system. Internal assessments, webinars and workshops were also conducted, using online platforms. Faculty Development Programmes, Workshops, Seminars, Skill Development Programmes and Invited Talks for students and staff were organized in online mode for continuous learning and periodic updation of knowledge and skills.

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

## Augmented Reality: The New Virtual Real-time Interaction

Augmented Reality (AR) is the integration of digital information with the user's environment in real time. It uses the existing environment and overlays new information on top of it. AR augments the reality and plays it in the surroundings by recognizing the suitable surface for the respective reality to be played. AR hardware comes in many forms, including devices that you can carry, such as handheld displays, and devices you wear such as headsets, and glasses. Common applications of AR technology include video games, personal navigation, live art gallery and many more.

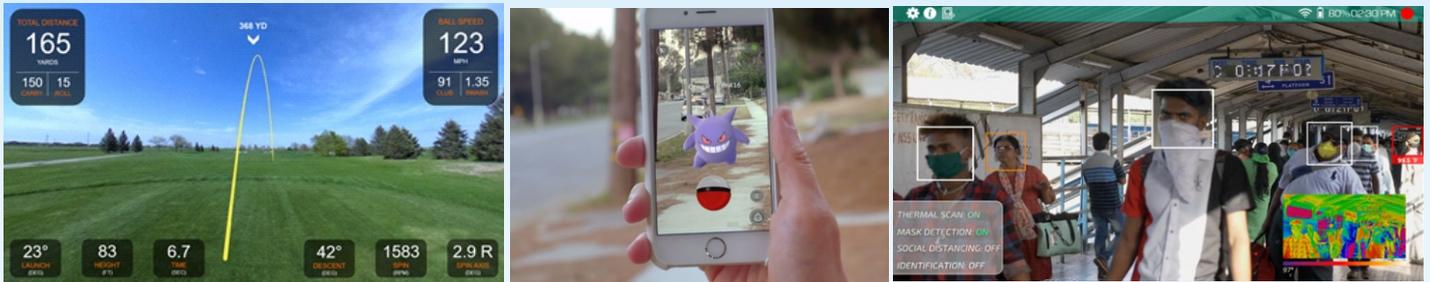


Fig.1: Augmented Reality : Real time Interaction

Augmented reality is also used in television, especially in sports. For example, golf broadcasts sometimes display a line on the screen that tracks the flight of the ball. NFL games display the first down line overlaid on the field. Major league baseball games often display dynamically generated ads behind home plate. In Olympic races, a world record (WR) line is displayed during some races to show how close an athlete is to a record time. In navigation, AR is used to display location information in real time. This is typically done through a heads-up display (HUD) that projects images in front of you like a hologram. Pokémon Go is a popular video game that uses augmented reality. As you walk around, your avatar is overlaid on a real-world map, along with in-game content. When you attempt to catch a Pokémon, it shows up with a real-world background, created by your smartphone's camera.

### AR Glasses that'll check COVID-19

AjnaLens Series, the smart glasses make use of augmented reality to layer information over live camera feed to provide useful information in real-time. The glasses can scan up to 300 people in a matter of 3-minute as its reading response time is less than 300ms. The glasses can also monitor social distancing, identify individuals with facial recognition, estimate the age of individuals, track attendance, and detect, if an individual's wearing a mask. While the AjnaLens can be customized in their use (for instance, it can also help track attendance in offices along with temperature readings), they're currently aimed at helping combat, the pandemic.

A red box around an individual signifies high fever with a displaying temperature reading. Similarly, an orange box means a person isn't wearing a mask and doesn't have a fever, whereas a white box means the person is wearing a mask and doesn't have a fever.

### AR Landscaping

A simple AR app on Android or iOS platforms could not only measure walls but also show how a room would look in any chosen colour, wallpaper, or other finishing, while automatically calculating materials and labour costs. Because of this, there are very few companies that have decided to delve into the virtual world. But being able to image what a home and yard would look like for your customer is much more convincing than simply asking them to imagine it. **ROAR Augmented Reality App** could be downloaded from Playstore and QR code to be scanned. Then, focus the smart phone screen to a table or to a plain surface and unlock the hidden AR.

[source://https://www.fastcompany.com/90478242/this-portable-furnace-could-stop-coronavirus-in-its-tracks](https://www.fastcompany.com/90478242/this-portable-furnace-could-stop-coronavirus-in-its-tracks)

Rajshekhar Choudhury, V Sem B

## The Big Chip

Artificial Intelligence and Machine Learning are the emerging technologies of the 21<sup>st</sup> century and growing rapidly into every aspect involving human intervention. Every field is trying to inculcate Artificial Intelligence and discover new potential through it. But, with greater potential comes greater requirement to upgrade technology.

Deep Learning - an essential segment of the larger Machine Learning sphere, is bringing forth new possibilities but is also computationally intensive. A Deep Learning model takes several days, if not weeks, to train and deliver results. Typically, a Deep Learning model is trained over powerful Graphics Processing Unit (GPU), containing processors with multiple cores to handle large amounts of data through parallel processing. Despite supercomputer employing

multiple GPUs to speed up the process, it is still tedious to fetch and train on such large data. Cerebras, a computer systems company dedicated to accelerate deep learning, have developed a chip that is faster than a GPU, by almost a 10,000 times. It holds within it, more than 1.2 Trillion transistors, 78X more Cores, 3000X more On-chip memory, 10,000X the memory bandwidth and 30,000X the fabric bandwidth than the Largest GPU (Nvidia Tesla v100). You may ask, 'How small did they go?', but it is that they 'went BIG'. Cerebras has built the largest chip ever - 56X larger than the largest GPU. The Cerebras 'Wafer Scale Engine' (WSE) is 46,225 mm<sup>2</sup>, entirely optimized for deep learning workloads. In comparison to Nvidia's 1 inch chip, the wafer-scale Cerebras chip is 8.5 inches – the largest ever made with 400,000 cores, 18GB SRAM memory and a 100 PetaByte/sec bandwidth on the network fabric.

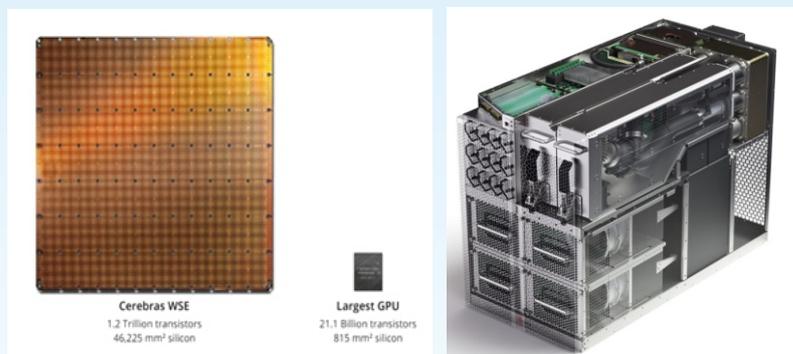


Fig.2: Cerebras

Building a really big chip as the size of an entire silicon wafer would dramatically increase the number of cores and memory while providing a low-latency communication between the cores. However, in the process of fabrication, bigger is not better. Conventional chips are designed to be as small as possible to obtain the maximum yield by avoiding the inevitable defects. Multiple such chips are integrated on a PCB to reduce the costs. However, a wafer-scale chip cannot be built with the lithography equipment used today because it is

designed to etch individual chips and an even bigger challenge is to produce chips without defects. Manufacturing difficulties are just the icing on the cake. Thermal expansion of the components, packaging and testing, power management and cooling systems for the chips were some of the major hurdles they had to overcome.

Since, this is the first ever wafer-scale integration chip ever built, it also meant that they had to build everything from scratch. The company had to invent new techniques to facilitate communication between individual chips keeping in mind the lithographic equipment in use today. They had to write new software to handle the trillion-plus transistors. They added extra cores throughout the chip as a backup, if any error appeared in that core's neighbourhood. The connectors tethering a chip to its motherboard that undergo thermal expansion had to be re-invented using different materials that absorb that thermal difference. The entire chip uses just 15kW of power and cooling is provided vertically at all points across the chip ensuring consistency.

The Cerebras WSE is the largest chip ever built, optimized for Deep Learning compute. By accelerating deep learning compute, the WSE eliminates the primary impediment to the advancement of Artificial Intelligence by reducing the time it takes to train model from months to minutes and from weeks to seconds. It enables the testing of hypotheses' more quickly and the exploration of ideas which are untestable with legacy architectures or are too expensive to try. The WSE reduces the cost of curiosity, accelerating the arrival of the new ideas and techniques that will usher forth tomorrow's AI.

source: [www.cerebras.net](http://www.cerebras.net)

Chiranth, VII SEM A

## Hack the Crackers

**Hacker** is a computer programmer who hacks into a computer network in order to evaluate and improve its security. Anyone, using these Hacker's skills maliciously is a **Cracker**. Hackers or Crackers uses the **Phishing technique** which is a type of social engineering attack often used to steal others data including login credentials and credit card numbers. It occurs when an attacker impersonates as a trusted entity and dupes a victim into opening an email, instant message or text message. Black Hat Hackers/Crackers can hack other devices by sneaking malware via hardware such as infected USB sticks that enables remote access to the device from the time they are plugged into the device.

Distributed Denial of Service (DDoS) hacking technique will aim a website such that a user cannot access it or deliver their service. This type of hacking occurs frequently. Denial of Service (DoS) will attack the work by inundating the target's server with large influxes of traffic. This overloads the server by giving requests which can't be handled by it. Ultimately the server crashes and the website goes down with it. Cookies have become a richest and easiest prospect for hackers. The cookies are little text files that is stored in our system or browser cache when we visit any websites. This will hold a wealth of information about us. Avoiding public or unprotected private networks will save us from cookie theft.

It is not an easy task to become an **Ethical Hacker** [White Hat Hacker]. They use an algorithm which takes a website's Software, Traffic Statistics, File-system structure and Webpage structure into account. Hacking tools such as NMAP, Metasploit, Superscan and Burp Suite are renowned. One should have been well-versed at Networking,

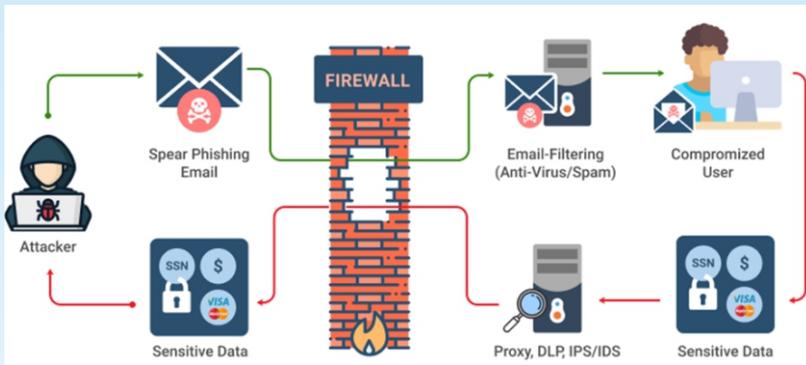


Fig. 3: Hacking Workflow

Programming Languages like C++, Python/Ruby, and PHP, Databases such as MySQL and MSSQL, Operating systems such as Linux, Windows with a graduate or post graduate degree in Information Technology or Computer Science and allied fields to become an Ethical Hacker. **Capture The Flag [CTF]** is a kind of information security competition that challenges contestants to solve a variety of tasks, ranging from a scavenger hunt on Wikipedia to basic programming exercises, to hack your way into a server to steal data. This will encourage Ethical Hackers.

The Government job opportunities for an Ethical Hacker are immense and have good remuneration that enhance the desirability of the job. The salaries of ethical hackers tend to be nearly 20 to 30% more than the salaries earned by professional in other positions at the same level in other IT fields. The primary hubs for these jobs include Bangalore, Mumbai, Pune, Hyderabad and Chennai. Jobs as Network Security Administrator, Chief Information Security Officer, Application Security Tester, Chief Application Security Officer, etc. offer exciting prospects. They can work in Defence Organizations, Law Enforcement Organizations, Forensic Organizations, Detective Companies, Investigative Organizations, etc.

Inspired by world's famous Ethical Hacker **Kevin Mitnick** and India's famous security researcher and cybersecurity specialist **Vivek Ramachandran**. A bug discovered in a Government Health Portal last year left data of nearly two million Indian patients unguarded. The recovery has highlighted the need to encourage Ethical Hacking in the country.

Source:[https:// hackeracademy.uk](https://hackeracademy.uk)

Nagaveni G R, V SEM B

## Cloud Security

Cloud security, also known as cloud computing security, consists of a set of policies, controls, procedures and technologies that work together to protect cloud-based systems, data, and infrastructure. These security measures are configured to protect cloud data, support regulatory compliance and protect customers' privacy as well as setting authentication rules for individual users and devices. From authenticating access to filtering traffic, cloud security can be configured to the exact needs of the business. These rules can be configured and managed in one place, administration overheads are reduced and IT teams are empowered to focus on other areas of the business.

The way cloud security is delivered will depend on the individual cloud provider or the cloud security solutions in place. However, implementation of cloud security processes should be a joint responsibility between the business owner and solution provider.



Fig. 4: Cloud Security

**Importance of cloud** : For businesses making the transition to the cloud, robust cloud security is imperative. Security threats are constantly evolving and becoming more sophisticated, and cloud computing is no less at risk than an on-premise environment. For this reason, it is essential to work with a cloud provider that offers best-in-class security that has been customized for your infrastructure.

### Benefits of Cloud Security:

**Centralized Security:** Just as cloud computing centralizes applications and data, cloud security centralizes protection. Cloud-based business networks consist of numerous devices and endpoints that can be difficult to manage when dealing with shadow IT or BYOD, Managing these entities centrally enhances traffic analysis and web filtering, streamlines the monitoring of network events and results in fewer software and policy updates. Disaster recovery plans can also be implemented and actioned easily when they are managed in one place.

**Reduced costs:** One of the benefits of utilizing cloud storage and security is that it eliminates the need to invest in dedicated hardware. It not only reduces capital expenditure, but also reduces administrative overheads. Once IT teams were firefighting security issues reactively, cloud security delivers proactive security features that offer protection 24/7 with a little or no human intervention.

**Reduced Administration:** When you choose a reputable cloud services provider or cloud security platform, you can kiss goodbye to manual security configurations and almost constant security updates. These tasks can have a massive drain on resources, but when you move them to the cloud, all security administration happens at one place and is fully managed on your behalf.

**Reliability:** Cloud computing services offer the ultimate in dependability. With the right cloud security measures in place, users can safely access data and applications within the cloud no matter where they are or what device they are using.

More and more organizations are realizing business benefits of moving their systems to the cloud. Cloud computing allows organizations to operate at scale, reduce technology costs and use agile systems that give them the competitive edge. However, it is essential that organizations have complete confidence in their cloud computing security and that all data, systems and applications are protected from data theft, leakage, corruption and deletion.

All cloud models are susceptible to threats. IT Departments are naturally cautious about moving mission-critical systems to the cloud and it is essential the right security provisions are in place, whether you are running a native cloud, hybrid or on-premise environment. Cloud security offers all the functionality of traditional IT security, and allows businesses to harness many advantages of cloud computing, while remaining secure and also ensure that data privacy and compliance requirements are met.

**Secure Data in the Cloud:** Cloud data security becomes increasingly important as we move our devices, data centres, business processes, and more to the cloud. Ensuring quality cloud data security is achieved through comprehensive security policies, an organizational culture of security, and cloud security solutions. Selecting the right cloud security solution for your business is imperative if you want to get the best from the cloud and ensure your organization protection from unauthorized access, data breaches and other threats. Forcepoint Cloud Access Security Broker (CASB) is a complete cloud security solution that protects cloud Apps and cloud data, prevents compromised accounts and allows you to set security policies on a per-device basis.

In nutshell, as the Cloud usage increases, it is also necessary to make sure that the cloud provider has reliable security against breach of access of the cloud.

[Source:https://semanticscholar.org](https://semanticscholar.org)

**Suguna C, III SEM B**

## Researchers Identify Nanobody that Prevent Covid-19 Infections

SARS-CoV-2 was first identified as the etiologic agent of the novel pneumonia COVID-19, in late 2019. In the comparatively short time since then, it has achieved pandemic status, causing more than 13.3 million cases, leading to more than 600,000 deaths. Accordingly, the WHO declared the pandemic to be a public health emergency of international concern.

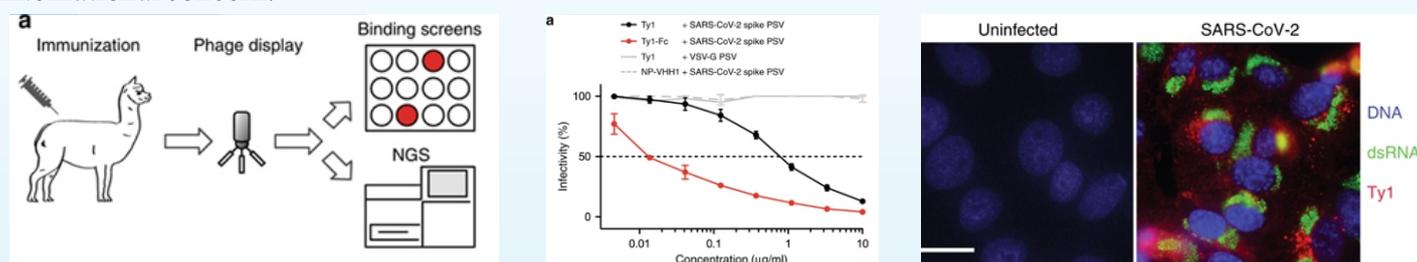


Fig. 5: SARS-CoV-2: Nanobody identification

Researchers at Karolinska Institute in Sweden have identified a small neutralizing antibody, a so-called nanobody, that has the capacity to block SARS-CoV-2 from entering human cells. The researchers believe this nanobody has the potential to be developed as an antiviral treatment against COVID-19.

The search for effective nanobodies which are fragments of antibodies that occur naturally in camelids and can be adapted for humans began in February when an alpaca was injected with the new coronavirus' spike protein, which is used to enter our cells. After 60 days, blood samples from the alpaca showed a strong immune response against the spike protein.

Next, the researchers cloned, enriched and analysed nanobody sequences from the alpaca's B cells, a type of white blood cell, to determine which nanobodies were best suited for further evaluation. They identified one, Ty1 (named after the alpaca Tyson), that efficiently neutralizes the virus by attaching itself to the part of the of the spike protein

that binds to the receptor ACE2, which is used by SARS-CoV-2 to infect cells. This blocks the virus from slipping into the cells and thus prevents infection.

Using cryo-electron microscopy, the researchers were able to see how the nanobody binds to the viral spike at an epitope which overlaps with the cellular receptor ACE2-binding site, providing a structural understanding for the potent neutralisation activity.

The results show that Ty1 can bind potently to the SARS-CoV-2 spike protein and neutralize the virus, with no detectable off-target activity says researcher Ben Murrell. It should be noted that the nanobody Ty1 can be readily produced in bacteria at very high yield (in excess of 30 mg/L culture), making it an excellent candidate for a low-cost, scalable antiviral agent against SARS-CoV-2.

Source:<https://www.nature.com/articles/s41467-020-18174-5>

**Swathi Dayanand, VII SEM B**

## From Alumni's Desk

### Learning Experience: Then and Now

This time we have our alumna, Vandana Rao from Batch 2015-19, was working at Accenture and now pursuing her MBA. She had shared an article on her learning experience in Accenture.

Right after graduating from BNMIT, work started at Accenture as an Application Development Associate, a job that was secured through campus placements at BNMIT. The exposure and learning received from the training at Accenture was immense. The training period involved self-learning of a vivid range of technology fundamentals like HTML, CSS, SQL and Java programming. The self-learning involved going through in-detail, the online teaching material (videos, notes) and completing assessment tests to evaluate where we stand in-terms of the knowledge on the technology fundamentals. The strict deadlines and the challenging tests provided during the training period gave me the push to learn quicker and better.



Fig. 6: Learning Experience

Coming from a non-Computer Science background, this intensive training made me be at-par with my colleagues who had prior knowledge about all the technology fundamentals. While gaining all the technical skills it was an important aspect of learning, another crucial learning factor was to adapt to the culture of working at Accenture after having just passed out from college. Working in a large multi-national company like Accenture, gave me an excellent exposure to work with a diverse set of people who came from different backgrounds, had different personalities and it allowed me to understand and gel with them while working in a team. This in-turn helped me enhance my team-work skills to a large extent. There were also a separate set of soft-skills training sessions given to my colleagues and me. Those soft-skills training sessions aided in strengthening my leadership skills, creative thinking and logical reasoning skills.

Overall, it was an excellent upward learning curve for me as a fresher to work at Accenture and I acquired several important technical and soft skills that I'll carry with me for the rest of my professional life.

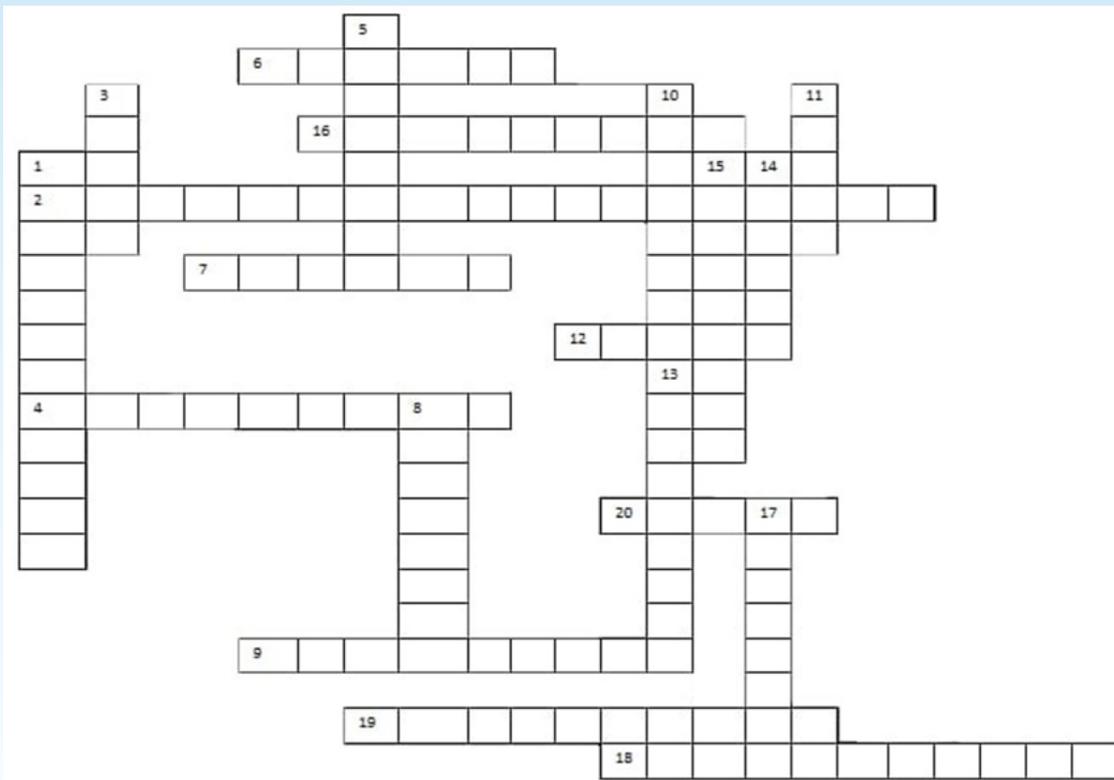
**Vandana V Rao**  
Employee,  
Alumna, ECE, BNMIT

**Did you know???**

While the average person blinks about 20 times a minute under normal circumstances, people on computers only blink about seven times a minute.

Printed circuit boards are almost always green because they are made from a glass-epoxy, which is naturally green

# Crossword



**Across**

- 2. Electrons move back and forth without appreciable movement
- 4. IBM is the largest manufacturer of what type of computer?
- 6. Tegra, Tesla, GeForce are series for Integrated Chipsets are from which company?
- 7. When checking a diode, low resistance readings both as indicate the diode is
- 9. Consists of two plates separated by a dielectric and can store a charge.
- 12. One terminal of a PN junction
- 16. A device that converts electricity into acoustic energy
- 18. A given signal's second harmonic is twice the given signal's \_\_\_\_\_ frequency
- 19. What technique is used to record crypto-currency transactions?
- 20. Type of electrically- erasable programmable read-only memory

**Down**

- 1. Device used for detecting electric current
- 3. An American vehicle and clean energy company, also unit of magnetic induction
- 5. Used for security in computer
- 8. What was the name of the first commercial car radio?
- 10. A substance/device that does not readily conduct electricity
- 11. One type of charges present in the PN junction diode
- 13. In a power supply diagram, which blocks indicates a smooth DC output.
- 14. First search engine on internet
- 15. PN junction is permanently damaged in \_\_\_\_\_ region
- 17. A cylindrical coil of wire acting as magnet when carrying electric current

**Answers**

1. Galvanometer	2. Alternating current	3. Tesla	4. Mainframe	5. Firewall
6. Nvidia	7. Faulty	8. Motorola	9. Capacitor	10. Insulator
11. Holes	12. Anode	13. Regulator	14. Archie	15. Breakdown
16. Headphone	17. Solenoid	18. Fundamental	19. Blockchain	20. Flash

**Mrigank Gupta, V SEM B**

## Quotes:

- |  |                    |
|--|--------------------|
| Today's Accomplishments were Yesterday's Impossibilities.                    | Robert H. Schuller |
| The best way to predict your future is to create it.                         | Abraham Lincoln    |
| The only way to do great work is to love what you do                         | Steve Jobs         |
| Success consists of going from failure to failure without loss of enthusiasm | Winston Churchill  |

## STAFF ACHIEVEMENTS

- Dr. P. A. Vijaya received ‘Outstanding Scientist Award’ in the 9<sup>th</sup> International Scientist Awards on Engineering, Science and Medicine, Trichy organized by VDGGOOD Professional Association held on 12<sup>th</sup> and 13<sup>th</sup> Sept 2020.
- Dr. Jyoti R Munavalli had delivered a talk on ‘Exploring Data Science’ during IEEE-KSIT Webinar on 4<sup>th</sup> July 2020.
- Dr. Bhuvana Suganthi D received ‘Young Scientist Award’ from Research Forum, Technical Research Publication, Oct 2020.
- Mrs. Chaitra N and Dr. P. A. Vijaya applied for a patent on ‘Real Time System to Aid and Assist Speech and Conversation using Natural Language Processing and Neural Networks’ on 15<sup>th</sup> Oct 2020.
- Dr. Veena S Chakravarthi had delivered talk in Author’s meet during IEEE-BNMIT Webinar Series on 18<sup>th</sup> Nov 2020.
- Dr. Yasha Jyothi M Shirur had delivered a book review on ‘A Practical Approach to VLSI System on Chip (SoC) Design’ in IEEE-BNMIT Webinar Series on 19<sup>th</sup> Nov 2020.
- Dr. Subodh Kumar Panda had delivered a talk on ‘Electronic Measurement of Pungency in Green Chillies’ in IEEE-BNMIT Webinar Series on 19<sup>th</sup> Nov 2020.
- Dr. Bindu S has delivered a talk on ‘Smart Nanomaterial’ in IEEE-BNMIT Distinguished Webinar Series on 20<sup>th</sup> Nov 2020.
- Dr. Veena S Chakravarthi and Dr. Yasha Jyothi M Shirur share their expertise as Consultants in SkillBot, Dr. Rekha P - Consultant in Agimus Technologies Pvt. Ltd. and Sri. N. Sheshaprasad- Consultant in Dhiyo Solutions Pvt. Ltd.

## STAFF PUBLICATIONS

- Chandrashekar C and Dr. Basavaraj Neelgar published a paper on ‘Pattern Generation Techniques for BIST’ in International Journal of Research and Analytical Reviews (IJRAR), Vol. 7, Issue 3, July 2020.
- Vatsala K S and Dr. Basavaraj Neelgar published a paper on ‘Design and Implementation of Low Pass IIR Filter Using VHDL for DSP Applications’ in International Journal of Research and Analytical Reviews (IJRAR), Vol. 7 Issue 3, July 2020.
- Dr. Bhuvana Suganthi D published an ArtiIndian Patent Publication on the topic ‘Driver Safety Improvement; Gesture Controlled Car Driving System to Assist the Physically Challenged’ in July 2020.
- Dr. Basavaraj I Neelgar, C. Dharani Kumar, A, Sree Vyshnavi, A, Om Sai Vigna and U. Sai Anush published a paper on ‘Audio Wavelet Compression and Audio Steganography using LSB Technique’ in International Research Journal of Advanced Engineering and Science, Vol. 5, Issue 3, July 2020.
- Deepa S. and Yasha Jyothi M Shirur published a paper on ‘Design of flexible FFT core for fast computing of digital signals in real time applications’ in International Journal of Advance Research, Ideas and Innovations in Technology, Vol. 6, Issue 4, July 2020.
- M. Bharathi, Dr. Yasha Jyothi M Shirur and P. L. Lahari published a paper on ‘Performance evaluation of Distributed Arithmetic based MAC Structures for DSP Applications’ in 7<sup>th</sup> International Virtual Conference on Smart Structures and Systems (ICSSS 2020) organized by Saveetha Engineering College, Chennai. Tamil Nadu, India on 23<sup>rd</sup> and 24<sup>th</sup> July 2020.
- P. L. Lahari, M. Bharathi and Dr. Yasha Jyothi M Shirur published a paper on ‘High Speed Floating Point Multiply Accumulate Unit Using Offset Binary Coding’ in 7<sup>th</sup> International Virtual Conference on Smart Structures and Systems (ICSSS 2020) organized by Saveetha Engineering College, Chennai. Tamil Nadu, India on 23<sup>rd</sup> and 24<sup>th</sup> July 2020.
- D Bhuvana Suganthi et.al., published a paper on ‘Data Imputation in Wireless Sensor Networks using Regression Models’ in International Journal of Advanced Trends in Computer Science and Engineering, Vol. 9, Issue 5, Oct 2020.

## STUDENTS' ACHIEVEMENTS

- Nisarga U of VIII Semester ECE was awarded '**Best Outgoing Student 2019-20**'.

### Technical Achievements

- Manaswini M, Rachana S, L Poojith, K R Pruthvi, Nisarga U and Namratha V of team 'The Trojan Hex' secured the 2<sup>nd</sup> position and cash prize of Rs. 75,000 in the National Level Finale SIH2020 for the project 'Smart Sericulture System using IoT and Image Processing' from 1<sup>st</sup> to 3<sup>rd</sup> Aug 2020.
- Deepali B K, Chethana Saligram, Gowri K S and J. Ajay Kumar for project 'Interactive Health Bot' and Aniruddh Aithal, Darshan Kumar Hegde and Girish P Kulkarni for project 'Digital Oratory Solutions using NLP and Neural Networks' have won the 'Best Project Award' - VIII Sem BE. (A Section)
- Madhuri R A, Mahima Hampali, Nisarga U and Pooja K S Deepali B K for the project 'Design and Implementation of Enhanced DMA Controller core for BNM100 DSP CO-Processor' and Shreyas G S and Thrupthi N for the project 'Autonomous Ariel Medical Assistance' have won the 'Best Project Award' - VIII Sem BE. (B Section)
- Sreenidhi B for 'PiSkate An Electronic Skate Board', Inchara S for 'Sthree Raksha: Panic intimation device for women' and Balaji R Rao for 'AI Yoga Instructor' have won the 'Best Presentation Award' - VIII Sem BE. (A Section)
- Manaswini M for 'Smart Sericulture System using IoT and Image Processing', Rakesh Kumar for 'Connected Autonomous Vehicle' and Spoorthi Shimaladka for 'UAV based Weed and Crop Classification System for sustainable Precision Agriculture' have won the 'Best Presentation Award' - VIII Sem BE. (B Section)

### Papers Presented & Published in Conferences/Journals:

- Dr. Bhuvana Suganthi D, P M Aashir Afnan, Mohammed Jasir and Parikshit G Wadageri published a paper on 'AI based Radar Waveform Classification System' in International Research Journal of Engineering and Technology (IRJET), Vol. 7, Issue 6, June 2020.
- Swathi Dayananda, Varshitha K. R, Rohini T, Yasha Jyothi M Shirur and Jyoti Munavalli published a paper on 'Low Power High Speed Vedic Techniques in Recent VLSI Design – A Survey' in Perspectives in Communication, Embedded-Systems and Signal-Processing (PiCES) – An International Journal, July 2020.
- Vishnu N, Rachana Vaidya, Chaitra N, Srinidhi S P and Shreyas B published a paper on 'Review on Early Detection of Alzheimer's Disease using Neuroimaging Techniques' in Perspectives in Communication, Embedded-Systems and Signal-Processing (PiCES) – An International Journal, July 2020.
- Deepali B K, Chethana Saligram, Gowri K S, J Ajay Kumar and Jyoti R Munavalli published a paper on 'Voice Controlled Personal Health Assistance Device using Natural Language Processing and Random Forest Disease Classifier' in Journal of Critical Reviews, Vol. 7, Issue 15, 2020
- Anirudh R Shandilya, Anusha A N and Sumathi A published a paper on 'Seizure Onset Detection and Prediction using EEG Data' in International Journal of Emerging Technologies and Innovative Research, Vol. 7, Issue 8, Aug 2020.
- Akshatha Pramod, Deeksha.R, Neha H.C and Jyoti R Munavalli published a paper on 'Automated Real-Time Locust Management using Artificial Intelligence' in International Journal of Engineering Applied Sciences and Technology, Vol. 5, Issue 4, Sept 2020.
- Rachana R. Vaidya, Aashvi Nagendra, Shreyas B and Jyoti R. Munavalli published a paper on 'Predictive and Comparative Analysis for Diabetes using Machine Learning Algorithms' in International Journal of Advanced Science and Technology, Vol. 29, Issue 3, Oct 2020.
- Sahil, Soumita Paul and Yasha Jyothi M Shirur published a paper on 'Power Optimization Techniques adopted at various abstraction levels in system on Chip Design- A Survey' in International Journal for Research in Applied Science & Engineering Technology, Vol. 8, Issue 10, Oct 2020.

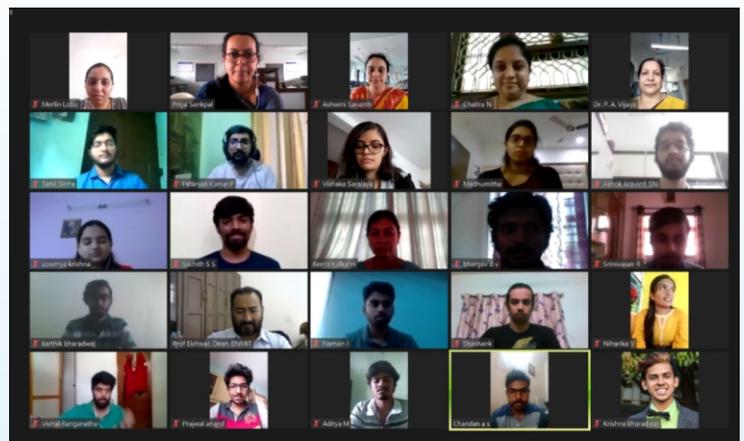
- Madhuri R A, Mahima M Hampali, Nisarga Umesh, Pooja K S , Yasha Jyothi M. Shirur and Veena S. Chakravarthi presented and published a paper on 'Design and Implementation of EDMA Controller for AI Based DSP SoCs for Real-Time Multimedia Processing' in 4<sup>th</sup> International Conference on I-SMAC (IoT in Social, Mobile, Analytics and Cloud) organized by SCAD Institute of Technology at Palladam, India on 7<sup>th</sup> to 9<sup>th</sup> Oct 2020.
- Rachana R. Vaidya and N. Chaitra published a paper on 'Comparison of Adaptive filters in extraction of Fetal ECG' in International Conference on Smart Electronics and Communication, Trichy, India, 2020.

## DEPARTMENTAL EVENTS

- **Skill Development Program** was conducted on 'Application of Signal Processing using MATLAB' from 27<sup>th</sup> July to 8<sup>th</sup> Aug 2020.
- **Skill Development Program** was conducted on 'Digital Design Modelling using HDL' from 27<sup>th</sup> July to 8<sup>th</sup> Aug 2020.
- A Webinar was organized on 'Demystifying COVID-19: The Pandemic, Opportunities and Coping Strategies' in association with Institute of Health Management Research, Bangalore on 14<sup>th</sup> Aug 2020.
- **IEEE Week** was organized by IEEE-BNMIT Student Branch in association with IEEE Nanotechnology Council from 17<sup>th</sup> Oct to 22<sup>nd</sup> Oct 2020.
- An invited talk was organized in association with ISTE Student Chapter – BNMIT on 'Campus2Corporate' by Sri. Sandeep Agarwal, Executive Vice President & COO-DBS, Happiest Minds Technologies on 23<sup>rd</sup> Oct 2020.
- **Two-days workshop** was organized by Institution of Engineers India Students' Chapter on 'Recent Trends in IoT and Robotics' on 27<sup>th</sup> and 28<sup>th</sup> Oct 2020.
- An **Online Quiz** was organized by Department of ECE in association with ISTE Student Chapter-BNMIT on 9<sup>th</sup> Nov 2020.
- **Webinar Series** on Nanotechnology was organized by IEEE-BNMIT Student Branch from 18<sup>th</sup> Nov to 20<sup>th</sup> Nov 2020.



Trainers and Participants during Skill Development Program on 'Digital Design Modelling using Verilog' from 27<sup>th</sup> July to 8<sup>th</sup> Aug 2020.



Trainers and Participants during Skill Development Program on 'Application of Signal Processing using MATLAB' from 27<sup>th</sup> July to 8<sup>th</sup> Aug 2020.



Speakers during webinar on 'Demystifying COVID-19: The pandemic, opportunities and coping strategies' on 14<sup>th</sup> August 2020

Mr. Sandeep Agarwal during an invited talk on 'Campus2Corporate' organized by ISTE Students Chapter – BNMIT on 23<sup>rd</sup> Oct 2020

ECE - Best Outgoing Student 2019-20 and Cultural Ambassadors.



Winners of Best Project Award and Best Presentation Award in VIII Semester (A Section) Project Exhibition (2019-20) with project guides



Winners of Best Project Award and Best Presentation Award in VIII Semester (B Section) Project Exhibition (2019-20) with project guides



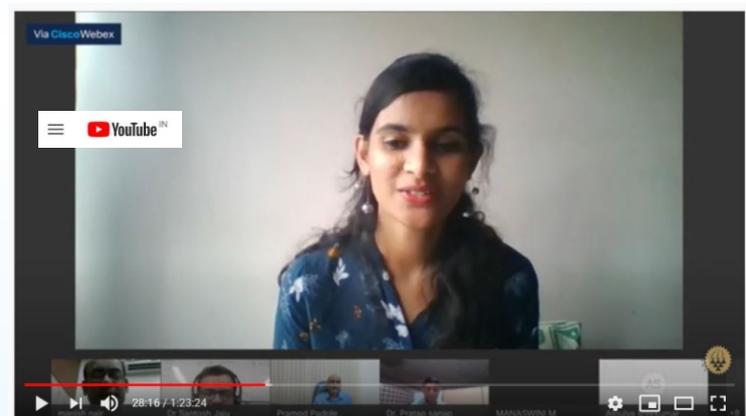
Prize distribution during ISTE Quiz conducted on 9<sup>th</sup> Nov 2020



Students with Memento during FCD function on 19<sup>th</sup> Oct 2020



Mr. Vishwas Mudagal, speaker during Author's meet (IEEE event) on 18<sup>th</sup> Nov 2020



SIH\_2020\_GHRCE\_VALEDICTORY FUNCTION

201 views · Streamed live on 4 Aug 2020

Manaswini speaking at prize distribution in the National Level Finale Smart India Hackathon 2020

## EDITORIAL TEAM

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**Dr. R. N. Tiwari (Asst. Prof.)**  
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