SIES Graduate School of Technology
RISE WITH EDUCATION

IEEE MTS SIES GST

SIES GST IEEE

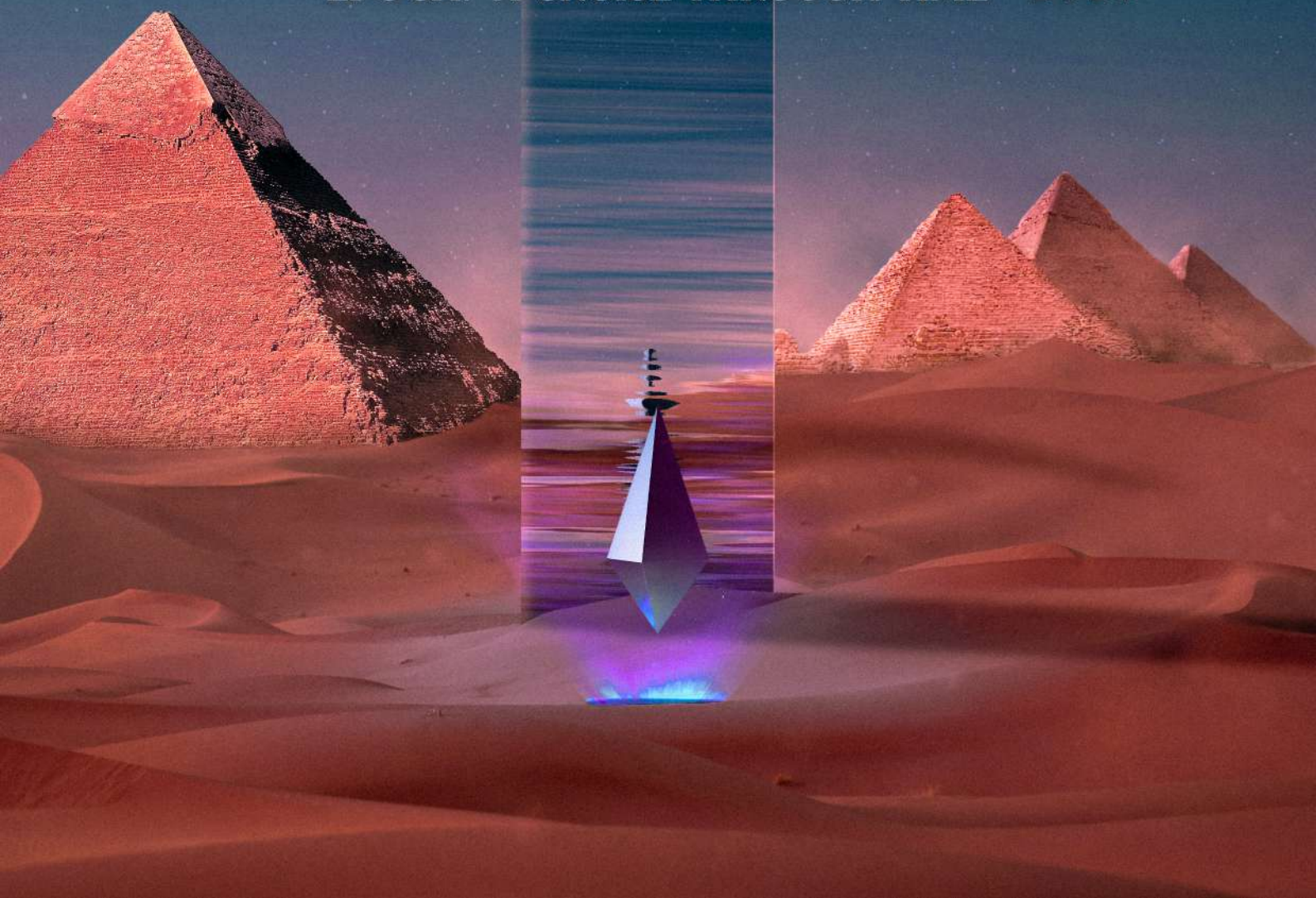
IEEE WIE SIES GST WIE CHAPTER

IEEE COMPUTER SOCIETY
SIES GST STUDENT BRANCH CHAPTER

IEEE-SIESGST PRESENTS ISSUE 6 OF

TECHNOZINE

EPOCH: A CRUISE THROUGH TIME 2021



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ABOUT SIES

The South Indian Education Society (SIES) was established in 1932. It is a pioneer in the field of education, knowledge, and learning in this metropolis. The society has been serving the cause of education and has carved for itself a niche, as a provider of quality and value-based education from nursery to doctoral level in a wide variety of fields. The institute seeks to achieve the educational mission by focusing on the modes of inquiry, which strengthens thinking skills and provides extensive field experiences to bring together theory and practices.

"This society should sincerely serve the cause of education and the educational needs of the common man of this cosmopolitan city"

- SIES MISSION

(Set by our Founder Shri M.V.Venkateshwaran in 1932)

"To be a centre of excellence in Education and Technology committed towards Socio-Economic advancement of the country"

- SIES VISION

SIES Graduate School of Technology, an integral part of this well-established community, started in the year 2002 and is located in the list of educational hubs in Navi Mumbai imparting quality based technical education, offering a four-year Bachelor of Engineering degree courses in Electronics and Telecommunication Engineering, Electronics & Computer Science, Computer Engineering, Computer Science & Engineering (Internet Of Things and Cyber Security Including Block Chain Technology), Artificial Intelligence & Data Science, Artificial Intelligence & Machine Learning, Information Technology and Mechanical Engineering. Additionally, offering Master of Engineering courses in the booming field of Artificial Intelligence & Data Science and Information Security. SIES GST has been well known in terms of producing quality and quantity. It stands to be a prestigious institution with a rich set of qualified faculties who have always been there to serve the young growing minds. SIES GST aims to enlighten its students and bring the best out of them.

VISION AND MISSION:

SIES GST EXTC Department Vision:

To be a premier department in Electronics & Telecommunications Engineering.

Mission:

-To provide quality education satisfying the requirements of the corporate world across diverse fields.

-To develop life-long learning skills to cater to socio-economic needs.

-To strengthen Industry-Institute Interaction to bridge the gap between academic and industrial requirements.

-To equip students with leadership and entrepreneurial skills.

Program Educational Objectives (PEOs):

Graduates will be able to:

-Identify, formulate and solve engineering problems in the industry, complying with ethical standards and societal needs.

-Pursue higher studies and professional development courses leading to significant advancement in the field of specialization.

-Apply technical concepts to develop applications and design products.

-Exhibit leadership and entrepreneurial acumen in their career.

ABOUT IEEE SIESGST

The IEEE student chapter was established in the year 2006 in SIESGST. Ever since the inception of what is one of the oldest student branches of SIES Graduate School of Technology, IEEE has strived on amplifying intellect and cultivating an environment suitable for intrapersonal evolvement in each individual that relates with us.

We aim to imbibe the latest technological advancement in the young growing minds by organizing contemporary workshops that are open to all students. Some of the various workshops organized under the chapter are on Data Analytics, SAR Remote Sensing Technology, UI/UX, LoRaWAN and many more.

Each year, IEEE SIESGST proudly presents its national-level annual technical festival ***'TECHOPEDIA'***. This year, we celebrated a decade-long legacy of our beloved technical festival through our tenth edition, ***Techopedia X***. Every year we have new recruits joining the organizing committee of Techopedia who construct a unique ensemble of events on the very same foundation that has been upright for ten long years. With each passing year, the quality of the events and the dynamism of the team are only increasing exponentially!

This major event sees active participation from within the college and more from colleges across Mumbai, Navi Mumbai and India. The winners of each event are endowed with cash prizes, certificates and medals as a token of appreciation.

IEEE SIESGST would like to thank our honorable Principal Dr. Atul Kemkar, respected HOD of EXTC Dr. Preeti Hemnani, Branch Counselor Prof. Biju Balakrishnan, and last but not the least, the entire student chapter whose culmination of efforts has helped in the progress of IEEE SIESGST.

FROM OUR

BRANCH COUNSELOR

It is an honor for me to present the 6th edition of the annual technical magazine **'TECHNOZINE'** of our very own IEEE Student Branch.

I am privileged to hold the post of the IEEE Branch Counselor at the SIES GST Student Branch where my prime aim is to encourage the young growing minds of our college by igniting the spark to learn in them. The student branch has indeed made me proud with the effortless operation of the Executive Committee while administering myriad events that would not have been possible without their cooperation and vivacity. As an entity representing the values and high standards of quality set by IEEE, I gladly claim that IEEE SIESGST has done a successful job in living up to those expectations.

'**TECHNOZINE**' is an almanac showcasing the cumulative effort of the entire IEEE team and the minds who have worked behind the success of all events that have been conducted throughout this year. It also includes a plethora of technical articles written by our students

I am very glad the **Microwave Theory and Techniques Society (MTT-S)** is putting efforts to organize quality programs. And the newly launched chapter of the **Computer Society (CS)** is already embracing new heights. **Women in Engineering (WiE) Affinity Group** advocated many important morals that were required for the benefit of the development of Women in STEM and beyond.

None of this would have been possible without the support of our respected advisor Dr. P V Parameswaran, principal Dr. Atul Kemkar and our HOD Dr. Preeti Hemnani. I extend my warm regards and thanks to them.

I would also like to thank and appreciate the team of IEEE SIES GST and the ones behind **'TECHNOZINE'**. I wish success to each one of you in all your future endeavors.

- Prof. Biju Balakrishnan
(IEEE Branch Counselor, CS & MTT-S Chapter Advisor)

FROM OUR

HEAD OF THE DEPT

IEEE SIESGST as a student branch, has flourished so pleasantly since its inception in the year 2006. Having personally observed the shift in the student members' presence and approach from being fairly timid in their first year to leading and organizing events in their subsequent semesters, I can say that IEEE has played a great part in developing this rationale.

It was an absolute delight to have been the WiE Affinity Group Incharge along with being the HOD of the EXTC Department which allowed me to be in association with the student members and guide them. It is incredible how throughout the year IEEE SIESGST conducts events, workshops and other technical seminars virtually since the pandemic. Our aim at WiE is to nurture women engineers and inspire them to reach their full potential. This year we focused on celebrating Women Empowerment and equality, and brave members of our community who strive every day in fields beyond engineering. The highlight of IEEE for the year 2021 is the 10th edition of the yearly technical festival Techopedia, which was conducted entirely online. And it was fascinating to look at how the IEEE Council and the volunteers came together and made this fest a success story with their innovative ideas and a positive outlook.

I congratulate the entire IEEE SIESGST Student Branch for successfully unveiling the 6th edition of Technozine, which broadly covers the intriguing journey of this team throughout the year along with thought-provoking article pieces written by our students. I wish every student member the best for all their future ventures.

- Dr. Preeti Hemnani
(Head of Department, Electronics and Telecommunication
WiE Affinity Group Incharge)

FROM THE DESK OF

THE IEEE CHAIRPERSON

A happy-go-lucky kid, with an enthusiastic demeanour was faced with IEEE SIESGST for the first time in his first year. I first encountered IEEE when I participated in an event named Circuit Maniacs under TECHOPEDIA 7.0. The curiosity in me steadily rose as I saw event after the event being conducted by IEEE SIESGST. All I could think of was that I had to be a part of this outstanding team.

I applied for the team as soon as the volunteering forms opened up and became the publicity volunteer. Starting from there, I steadily rose from being just another volunteer to becoming the Vice-Chairperson in my third year and finally the Chairperson of the student chapter. Over the three years under IEEE, I have met an excellent batch of inspiring seniors, a reassuring class of teammates, and an even more enthusiastic group of juniors and the continual supportive pillar of the student branch Prof. Biju Balakrishnan sir, all of whom have made this remarkable journey dreamlike. Their constant support and encouragement have awarded me with the Outstanding Student Volunteer Award 2021, dawned by the IEEE India Council.

We at IEEE SIESGST have conducted many activities and events on the latest buzzwords in the industry. Right from software-related topics like UI/UX, Data Analytics to hardware domain concepts like LoRaWAN and Remote Sensing Technologies, we have strived to inspire all students through our events.

The student chapter has also persisted in encouraging women to pursue an active interest in the field of technology and science. Although it wasn't easy for us to start the tenure in the new normal, the team put in a brilliant level of effort as we pulled off a 3-day long symposium viz. ‘Epsilon’, which spanned across all of Asia Pacific. Additionally, this year also put on the map a milestone for IEEE SIESGST, which was the 10th edition of the annual technical festival ‘Techopedia’, and proved to be the grandest yet, compassing 6 fresh events over 7 days. All our hard work and determination were applauded and appreciated as we were honoured with the Regional Exemplary Award, twice in a row.

IEEE SIESGST provides a delightful atmosphere for all the budding minds to grow and develop into diligent and inventive personalities. It has always supported students keen to work on themselves and upskill by giving them a platform to learn about new technologies and also tries to help them inculcate the extra set of skills like leadership, time management and adaptability. Thinking back, I am just grateful that I found IEEE and looking at where we are today I feel overwhelmed. These 3 years, starting from volunteering to being elected as the Chairperson i.e from being an aspirant to a leader, IEEE SIESGST has provided me with all kinds of opportunities to grow and prosper. I wish the student chapter and its upcoming batch of student volunteers the best of luck and hope to see the body shine brightly as it always has!

- Shubham Mishra
IEEE SIESGST Chairperson

FROM THE DESK OF
THE IEEE REPRESENTATIVE

I have a motto to give back to the community! Right from my school days, I never missed a single opportunity to help others & to be a part of different organizations or clubs that will drag me out of my comfort zone and eventually shape me with crucial learnings. But technology is something that has always fascinated me. When I got admitted to college, I was looking for something which could help me enhance my interpersonal and technical skills. Then I was introduced to IEEE SIESGST in my freshman year, I was fascinated by knowing the perks of being an IEEE member and decided to make the best use of this opportunity.

The journey of 3 years from being a volunteer to a Head and then the IEEE Representative was just phenomenal. I have seen exponential growth in the quality and number of activities conducted in different subchapters. Our batch had also encountered the worst pandemic we would have ever imagined, which forced organizations to conduct all their activities in the online mode, but IEEE SIESGST took this as an opportunity toadvance and reach a wider audience around the world, eventually grow and set high benchmarks.

We have successfully conducted hundreds of award-winning events under different subchapters that have helped students enhance their skills. We made sure that we are satisfying all the requirements of audience by conducting workshops and events covering a broader spectrum of domains.

Of all the events that we conducted, one of my favourite ventures was 'Epsilon' a 3-day international symposium. What made it special was that we had 22 speakers from various tech giants joining us from all around the world. We received lots of love and positive feedback from the developers community and speakers regarding the concept of Epsilon. I'm sure this will keep on getting bigger and better each successive year! We also initiated many technical projects by which the student members can upskill themselves and also help maintain the community's technicality. All of this would've been just an imaginary concept without my team. I feel very grateful, as I got to learn from a plethora of professional personalities. The amount of effort that the team has put in to execute an event, the energy levels, and the excitement displayed by the team was exemplary. I always felt that I was working on something that I cared about, and as a result, my vision pulled my team into taking up challenging initiatives.

IEEE SIESGST is a place where one can enhance their professional credentials, cultivate their capacity to be a true leader, carve their career development and future success. Our branch counselor Prof. Biju Balakrishnan is a true inspiration for all of us in the team. Without him we never would have gotten so far.

IEEE SIES GST will never fail to amaze with its ideas and I will always wish the best for the whole team.

-Prathamesh Thakur
IEEE Representative

FROM THE DESK OF
THE MTT-S CHAIRPERSON

I remember the day when I had to choose between two major options before me, and it was either joining the student council or IEEE. That day I committed myself to stay here until the end no matter what the odds were and I chose IEEE SIESGST. This team was not some ordinary team because it had something special, hidden in its core. The beauty of joining this team will be one of the most memorable moments I'll cherish until the end.

I began my journey as a technical volunteer. Being a volunteer not only attracted me to the diverse technologies used by IEEE but also showed me that no matter where I'm stuck in my work, help will be provided whenever I need it. All I had to do was just ask. Then after a few months, came the season of the most awaited grand festival named 'Techopedia'. The excitement and commitment to achieve our goals to make this festival a grand success was the driving energy inside the hearts and minds of all my teammates. This was a stage where I could only see multiple opportunities knocking on my door and I could see myself already upgrading with new skill sets.

In the following year, came the time for the election of a new council, and I was motivated to continue my journey with IEEE SIESGST. The fact about wireless communication and microwave radiation fascinated me the most. I saw a burning desire within me that asked to explore those domains more, and after that I was elected as the MTT-S Vice-Chairperson. This was a student chapter of IEEE that was in the growing stage and I wanted to help it grow and help my peers know how interesting this idea of microwave theories could be. I was able to conduct some exciting webinars and workshops under this chapter. In that year, the progress was fascinating as it attracted a large audience. The idea of curiosity came into the picture when we started to integrate satellite technology with our regular microwave theories. People wanted to explore this domain as they seemed to be interested in the outcomes of our webinars and workshops.

The following year I was elected as the MTT-S Chairperson and I thought this was the right moment to introduce something new to my chapter. The answer to my question was Radio Astronomy. The idea behind this was to design a radio telescope that can track the Hydrogen spectral line from the nuclei of stars. I also found an enthusiastic Vice Chairperson for my chapter who accompanied me with my new idea.

As my tenure was coming to an end, my team and I got an opportunity to attend IEEE India Council's most prestigious congress named AISYWLC, it was held in Kerala . My crew and I travelled together and treasured some memorable moments. Words may fall short of describe the joy and learning I found after being with IEEE for 3 years. I am forever grateful to my branch counselor and my mentor, Prof. Biju Balakrishnan for his continuous support and assistance. As teamwork makes the dream work happen, I'm looking forward to more great work from the new team. Go IEEE!

-Ruben Jayakumar
MTT-S Chairperson

FROM THE DESK OF
THE WiE CHAIRPERSON

The textbook definition for “home” is a place that makes you feel connected and this is exactly what IEEE SIESGST has made me think. It has given me direction and helped me groom myself in all the best ways possible both personally and professionally. Without any second thought, I would say IEEE has been an indispensable part of my undergraduate journey. Whenever someone asks me about my college memories, the first thing that strikes my mind is IEEE and I consider myself extremely fortunate to be a part of this incredible journey to cherish forever. Going back in time, during my first year of college I got to know about TECHOPEDIA, the national level technical fest of SIES GST was arranged by IEEE, and this got me thinking about how the backend of such an amazing fest functions. This curiosity made me one of the two volunteers of Technopoly the flagship event of Techopedia 2019. As a volunteer, I learned a lot, made mistakes but also corrected them, and implemented the event with great zeal. A different satisfaction hit me after the successful execution of Technopoly, seeing the 165 participating happy faces, this is when I knew where I belonged, what gave me joy.

I was selected as the Co-treasurer for the year 2020, and one of the best things about IEEE SIES GST is that irrespective of your post you get to work in every field possible. During this tenure, I grasped PR skills, pitching skills, and managerial skills. I was then appointed as the WiE chair for the year 2021. Soon after the formation of the council, we were hit by a global pandemic, however, it could not suppress our zeal, we continued to deliver everything online, webinars, seminars, hands-on workshops, and events, we also conducted TECHOPEDIA X and EPSILON our first ever symposium online, both of which were a hit.

When I think about this journey, starting from a volunteer to the WiE chair I have evolved as a person, the introverted volunteer Sakshi can today address any crowd with great confidence all thanks to IEEE. I have met loads of amazing people through this journey, amazing seniors who helped in moulding ourselves and obedient juniors, learnt a lot from each one of them.

Lastly, a big thank you to the pillar of IEEE for his constant support, Prof. Biju Balakrishnan, none of this would have been possible without him, forever grateful.

All the best to the upcoming young bright minds who will surely take IEEE to an even greater level. Go IEEE, Go WiE.

-Sakshi Shetty
WiE Chairperson

FROM THE DESK OF
THE CS CHAIRPERSON

"Do I have a special someone? Uh yes. My team at IEEE SIESGST"

IEEE SIESGST. These two words now hold a very special meaning to me. To begin with, I was a very timid, shy, and introverted person, with little to say to anyone. The student chapter has been one of the biggest factors that drastically changed my college life experience and skills. I was lucky enough to have gotten an excellent batch of seniors who gave me all the support that I could have needed and have an innovative, enthusiastic, and ingenious group of teammates.

My journey started as an event volunteer under the annual technical festival "TECHOPEDIA" in my second year and I went on to become the Joint Secretary for IEEE SIESGST in my third year. I was honoured to become the first Chairperson of the Computer Society chapter under the student branch, where I strived to inculcate several pivotal topics that helped in imbibing the love for technological growth among the students. Working in close coordination with a team of close to 100 students, was an overwhelming experience, as we were able to nurture a Data Analytical and Competitive Coding culture on campus. This was truly possible only with the meticulous efforts put in by every individual member of the team and the undying support from Prof. Biju Balakrishnan.

The chapter has helped me grow in every way possible. I have gotten to learn about various technological advancements through the numerous resources that IEEE provides and at the same time mastered the skills of team management, communication, appreciation, multitasking, and at the same time working dynamically under pressure. My time with the student body signifies a milestone for me in terms of my career as well as personal growth.

IEEE SIESGST has never been only a student body for me. It has reflected upon me the fact that teamwork and coordination are as important as polishing your skills and abilities. The chapter has welcomed me with open arms and is representative of a family that I never knew could exist. It has allowed me to interact and network with people with various domain knapsacks and has helped me realize my potential as a leader. I am truly grateful to the student body for moulding me into the promising individual that I am. I wish the forthcoming batch of members the very best of luck and hope to see the chapter shining brightly. IEEE SIESGST will always be in my heart and I thank the chapter as it has shown me the true meaning of the term "Joy of Volunteering".

-Karthik Iyer
CS Chairperson

The "New Normal"
- New Opportunities

A wave of technologies is upon us in the backdrop of the pandemic, which has accelerated their adoption. Presently, virtual (remote) operations are mainstream and physical presence is increasingly an exception in many areas, particularly, education, healthcare, government, IT services etc. Several organisations, including manufacturing, have embarked on digital transformation not only for competitive advantage but also to enhance employee experience. Much as inventions and innovations in the digital world constantly seek to enhance the quality of life, we are beset by the twin challenges of information/ cyber security and environmental impact.

Computing capability and connectivity are at the centre of digital transformation programs that keep our society functional, even in these extra-ordinary times. Cloud and 4G/ 5G Communication networks are two major examples of enabling technologies, besides software applications. With increased exposure to the public internet and the amount of sensitive data that is transmitted, both voluntary and involuntary, Information/Cybersecurity is an integral requirement. The 3C's (Cloud, Connectivity, Cybersecurity) must be planned together for digital enablement. Smartification (Smart appliances, homes, cities, grids, factories, farms etc.) has significantly added to the volume, variety and velocity of data that is generated. Widespread digitalisation and the proliferation of internet connected devices has led to an exponential growth of the attack surface. A large variety of organizational and personal data is available to build accurate digital profiles of businesses as well as individuals, which must be accessible securely, only to authorised parties. Therefore, it is critical, now more than ever, to ensure information/ cyber security by building a robust end-to-end security infrastructure.

Contrary to popular perception, the IT/ Digital industries have large carbon footprints, when the raw material extraction, production, utilisation and disposal stages are taken into consideration. Ensuring sustainability is critical as championed by the United Nations Organizations through 17 Sustainable Development Goals (SDG) chalked out for the world. Contrary to popular perception, the IT/ Digital industries have large carbon footprints, when the raw material extraction, production, utilisation and disposal stages are taken into consideration. Ensuring sustainability is critical as championed by the United Nations Organizations through 17 Sustainable Development Goals (SDG) chalked out for the world. This global imperative necessitates a reimagination of every aspect of technology across its lifecycle as businesses must focus on 3 P's – Planet, People and Profit. It opens many possibilities for engineers, whether in emerging or established digital technologies across every sector of the economy.

Just as customer/ citizen focus is the key to success of any business or government program, end-user adoption is the key to success of a technology. While the "New Normal" has led to a general acceptance of virtual interactions, enhancing the customer experience is critical. Technologies like artificial intelligence (AI), machine learning (ML), Augmented Reality/ Virtual Reality/ Mixed Reality, AR/VR/MR, Blockchain, Internet of Things (IoT), 3D printing, among others, in combination with established digital technologies such as Cloud computing, Data Analytics, Wireless (2G/ 3G/ 4G /5G) and Wireline Broadband communications help Industry effectively address usability, functionality, quality and support requirementsthat influence end-user experience. A few illustrations demonstrate how technology is driving the Healthcare and Wellness sector, especially when statutory protocols dictate minimal physical contact and social distancing.

Technologies play a key role in the "wellness" lifecycle that encompasses the stages of fitness monitoring, disease screening, diagnosis, treatment, recuperation, and the multiple pathways at each stage. AI/ML and analytics are used extensively in the fitness monitoring, disease screening, and diagnostics domain to facilitate the examination of health conditions in a minimally invasive manner or for predictive healthcare. Tele-consult and telemedicine platforms with AR/VR enhancements improve patient experience. Home-ICU units leveraging bio-medical sensors, IoT, cloud, analytics, and broadband connectivity for 24 x 7 monitoring of vital parameters facilitate proactive/

The "New Normal"
- New Opportunities

predictive remote patient care. These technologies are also applicable for individuals who want to better manage their health and wellness proactively. Healthcare providers are embracing blockchain, cloud among other digital technologies, to enhance efficiencies, integrity, and reliability of service delivery.

Additionally, 3D printing, AR/VR/MR/XR opens more possibilities in the arena of training and skilling of clinicians as well as inpatient care. It can enable capacity building at scale, cost-effectiveness and efficiencies within the healthcare ecosystem. Furthermore, realistic models of organs created by 3D printers can help doctors study and prepare for complex surgeries. Studying personalized organs and ensuring precision can significantly improve patient outcomes and treatment plans. Prosthetics and medical devices can also be made easily accessible to a larger population. Medical devices and instruments can be developed faster, and mass-produced. As the 3D printing of biological materials mature, the goal of regenerating organs becomes more within reach.

In the pharmaceuticals supply space, IoT based logistics solutions coupled with AI driven data analytics ensure that active primary ingredients (API) as well as batches of drugs and vaccines are delivered to respective stakeholders within specified environmental and physical constraints (temperature, humidity, position, transport duration etc.). Any deviation is alerted and corrective action is taken proactively. Predictive analytics help pre-empt disruptions. Blockchain solutions are employed to ensure authenticity of materials.

As the democratization of technology drives increased usage, it is expected that a multi-disciplinary approach would make reusable environment-friendly materials the core around which further development takes place. We are amid massive technology-driven disruption as well as adoption. In this scenario, it is critical to be able to continuously learn, unlearn and relearn about technologies in a multi-disciplinary, cross-functional context.

Organizations like IEEE, embody the spirit of advancing technology for humanity, with its focus on fostering healthy partnerships between stakeholders, to ensure its safe adoption. The different societies within IEEE, such as, Communications, Computer, Electron Devices among 36 others, cover a wide gamut of areas ranging from pure electronics, photonics, nuclear sciences, geosciences, medicine, management, education to social impact of technology. IEEE offers a veritable platform to keep abreast of technology and its applications while providing opportunities to interact with peers and domain experts across disciplines.

Standards are another important aspect of technology development and IEEE plays a key role in this area. Standardization promotes interoperability with the potential to reduce redundancies and wastage, thus minimizing impact on the environment. IEEE standards for LAN, Wi-Fi, Bluetooth, although not apparent to the lay person, have ensured global usage as well as interoperability of different types of devices.

Today, reality is virtual and our lives are increasingly "phygital" – a hybrid of physical and digital engagement. Technology adoption is a necessity, even as it continually evolves. It is pertinent to remember that technology, like fire, is a good slave but a bad master, for e.g., as seen in the world of artificial intelligence with associated challenges of bias, improper training and other ethical issues. As we navigate the multitude of revolutionary technologies, keeping customer/ citizen and environment objectives at the centre is an essential constant. The pandemic offers humanity an opportunity for course alteration. Applications built fulfilling customer experience requirements and minimizing environment impact are key to success. Developments in the digital eco-system comprising of electronic chips, networks, software applications, cloud computing, wireless communications, smart devices, to name a few, are instrumental in charting a new course in almost every domain. Engineers are well placed to seize the initiative to enable a new sustainable world where everyone thrives.

-Aiyappan,
Founder, Congruent Services ,
Chair – Communications Society,
Bombay Chapter, Past Vice-Chair,
IEEE Bombay Section,
Senior Member IEEE

Some Good Documentaries/Weblinks/Books

Dear Colleagues and Students,

As education evangelists, we all are busy with our technical and academic activities during the semester. It is hard to find some time or no time other than our regular activities. Coronavirus lockdown has provided us an opportunity to spend some time on other activities which may be joyful and bring a new experience/perspective to life. I would like to share a few resources/pointers with you, which may be useful to you during the lockdown.

Documentaries/Web Series:

1. Chernobyl Web Series: This 5 part docudrama is based on the Nuclear power plant explosion that happened in 1986, USSR. This series is based on true events and shows how a man-made mistake can create catastrophes. You find it a bit relevant to today's scenario of the CoronaVirus pandemic situation. You may find this web series on OTT platforms or on YouTube.

2. Inside Bill's Brain: Decoding Bill Gates: This is a three-part documentary based on Bill Gates' life. This documentary shows how Bill thinks, what keeps him motivated, and how he has solved big social challenges with engineering skills. A must-watch and very motivating series. You may find this web series on Netflix.

3. Our Planet: This is an eight-part nature documentary discussing the conservation issues of wildlife, and how as humans we are destroying this wildlife. This documentary is arguably very costly with the most mesmerizing visuals and narrative. You may find this web series on Netflix.

4. Our Planet: This is an eight-part nature documentary discussing the conservation issues of wildlife, and how as humans we are destroying this wildlife. This documentary is arguably very costly with the most mesmerizing visuals and narrative. You may find this web series on Netflix.

5. The Test - A New Era for Australia's Team: If you like test cricket then this is a must-watch documentary for you. This documentary shows Australian cricket struggle and build up post-Australian cricket ball-tampering scandal in South Africa in the year 2018. This series is related to sports but very much applicable in education as well. This is a story about an Australian coach and team who build up from scratch on their journey to win Ashes again in the year 2019. You may find this web series on Amazon Prime.

Some Good Documentaries/Weblinks/Books

Web Links & Books:

Audio Books: If you like Audiobooks and Podcasts see the following websites for really good content.

1. Amazon Audible (Payable Service, but you may get a 90 days free trial), great collection of books.
2. Suno Audio App (Free Service without any advertisement): Many good recorded Podcasts and Programs.
3. Cut the Clutter by Shekhar Gupta (YouTube Channel): If you like Current Affairs, Indian Geo-Political details, politics, etc. This is a good program by famous Journalist Shekhar Gupta. Each episode discusses the current affair in great depth with a fantastic analysis.
4. Good Read: This is a very popular website for book readers. Lots of information and a must-have app if you love books.
5. Business Sutra - A Very Indian Approach to Management by Devdutt Pattanaik: Devdutt Pattanaik is a very famous author who interprets Indian Mythology, Religion, and Philosophy from different perspectives. In this book, the author has explained many important business/management concepts with Indian mythology. This book is based on the CNBC Tv18 program on Business Sutra, in case you do not like to read the book, you may also watch these old episodes on youtube.
6. Zero to One by Peter Thiel: Peter Thiel is a well-known serial entrepreneur (Paypal Fame). In this book, he has shared his experiences and insights about entrepreneurship. A good read, you may also refer it to your students.
7. Sapiens: A Brief History of Humankind by Yuval Noah Harari. This is a must-read book for everyone. This book talks about human history in a very lucid way. Readers will get lots of new information and a new perspective about human history.

I hope these pointers will be useful. If you find it appropriate please share it with your friends and colleagues.

Thank you and Stay Safe!

-Prof.Saurabh Mehta,
Vidyalankar Institute of Technology,
Mumbai

Scan for reference links.

HUMAN-COMPUTER INTERACTION

"Whether we're communicating with a human or a machine, the goal is to create a shared understanding of the world. That's the point behind both the rules governing polite conversation and how a user-friendly machine should work."

- Cliff Kuang

Recent years have seen technology growing at its own pace towards design and communication systems and to cope with difficult contexts where these technologies must work, the world is now busy creating a stronger human-computer bond than ever. But what exactly is HCI? The term HCI, also called Man-machine interaction, stands for Human-computer interaction, a study of how humans interact with technology interfaces. Like its name, HCI consists of three major parts: the user, the computer, and their term of working/interacting together.

It was only in the 1980s when computers started becoming less expensive and the usabilty problems became more intense. It is mainly difficult to describe the beginnings of a research or a field of study, but the ultimate goal of HCI was to produce safe and functional systems. The past advances made in the last two decades have almost made an impeccable remark to realize which concept is fictional and which is real. One of the best examples to quote is the launch of the iPhone in 2007 which promoted touch as the new skill of thinking about HCI.

Today, human-computer interaction is no longer limited to just keyboard and mouse interaction. Using the hands directly as an input device is the new, natural way to provide human-machine interaction rather than the traditional method. At this time, apart from hand gesture recognition, gaze gesture has a huge demand in interface paradigms like AR and VR (Augmented reality and Virtual reality) wherein tracking of eye movements can be used for a varied number of functions when traditional interactive methods may not be suitable when hands are busy and speaking may not be an open option. Perhaps the most fascinating part of the present evolution is the IoT (Internet of Things). Devices like smartphones, laptops, cars, and even houses can be connected to a plethora of webs to pick up the right information for you.

What if such user interfaces were no longer trapped within the screens of our smartphones, and laptops and were instead mingled into our everyday life?

Imagine being able to converse with computers instead of poking letters on the screen all the time. Well, that will become reality in not much time. All of us would agree with this point that there has been a drastic change in how humans interact with computers in the last two decades. For context, the amount of mobile power your phone currently has is greater than the computing power used across NASA back in 1969. The portable devices have brought amazing human-computer interactions, all in just the palm of your hand.

It is predicted that in the next five years, the adoption rate of speech will be over 80%. However, touch will still likely be the king on smartphones for the years to come. But voice certainly promises a deeper method to interact with our devices. AR and VR will have a lot more interesting setups in the next decade. The new VR technologies will give rise to so many more new interactions, it will truly change the way our interfaces are designed. The future won't be about us adding a new way to connect our laptops, instead, it'll be more about the multitude of computers surrounding us everywhere. In the next five years to come, mobile devices will become digital representations in everyone's ecosystem.

- Kritika Surender Pandey (SE EXTC)

CREATION
OF A VIRTUAL LIFE!

Machines can talk, so why shouldn't they "see" as well?

Human vision is like computer vision, but we humans here have an advantage. We can tell the objects apart, how far or near they are or if they're moving or not, or if there's something wrong with the image.

Computer vision is a branch of Artificial Intelligence. AI helps computers to think, while computer vision allows the computer to understand and observe the world around them. It teaches the machines to perform the task that our retinas or optic nerves do with the help of data, cameras, and algorithms. You might have seen an action movie where they scan the face of a person and the name, age the biodata of that said person appears in seconds! That is what Facial Recognition, is it is a way of verifying a person's identity. This technology is mostly used for security and law enforcement.

Did you know?

The computer vision market is expected to grow from USD 10.9 billion in 2019 to USD 17.4 billion by 2024-growing at a CAGR of 7.8%.

Computer vision and facial recognition are being used in various fields of technology such as:-

i) Self-driving vehicles where cars are equipped with LiDAR and ultrasonic sensors.

ii) In medical diagnosis to identify cancer tumours through CT scans.

iii) Law and order uses computer vision to scan live or recorded footage to identify harmful objects such as weapons, explosives, wanted people, and other interested persons. Helps identify suspicious behaviour and movement patterns and prevent illegal activity.

iv) In manufacturing sectors, computer vision is used to improve technologies like IoT. It can be used to inspect manufactured products for non-conformities and defects.

Computer vision technologies would be easier to upskill in the future and will be able to discern more from images than they do now. This technology can also be combined with other techs or other subsets of AI to build applications for different functions in the future. In the growth of artificial general intelligence (AGI) and artificial superintelligence (ASI), computer vision will play a crucial role by giving them the ability to operate information even better than humans.

In the present state, Computer Vision technology is powered by algorithms that use Convolutional Neural Networks (CNN), to make sense of the images. These neural networks scan images pixel to pixel, to identify and memorize the patterns. Facial recognition also uses computer vision to identify individuals. Computer vision is becoming more proficient in identifying patterns from images than the human cognitive system with the help of artificial neural networks and deep learning. For eg., researchers have tested an AI that can detect neurological illness faster than radiologists by reading CT scan images. Deep learning algorithms help in identifying the unique patterns in a person's fingerprints and hence they are used to access high-security areas. Computer vision is also great at recognizing subtle differentiating patterns in people's retinas and irises, which are much more effective as unique identifiers than fingerprints. Hence, these systems can be used to enhance the security of confidential locations and high-valued assets.

-Sakshi A. Sakhare (SE ECS)

EPSILON-2021

IEEE SIES GST with its sub-chapters MTT-S and Computer Society in feature conducted **EPSILON 2021~** a Symposium from 2nd to 4th April 2021. Epsilon 2021 was an academic convention wherein the invited industry experts spoke about their expertise in the field of '***Computing and Knowledge Engineering***' which was the theme profusely covered in this Symposium. The event ran along three tracks namely,

Track 1 - ML conference under IEEE
Track 2 - Cloud Computing under Computer Society.
Track 3 - Quantum Computing under MTT-S.

Day 1 consisted of a talk session in three tracks where topics like "AI & ML: The Ultimatum" where the speaker dove into the history and captivating applications of AI & ML, "Cloud Computing: A Zenith Repository" where the speaker sailed through the sea of primaries in Cloud Computing and its applications and "Getting started with Quantum Computing" covered the basics of Quantum Computing starting from Qubits.

Hands-on workshops on three different subjects were conducted on Day 2. Workshop on "Building a Machine Learning Application" under Track 1, which involved building a Diabetes Classification System, next was the construction of a basic "Share Your Thoughts Web App" under Track 2 using Google's Firebase platform, Track 3 was a workshop on "Quantum Computing ft. QISKIT" using IBM-Q Experience.

Panel discussions were part of the final day. The 1st panel saw an exchange of views focused on the topic of "Privacy of ML and War of Data". A comprehensive dialogue on "Cloud Computing, Big Data, DevOps, Service Models, and Future Scope" was seen in the 2nd panel. The 3rd panel was an extensive colloquy on the idea of "Quantum Computing using Microwaves" and "Future scope of Quantum Computing".

Epsilon 2021 proved to be very informative and engaging. Throughout the 3-day symposium, we had 22 speakers from big giants like Google, IBM, Microsoft, etc to give us insights on our theme which covered Cloud Computing, Quantum Computing, AI & ML.

EPSILON-2021

EVENT HIGHLIGHTS
FROM 2021

YouTube EnigmaTech Sundays'

IEEE SIES GST took an initiative to provide the audience with a refined collection of recent technical news and information from around the world weekly through EnigmaTech Sundays'. The best news articles and information pieces are singled out from several sources on the web and included in the weekly video. Our prime objective remains to be, making STEM updates instantly and easily accessible to the viewers.

Podcast BrainHertz

IEEE SIES GST took an enlightening initiative: Brainhertz.

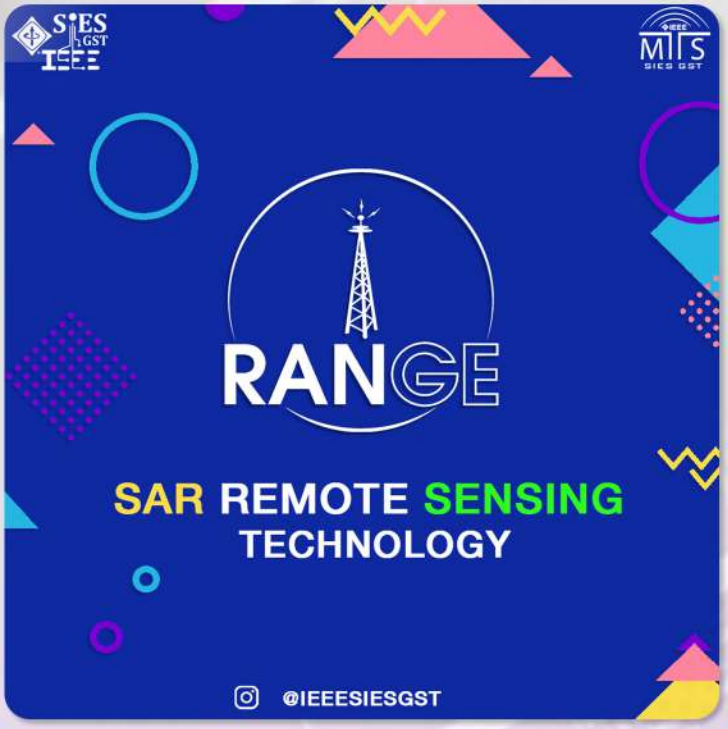
We at Brainhertz talk about truly awe-inspiring concepts. From the oldest inventions to the technologies that are still under development, we aim to cover it all. From origins to exceptional ideologies, we intend to explore the wide possibilities of science and technology and embark on the journey of technical knowledge.

EVENT HIGHLIGHTS
FROM 2021

RANGE MTT-S WORKSHOP

IEEE SIES GST conducted a one-day workshop named 'RANGE' under the MTT-S sub-chapter in collaboration with IEEE MTT-S Bombay Section. This session was conducted in the month of April, 2021.

Mr. Shubham Sharma was the speaker for the event who is currently working as a senior remote sensing scientist at GeoSpoc and is highly qualified in the field of Remote Sensing Technologies. RANGE provided great industrial insight in the field of remote sensing technologies. We had an audience of more than 200 participants for this event.



UI/UX 101 CS WORKSHOP

IEEE SIES GST conducted a one-day workshop named 'UI/UX 101' under the Computer Society sub-chapter in collaboration with IEEE CS Bombay Section in the month of May, 2021. This workshop was an excellent opportunity for everyone where they got a chance to interact and learn with the highly experienced and knowledgeable speaker Mr. Rohan Prasad who is currently a User Experience consultant at Microsoft. This event had an engagement of over 200 participants.

EVENT HIGHLIGHTS
FROM 2021

LoRa WAN - Let's Connect

IEEE SIES GST with its sub-chapter MTT-S in feature conducted a webinar to promote a research-oriented outlook towards hardware technologies in the attendees and to introduce the high performing technology of LoRa and LoRaWAN. The event was conducted in October. The speaker was Mr Tushar Borhade, who is currently working as a Solution Architect to design IoT solutions at Nextqore Inc. The attendees got to learn the different classes of LoRaWAN and its network architecture with colourful visual representations. This event had an engagement of over 160 attendees.

Data Analytics-CS Workshop

IEEE SIES GST conducted a one-day workshop named Data Analytics- 'Let the Data Speak' under the Computer Society sub-chapter in collaboration with IEEE CS Bombay Section in the month of August. This hands-on workshop was an exceptional opportunity for all the enthusiast to learn all the exquisite details about Data Analytics & Visualisation from an expert. Our speaker for the event was Mr Jigar Bhatt, a Data Analyst at Global Data & Analytics Team at Allegion. We had over 180 attendees for this workshop.

EVENT HIGHLIGHTS
FROM 2021

Bridge the Gap

WiE IEEE SIESGST conducted a three-part interview series called Bridge the Gap. We called up and connected with some of the most inspiring women who are succeeding brilliantly in various male dominated professions. We asked them about the journey that they took to be where they are right now through a series on Instagram Live Sessions.

Our first speaker was Ms. Akansha Kohli who is an All-Round cricket player representing the Karnataka State Cricket Team. She emphasised on the importance of perseverance, grit and resilience towards achieving your dreams.

For the following week, we were joined by Ms. Shreya Pattar, who is a Content Writer and Creator, Marketer, Freelancer and an ex-LinkedIn Campus Editor. She taught the audience some essentials regarding freelancing and original content creation.

For the finale of the series we were joined by Ms. Mohini Jodhpurkar who is a part of the unit behind NASA's recent Mars explorations. She debunked some myths surrounding NASA and commented on some interesting rumours regarding alien existence and UFO sightings.

RISING DATA PRIVACY CONCERNS
- A NETIZEN'S PERSPECTIVE

In the modern world it is often said that 'Data is Gold', and thus it is high time that we squash the smugglers. With the start of the age of technology, we are looking at the initial obstacles that remain in the way of truly integrating technology into human life, i.e concerns about the user data privacy. Every individual has the right to privacy, they have the right to remain anonymous and to keep their private life truly private.

The technological advancements in the last few years have caused about a third of humanity to be connected via the internet. The internet and its hosted services such as knowledge warehouses, social media etc. have never touched more lives simultaneously.

For a naive user, this all has been nothing more than a paradise, getting most of the services for free and only really paying for the internet connection. With the increase in integration of these services in normal life, it seems that the users forget there are massive multi-billion dollar companies running these services. The cost for running something like Facebook or Google is so high that they have pretty much solidified their position as a monopoly in their respective spaces. About 1000 hours of content is uploaded on Youtube every minute. 4 Million likes on facebook and about a million likes on Instagram. The cost of operations for Youtube could be anywhere from 6 to 12 Billion dollars yearly. It is impossible to run a business of this magnitude ethically without any upfront fees. Google, Facebook etc, are some of the most profitable companies in the world; what the general public do not understand is that the services are free, convenient and very addictive, but it's not that they are not paying for it, it's just that they are paying in the form of their data.

These companies collect user information such as age, sex, location, device type etc. And pair this with the future information like the content the user watches, likes etc. Compiling this information, you get a pretty accurate description of the type of person browsing the website. They use this information to advertise to you, this is not the advertisements you see on TV, but it's a much more sinister approach to advertising called Targeted Advertising.

Technically, a lot of what these companies do is legal like while signing up, users click "Accept terms of service" without reading. But strictly speaking this cannot be considered ethical. Besides there are restrictions on agreements and they are not a 'free for all' like what currently these companies believe.

RISING DATA PRIVACY CONCERNS
- A NETIZEN'S PERSPECTIVE

Google, Facebook etc, work closely with governments, thus any data kept with these services are in no way secure or private.

Some individuals like to argue by saying "I am fine with it since I don't do anything illegal."; The matter is not only about doing anything legal or illegal, but it's also about not wanting one's personal information and very delicate private life to be exposed to the outside world. Every individual has the right to live in dignity.

If the current system would be mirrored in real life then every corporation would have the right to strip and frisk any individual they want. In essence, our private information is very similar to our bare bodies. No one, not even the government has the right to abuse the latter, then why be so lenient on the former.

For these companies, the users are nothing more than a money making machine, which endlessly generates more and more accurate representation of itself and thus overtime earns them indefinite profit.

The endless and continuous spying on the user's behaviour is not only a breach of privacy but also considers the user to be guilty before any evidence. In essence, it considers that every user has a mal intent and the moment any user shows the same, they can report them to the authorities. This seems innocent enough at the first glance, but the definition of 'Ill intent' can be questionable. With the rise of countless attempts to stifle free speech by various governments across the planet, it seems like these organizations are proving to be their biggest supporters.

Now, after endless breaches, hacking, loss of life etc, governments are finally noticing the long term effects of weak data privacy laws. In particular, the European Union has taken great steps to ensure that normal users can not only use the services securely but also can be safe from the above threats. Moreover, the biggest victim of these data breaches and unethical use of data are some of the most vulnerable portions of society i.e children and senior citizens.

In conclusion, looking at the above information, arguments and presented evidence, I believe even the reader agrees that there needs to be a strong, strict and modern overhaul to the existing internet privacy laws which dates back to the 90s. Data protection should not only be considered a 'good to have' but a 'must'. I hereby conclude by saying that, the world will truly realize the potential of IoT, Smart Devices and the Internet the moment strong data protection laws are created and enforced.

-Shabarish Ramaswamy, BE CE

What are NFTs anyway?

What are NFTs? You might have heard of them since they are an extremely popular trading method. But do you know what they are? What is their point of genesis, and how do they work?

Non-fungible tokens more famously known by its abbreviation 'NFTs' are unique tokens, linked to digital (sometimes physical) benefits that provides proof of ownership and creates digital scarcity.

Digital goods have been existing for a very long time, including cryptocurrencies, and video games purchases. To know what NFTs are and where they fit in, you need to know the difference between types of digital goods. The first question to ask in order to distinguish other digital goods from NFTs is, if your purchase is unique to you or can it have copies? For example, when you withdraw money from an American Bank for American Dollars you don't care which specific notes of dollar you are withdrawing, dollars are dollars. But when you buy a one-of-a-kind collectible in a video game your primary interest is to be sure if you have the specific collectible that you wanted and not something else. Possessions that are interchangeable, essentially global currencies, are fungible. Whereas, possessions that cannot be interchanged are called non-fungible. Easy!

Now jumping to the next important question: What is centralization and decentralization? The most basic example of centralization is small business owners who run and decide the primary strategic administrations for their company. Well, on a larger scale we can refer to banks as a centralized entity wherein all the superintendence is carried out under the same name with a centralized strategy. In a decentralized application, there exists an idea that there is no one company/ representative performing as a vanguard but it is a network of computers. There is this technology that is used to maintain that network called Blockchain. Things such as cryptocurrencies come under this section but are fungible. While NFTs are decentralized and non-fungible

To understand more about NFTs let's look at an example

This picture of a monkey got sold for 3.4 million. There's a reason it might be worth it?

The Bored Ape Yacht Club (BAYC) is a collection of 10,000 bored ape digital collectibles NFT that live on the blockchain.

Every single ape is unique and they were launched in April of 2021 for $190 a piece but now they are auctioning at a price of $200k minimum. They are owned by "celebrities" like Snoop Dogg, Steph Curry, Jimmy Fallon, Logan Paul and the list goes on.

You must be wondering why are people spending hundreds of millions of dollars on a JPEG that you can just screenshot? The answer is "EXCLUSIVITY". When you own a Bored Ape it grants you exclusivity by granting you member-only benefits like joining their private group chat, getting a mutant version of the ape, and an invitation to a week-long party called the Ape Week (a week-long party on…..... you guessed it! A yacht!)

Sounds funny, but it is very real.

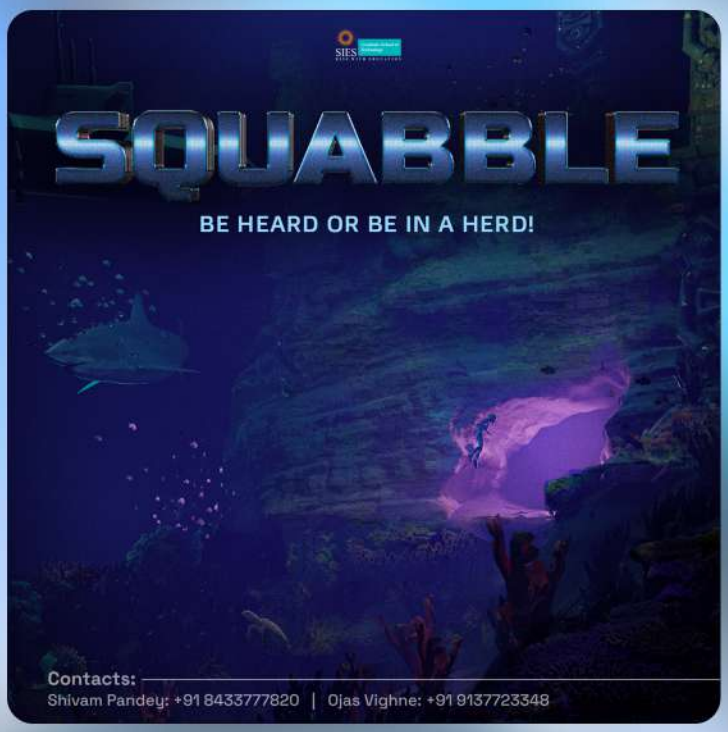
-Sahil Pednekar, BE EXTC

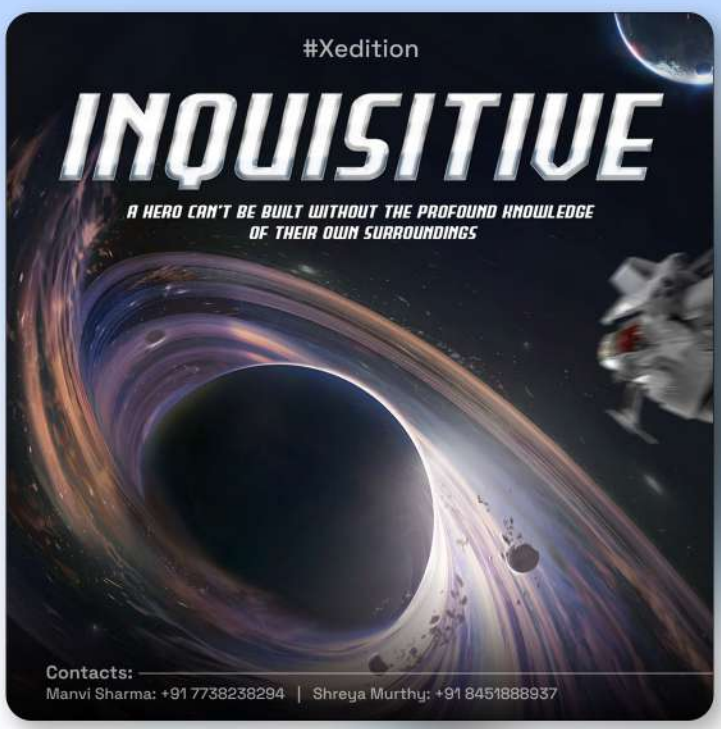
TECHOPEDIA X

IEEE SIESGST administered the tenth edition of the National Level annual technical fest Techopedia from the 7th to 13th of February 2022. The glory that Techopedia has achieved over ten years was celebrated by symbolizing time through the theme of the event for the year which was "**Epoch ~ A Cruise Through Time**". The entire fest consisted of 6 events in total viz. Squabble, Inquisitive, Technopreneur, Quantum Break, Nexus, Labyrinth. All the events were an absolute hit from the participants' standpoint. The event received a total registration count of 1500 and the on-day participation count was 1013 participants as a cumulative of all events. The top performers from all the events were allocated exciting cash prizes and certificates.

Squabble

It was a National Level Debate competition and a platform where the participants showcased their oratory skills with a technical perspective which consisted of group discussion and one-on-one debate with time limitations.





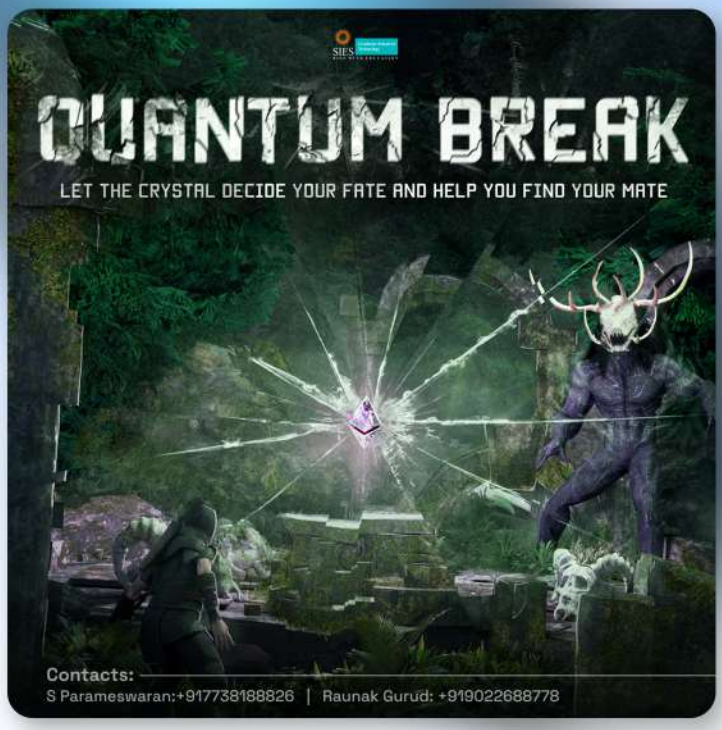
Inquisitive

It was a National Level Quiz competition where the participants got to validate their cerebral capacity by engaging in quizzes on the occurrences, technologies, advancements, and affairs from all over the world. The entire event followed the theme of past, present, and future

TECHOPEDIA X

Technopreneur

It was a National Level Business Model Presentation competition in collaboration with EDC SIESGST where the participants, through their entrepreneurial skills, gave their best hand at pitching, and selling their ideas/products all the while facing fun twists throughout the course of the event. The event challenged the participants to solve real-life problems artistically and innovatively.



Quantum Break

It was a thrilling set up where the team of two participants focused on a rescue endeavour. One of the teammates is kept as a hostage and the other has to rescue them going unnoticed by the abductors. In the game after receiving the encrypted data, the rescuers decoded it and were provided with the clue to proceed.

TECHOPEDIA X

Nexus

It was a National Level Technical Quest that involved a team of two on a quest that required a blend of technical and logical skills bundled with a lot of creativity, excitement, and brainstorming. This event was a venture that called for encipherment skills, and creative and enthusiastic minds.

Labyrinth

It was an event that was completely crafted up from scratch for the top performers of Techopedia X from the other five events and the Labyrinth lucky draw winners. It was a game that entailed a mystifying scheme of occurrences based on the choices made by the competitors. There was no right or wrong choice in this game, but there was always a better choice to make. This event presented the participants with a confusing maze through which they could navigate in real time and make a better choice within the game scenario that the participant was presented with.

TECHOPEDIA X

THE TEAM OF TECHOPEDIA X

Technology
Review

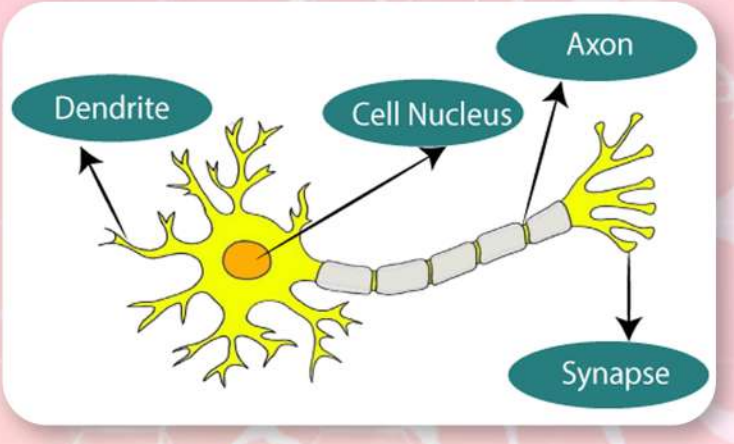
The beauty of the human brain

"The human brain, then, is the most complicated organization of matter that we know."
- Isaac Asimov

The brain is beautiful because its developmental trajectory allows human beings to become the adaptive, creative, socially connected, and complex beings we are. The brain is unfathomably complex, containing roughly 100 billion neurons that interact across 100 trillion systems and transmit information via 62,000 miles of wiring — enough to wrap around the Earth's circumference more than twice. The 100% emergence of our minds from the physical reality of our brains is beautiful, wondrous, and perplexing. How complex mental life emerges from the molecular and cellular minutiae of the brain is deeply mysterious. Answers to these fundamental questions will strongly influence how we conceive of ourselves as sentient, thinking beings; how we anticipate our future as the boundary between biological and artificial intelligence blurs; and how we understand and treat psychiatric and neurological conditions. Its capability to process information is the best computing thing to exist naturally.

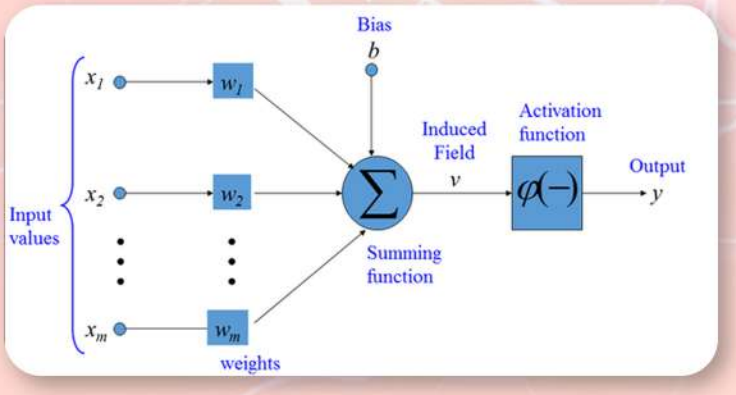
"The beauty of the human brain is the exact reason why we need to duplicate it."
- Manvi Sharma

Everything that makes the brain so precious is everything that we need to use in our daily lives to make it more fluid. There's something that makes the human brain better than any other animal brain? Great! Find it out and commercialize it! Find out the reasons for its thriving success and duplicate it in any way you can to get something more out of its concepts. Basically what was done while making ANN (Artificial Neural Networks). And exactly what will be done in the future to expand the horizons of computer science and humanity as a whole.



Artificial Neural Networks

The term "Artificial Neural Network" refers to a biologically inspired sub-field of artificial intelligence modelled after the brain. An Artificial Neural Network is usually a computational network based on biological neural networks that construct the structure of the human brain. Like a human brain having neurons interconnected to each other, Artificial Neural Networks also have neurons linked to each other in various layers of the networks. These neurons are known as nodes.



Supervised Learning

As the name suggests, supervised learning takes place under the supervision of a teacher. This learning process is dependent. During the training of ANN under supervised learning, the input vector is presented to the network, which will produce an output vector. This output vector is compared with the desired/target output vector. An error signal is generated if there is a difference between the actual output and the desired/target output vector. On the basis of this error signal, the weights would be adjusted until the actual output is matched with the desired output.

Unsupervised Learning

As the name suggests, this type of learning is done without the supervision of a teacher. This learning process is independent. During the training of ANN under unsupervised learning, the input vectors of similar types are combined to form clusters. When a new input pattern is applied, then the neural network gives an output response indicating the class to which the input pattern belongs. There would be no feedback from the environment as to what should be the desired output and whether it is correct or incorrect. Hence, in this type of learning the network itself must discover the patterns, features from the input data, and the relation between the input data over the output.

Some of the Applications:

Human Face Recognition

It is one of the biometric methods to identify a given face. It is a typical task because of the characterization of “non-face” images. However, if a neural network is well trained, then it can be divided into two classes namely images having faces and images that do not have faces.

First, all the input images must be preprocessed. Then, the dimensionality of that image must be reduced. And, at last, it must be classified using a neural network training algorithm. Following neural networks are used for training purposes with preprocessed images :

- Fully-connected multilayer feed-forward neural network trained with the help of a back-propagation algorithm.
- For dimensionality reduction, Principal Component Analysis (PCA) is used.

Signature Verification Application

Signatures are one of the most valuable ways to authorize and authenticate a person in legal transactions. The signature verification technique is a non-vision-based technique.

For this application, the first approach is to extract the feature or rather the geometrical feature set representing the signature. With these feature sets, we have to train the neural networks using an efficient neural network algorithm. This trained neural network will classify the signature as being genuine or forged under the verification stage.

-Manvi Sharma, SE ECS

Achievements

A few moments of triumph for the team of IEEE SIESGST...

IEEE Regional Exemplary Student Branch Award year 2020

IEEE

IEEE Regional Exemplary Student Branch Award 2020

Presented to

Sies Graduate School Of Technology

Bombay Section, R10

For exemplary performance as an active IEEE Student Branch offering technical programs, activities, professional networking opportunities that enable members in building critical skills.

13th November 2020

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. FOUNDED NEW YORK 1884

Toshio Fukuda

Toshio Fukuda

IEEE President 2020

Achievements

IEEE Regional Exemplary Student Branch
Award year 2021

IEEE

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20th December 2021

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. FOUNDED NEW YORK 1884

Susan K. (Kathy) Land
IEEE President 2021

Achievements

Darrel Chong Student Activity Award 2021

IEEE

Recognizes and certifies

South Indian Education Society, Graduate School of Technology

with the Darrel Chong Student Activity Award 2021 - Bronze for the activity

"Techopedia 9.0"

20th December 2021

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, INC. FOUNDED NEW YORK 1884

Susan K. (Kathy) Land
IEEE President 2021

Achievements

IEEE India Council's Outstanding Student Volunteer Award

IEEE

IEEE IND COUN

IEEE India Council Award
Outstanding Student Volunteer

Presented on 19 December 2021 during INDICON 2021
held at IIT Guwahati to

Mr. Shubham Mishra

SIESGST STB63071, Navi Mumbai
and IEEE Bombay Section

S.V. Kulkarni
Vice Chair, Awards
IEEE India Council

Suresh Nair
Chair
IEEE India Council

Achievements

SMELT 2.0 Joint SB Leadership Contest

Achievements

AISYWLC's Got Talent

Photo Gallery

IEEE SIESGST Student Members at AISYWLC'21 an All India Congress.

IEEE SIESGST Student Members at the Bombay Section YP Meet Up 2021 as the acting organizing committee.

Digital Art

-Sahil Pednekar, BE EXTC

-Tushar Ninawe, TE EXTC

Editors' Desk

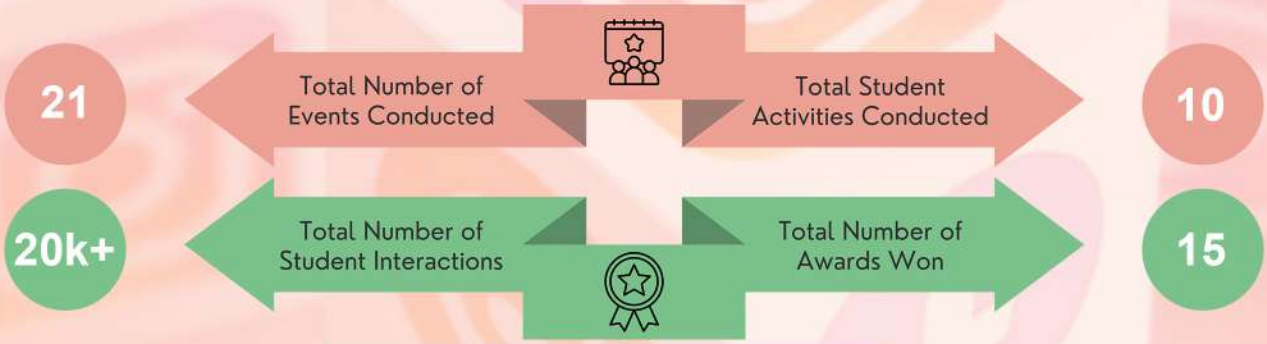
When everyone was busy celebrating the success of an event, we secretaries were busy documenting them in such a light that would do justice to the success. But sometimes words are not enough to express the team spirit and tireless efforts that were dedicated to shaping an event. This almanac of ours is a channel through which, year over year, we illustrate all the cherished efforts taken by each individual in the team. Working with a bunch of highly motivated people, looking at the amount of work that goes into structuring an event, when a thought that has been enduring in mind becomes real, is truly an interesting and exciting experience. IEEE is not just a student chapter to us, it indeed is a journey where we built a family we truly admire. Through IEEE we met the finest people, made incredible friends, and got to learn a ton.

This is us signing off as editors. IEEE will keep up the good work.

Best Regards,
Anusha G & Shruti S
Joint Secretaries (2021)

Editorial Team 2021

IEEE SIESGST 2021 Figures



TOP EVENTS

EPSILON 2021

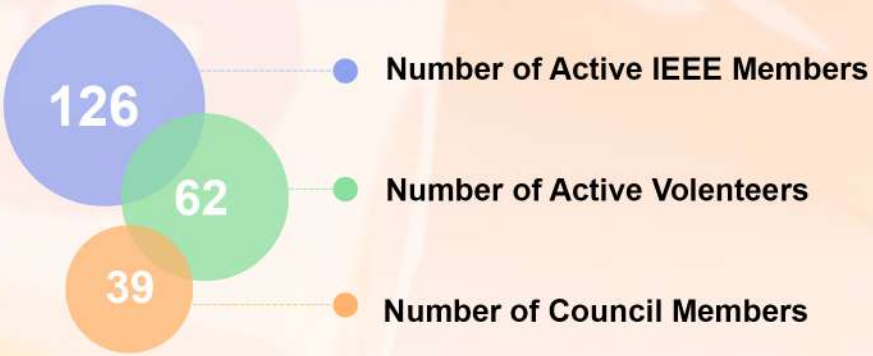
- 500+ REGISTRATIONS
- 5k+ INTERACTIONS

TECHOPEDIA X

- 1.5k+ REGISTRATIONS
- 2k+ INTERACTIONS

YOUTUBE IMPRESSIONS

INSTAGRAM IMPRESSIONS



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Design Team 2021

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