TECHNIZ

2024- 2025

COMPUTER DEPARTMENT

SIES Graduate School Of Technology

NBA Accredited 2024-2027

This is the annual magazine of the “Department OF Computer Engineering”, SIES Graduate School OF Technology.

Table of Contents

Vision

To be a centre of Excellence in Computer Engineering to fulfill the rapidly growing needs of the Society.

Mission

- To Impart quality education to meet the professional challenges in the area of Computer Engineering.
- To create an environment for research, innovation, professional and social development.
- To nurture lifelong learning skills for achieving professional growth.
- To strengthen the alumni and industrial interaction for overall development of students.

PEO

- Practise Computer engineering in core and multi-disciplinary domains.
- Exhibit leadership skills for professional growth. Pursue higher Studies for career advancement.

PSO

- To apply computational and logical skills to solve computer engineering problems
- To develop interdisciplinary skills and acquaint with cutting edge technologies in software industries

EDITORIAL BOARD

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Message from HOD's desk

Dr. Aparna Bannore

Dear Reader,

I am delighted and congratulate the TECHNIZ team for their brilliant and original efforts. I sincerely thank everyone for submitting articles and contributing to the success of TECHNIZ. Without innovation, there would be no progress, and we would be forever repeating the same patterns.

This is an opportunity to appreciate the role of science, technology and innovation in the development of the country. I sincerely hope that all the articles will significantly contribute to the long term dream and to ensure that it benefits the development and improving quality of life.

I wish all the readers Best of Luck & a bright future ahead, filled with joy and success.

HOD-CE

Message from Faculty Incharge

Prof. Smruti Vyavahare

We are glad to introduce Issue 8 of the departmental magazine of Computer Engineering Department of SIES GST, Techniz. Techniz is all about technology that inspires students to do something, that leaves an everlasting mark in the world of technology. Thus, it is our job to ensure inspiring technological developments are being brought to the students of SIES GST, by the students and faculty members of SIES GST itself.

We retained most of the members from the previous issue team. Thanks to the team of Techniz for their commendable efforts. I hope that you all enjoy reading this magazine.

Shift in Mindset from Engineering college to Software Industry.

Engineering students transitioning from college to the IT industry requires a significant mindset shift as there is a vast difference between the two. Hence it is essential for students to undergo practical industrial internship for at least 3 to 4 months during vacation which enables students to perform better when they are freshly recruited in the Information technology industry. Here's a breakdown of how to reframe your thinking to thrive in the professional world of today's tech which is fast upgrading and hence has to be updated regularly.

- **Learning: From Structured to Self-Driven**

  In college, professors guide your learning with fixed syllabus and exams testing specific knowledge. In the IT mindset, you're expected to learn continuously and independently. Technologies evolve rapidly, so staying relevant means constant upskilling. Embrace lifelong learning through resources like Udemy, GitHub, and official documentation.

- **Time Management: From Deadlines to Deliverables.**

  Engineering College typically around fixed deadlines, often leading to last minute cramming. In the IT world, you'll work in sprints with ongoing deliverables, tight turnarounds, and collaborative efforts. Utilize tools like Azure DevOps. Jira and Slack to stay organized. Prioritize clear communication to the scrum master with proper planning to avoid last-minute hustle.

- **Collaboration: From Individual Grades to Team Goals**

In college, your grades are primarily yours, and teamwork might be optional. In IT, Industry success is measured by how well the team delivers collectively. Master essential collaboration tools and practices such as code reviews, version control and peer programming. Practice active listening, provide constructive feedback, and maintain clear documentation.

- **Problem-Solving: From Academics to Practical Impact.**
  College problems are often academic. In the IT industry, you'll be solving real-world issues for users, clients, and business needs. Focus on understanding user needs and edge cases, and learn how to debug systematically. Care about writing code that's maintainable and scalable, not just code that "works."

- **Evaluation: From Grades to deliverables**.
  College heavily emphasizes CGPA and correctness. In IT industry, you're judged on delivery, communication, collaboration, quality, and adaptability.

- **Mindset: From Student to Professional.**
  As a student, you're learning to pass in your semesters, and can often afford to be passive. But in the IT industry, you're expected to take initiative, work on your own and solve problems independently. Think like you are an Architect and not just a learner. Understand the business side of your work to add value to the customer.

- **Key Habits for an IT industry Mindset:**

  To cultivate a robust IT mindset, integrate these habits into your daily routine:

  - Practice by solving problems: Practice regularly on platforms like LeetCode or HackerRank, or by working on personal projects.
  - Version Control: Become proficient in any platform and collaborate effectively through those platforms like GitHub.
  - Understand Documentation: This is arguably the most underused skill; make it a habit to consult official documentation.
  - Asking Questions Early: Ask for clarification from your seniors in case of blockers. Wishing all the students of SIESGST the very best.

By Akashsai Rajaram (2018-22 batch) Associated with TCS.

Generative AI: Understanding the Concept, Tools, and Algorithms

Dr. Kalyani P.

In the world of artificial intelligence (AI), generative AI stands out as a groundbreaking innovation. By enabling machines to create new content, generative AI is reshaping industries, solving complex problems, and pushing the boundaries of creativity and functionality. This article delves into the core concepts, working mechanisms, tools, and algorithms that define generative AI.

- **What is Generative AI?**

  Generative AI refers to a subset of artificial intelligence that focuses on creating new content, such as text, images, audio, or synthetic data. Unlike traditional AI systems that classify or predict based on existing data, generative AI "creates." It uses advanced algorithms, including Generative Adversarial Networks (GANs), Variational Autoencoders (VAEs), and large language models like GPT, to learn patterns from existing data and generate outputs that are nearly indistinguishable from those made by humans.

- **Generative AI operates primarily through two processes:**

  Training Phase: By observing patterns, relationships, and structures in vast datasets, the AI model gains knowledge.

  Generation Phase: Based on the information learnt during training, the model generates new, unique content that corresponds with the properties of the learned data.

For instance, a generative AI model trained on a dataset of paintings could create new artworks that mimic the style of the originals.

- **Key Algorithms Behind Generative AI:**

Generative AI is powered by a number of frameworks and algorithms, each of which is appropriate for a particular purpose. Among the most noteworthy are:

1. **Generative Adversarial Networks (GANs)**:

GANs consist of two neural networks, a generator and a discriminator, that work in opposition to each other. The generator attempts to create new data that resembles the training data, while the discriminator evaluates the authenticity of the generated data, distinguishing it from the real data. Over time, the generator improves its ability to produce realistic outputs as it learns to "fool" the discriminator. This adversarial process enables GANs to generate highly realistic images, videos, and other types of data.

2. **Variational Autoencoders (VAEs):**

VAEs are probabilistic models that encode input data into a compressed representation and then decode it back into its original form. During training, VAEs learn to map input data to a latent space, a compressed representation of features. To generate new data, VAEs sample points from this latent space and decode them. This approach allows VAEs to generate smooth and coherent outputs, making them ideal for tasks like image reconstruction and synthetic data generation.

3. **Transformer Models:**

Transformers are widely used in natural language processing and other sequential data tasks. Models like GPT (Generative Pre-trained Transformer) leverage a self-attention mechanism to understand the context and relationships between different elements in the input data. By processing data in parallel, transformers can generate coherent and contextually relevant text, making them suitable for tasks like content creation, summarization, and language translation.

4. **Diffusion Models:**

Diffusion models generate data by gradually reversing a noise process. Starting from random noise, these models iteratively refine the data to produce structured outputs. This approach is particularly effective in generating high-quality images and other types of complex data. Diffusion models are gaining

traction due to their ability to produce diverse and detailed outputs.

- **Tools and Frameworks for Generative AI**

Developers and researchers rely on various tools and frameworks to build and deploy generative AI models. Some popular ones include: TensorFlow and PyTorch, Hugging Face, Runway ML.

- **Applications of Generative AI**

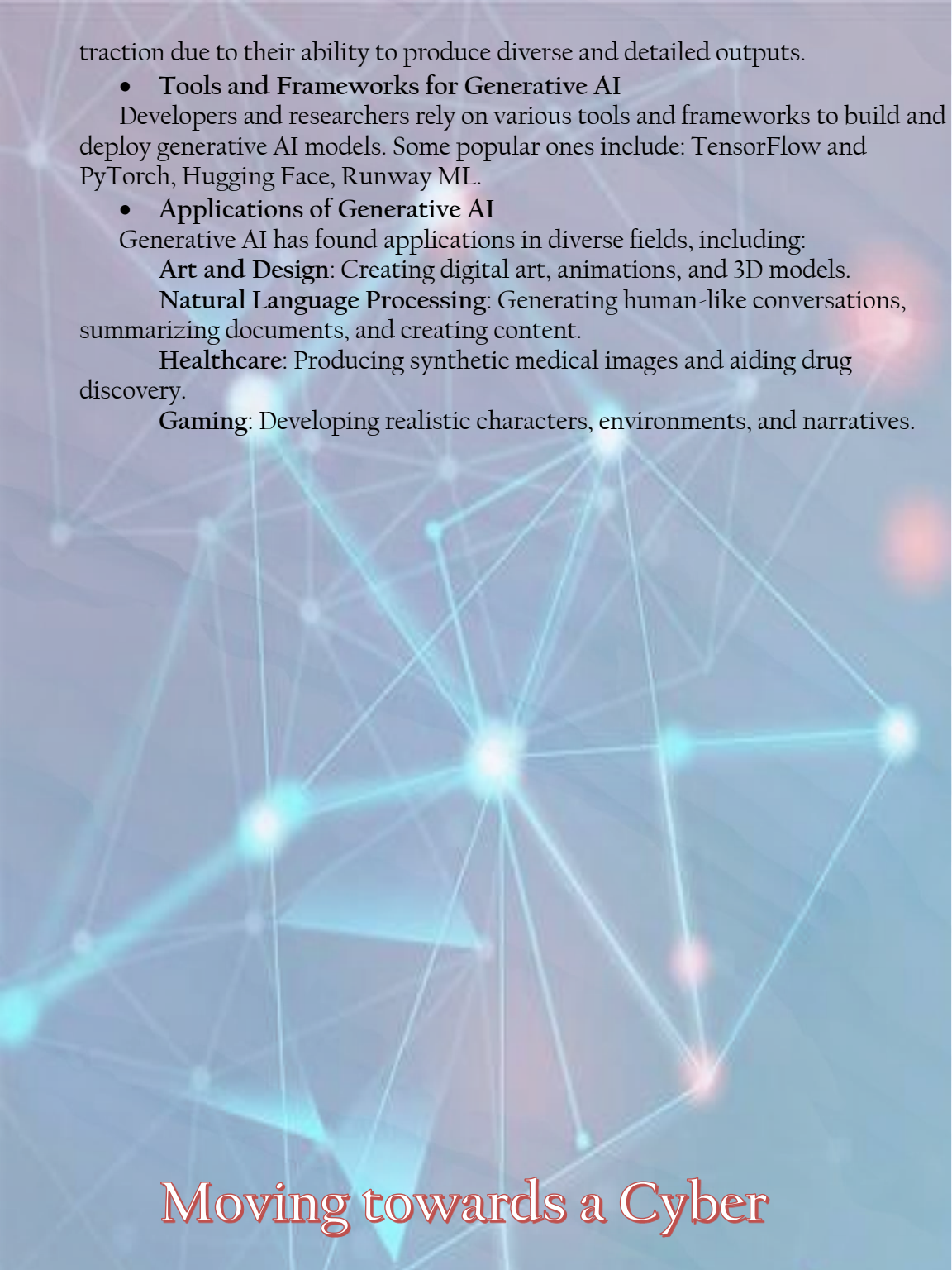
Generative AI has found applications in diverse fields, including:

Art and Design: Creating digital art, animations, and 3D models.

Natural Language Processing: Generating human-like conversations, summarizing documents, and creating content.

Healthcare: Producing synthetic medical images and aiding drug discovery.

Gaming: Developing realistic characters, environments, and narratives.



Secured India

India's rapid digitization has transformed everyday life across urban and rural landscapes. With over 800 million internet users and a booming digital economy, the country is experiencing an unprecedented shift toward online platforms. Services such as UPI payments, online banking, social media, e-commerce, and digital public services have penetrated deep into the Indian masses. While this digital growth brings convenience and economic benefits, it also exposes users to a rising wave of cyber threats. Attacks such as phishing, malware, identity theft, ransomware, and social engineering scams have become increasingly common. Alarmingly, a significant portion of the population still lacks basic cybersecurity knowledge, making them vulnerable targets.

To combat this growing menace, the Indian government has implemented several initiatives to build cyber resilience. CERT-In (Indian Computer Emergency Response Team) is actively monitoring threats and responding to incidents. The introduction of the Digital Personal Data Protection Act, along with efforts from institutions like the National Cyber Coordination Centre (NCCC), reflects India's commitment to strengthening cybersecurity infrastructure. Campaigns like Cyber Jagrukta Diwas are helping spread awareness among students, professionals, and citizens alike. Educational institutions are also beginning to incorporate cybersecurity basics into their curriculum, fostering a generation that is more cyber-aware and responsible.

Moreover, India's cybersecurity market is on the rise, projected to reach over $3.5 billion by 2027. This growth is not only opening up lucrative career opportunities in fields such as ethical hacking, cybersecurity law, incident response, threat intelligence, and AI-based security but also fuelling a surge in cybersecurity startups. These startups are developing indigenous solutions that are cost-effective and tailored to local needs, ranging from antivirus tools to end-to-end encryption apps and identity protection services.

As the country continues its journey toward a digitally empowered society, ensuring cybersecurity becomes not just a technical necessity but a societal priority. Future policies must emphasize digital literacy, data protection, and robust legal frameworks. Equally important is empowering citizens with the knowledge to recognize and resist online threats. By investing in awareness, technology, and skilled manpower, India can build a secure digital ecosystem that

supports innovation, safeguards privacy, and protects national interest. The rise of cybersecurity in India is both a challenge and an opportunity—one that must be seized with vision and responsibility.

-By Akhilesh (CE Student)

Empowering AI: The Rise of Offline Mobile LLMs

Imagine being able to pull up the power of an incredibly smart AI right in your pocket—no internet needed. It's like having your own personal assistant, capable of understanding and generating text, solving problems, and offering insights wherever you go. That's what offline mobile Large Language Models (LLMs) promise to deliver. These technologies are changing how we interact with AI, and they're making things like privacy, accessibility, and cost more manageable. So, let's take a deeper look at how this all works and why it matters.

- What Are Offline Mobile LLMs?

You've probably heard of LLMs like GPT or Bard—those AI models that can write essays, answer questions, and chat with you. Traditionally, these models have been huge and required massive servers in the cloud to function. But thanks to some cool breakthroughs, we now have smaller versions of these models that can run right on your smartphone. The magic happens through smart optimizations—like pruning and quantization—that reduce the model size while still keeping most of its power intact. So, you can have the ability of a super-smart AI in your pocket, and it can run offline, no Wi-Fi required.

- How Do Offline Mobile LLMs Work?

Here's the thing—running a powerful AI model like this on a small device seems like a tough challenge, but it's all about smart design and the right hardware. Let me walk you through it:

Model Optimization: Big AI models typically have billions of parameters, which is what makes them so powerful but also so big. Think of parameters like ingredients in a recipe. The more ingredients you have, the more complex and flavorful the dish can be. In the case of AI, the more parameters there are, the more "knowledge" the model can store and the more accurately it can understand and generate text. However, just like a dish with too many ingredients might be hard to cook and require more space in the kitchen, a model with too many parameters takes up a lot of space and computational power. By using techniques like pruning

(removing unnecessary parts of the model) and quantization (reducing the precision of numbers used in calculations), we can "trim" down the recipe without losing much of its flavor. For example, a model like Gemma 2:2B can be optimized to run on a phone while still offering many of the capabilities of the full-sized version.
On-Device Processing: Today's smartphones are packed with some pretty impressive chips like NPUs (Neural Processing Units) or GPUs (Graphics Processing Units) designed for AI tasks. These chips handle complex computations locally on the device, so you're not sending data to a server in the cloud and waiting for a response. This means everything happens faster, and it stays private—your data never leaves your phone.

Edge AI Libraries: There are some great frameworks, like TensorFlow Lite and PyTorch Mobile, that help make these models even more efficient on mobile devices. These tools help reduce the resources the models need, making sure they work smoothly without putting too much strain on the phone.
Incremental Updates: To keep things fresh, offline models don't need huge, bulky updates. Instead, updates come as small patches that can be downloaded when the device is online and then applied locally, so you don't have to rely on the cloud to stay current.

- Powering Offline Mobile LLMs: The Role of Snapdragon's Latest Processors

Now, let's talk about the hardware that makes all this magic happen. Qualcomm's Snapdragon processors are at the heart of many mobile devices today, and they're a game changer when it comes to running offline LLMs. With each new generation, these processors are becoming better at handling AI tasks directly on the phone.

Take the Snapdragon 8 Gen 2 for example—it's got a super-powerful AI Engine and specialized components like the Hexagon DSP and Adreno GPU that are perfect for AI tasks. These chips allow offline models to run smoothly without draining your battery. It's thanks to these processors that phones can handle the heavy lifting of AI in real time, making offline LLMs faster and more efficient than ever before.

So, whether you're on a hike in the mountains or sitting in a plane without Wi-Fi, Snapdragon's processors make sure that your LLM can still process information quickly and accurately. No need to rely on a distant server to answer your questions—the power is right in your hands.

- The Road Ahead

Of course, there are still challenges. Battery life and computing power are ongoing hurdles, but the good news is that technology is advancing quickly. The next generation of mobile chips and AI optimizations will continue to make offline mobile LLMs even more powerful and efficient.

- Why It Matters

Offline mobile LLMs are changing the game—they're not just about convenience, they're about empowerment. They make AI personal, private, and accessible to everyone, wherever you are. So, whether you're solving problems in the field, staying productive on the go, or simply enjoying the peace of mind that comes with having AI work offline, these models are here to stay. And the best part? It's all happening in your pocket, untethered from the cloud.

-By Rushikesh (CE Student)

INNOVATIONS 2025
A National Level Project Competition

Innovations is a national-level project competition conducted annually by the CSI Student Chapter of SIES Graduate School of Technology. It serves as a platform for young minds to take this window of opportunity and bring forward their innovative ideas in the form form of projects. Every year, teams from various institutes all over India participate in Innovations in large numbers.

This year, the **13th edition of INNOVATIONS** was conducted on **29th March 2025.** This year we received over 45+ abstract submissions out of which 27 abstracts were selected for the competition after carefully analyzing each project based on parameters such as novelty, effectiveness, positive impact on society, and scalability.

The projects were from various domains such as Computer, IT, Electronics, the Internet of Things, and Mechanics.

The chief guest for the Event was Mr.Krishnarao Ghakkan -Executive Delivery Leadership & Strategic Partnership. HealthTech

The Key note speaker was Kishor Chaturani Chief - Product Architect at Tata Consultancy Services

The Judges for the event were as follows:

Panel 1: Gauri Krishnamoorthy: Product Manager at Jio Platforms Limited Ms.Khushi Kapoor : TCS, specializing in Android and web development

Panel 2: Mr.Abhishek Tiwari : Startup Founder of Help for coders Ms. Thirukarthika Murugan :AI Engineer - HTC Global Services

Winners:


CSI
PARTICIPATION
CERTIFICATE
Proudly Presented To
AAHANA BOBADE
In recognition of their participation in Innovations '25,
A National-Level Project Presentation Competition held on 29.03.2025
at SIES Graduate School of Technology, Nerul, Navi Mumbai.
Prof. Namrata Patel
CSI SIES GST SBC
Dr. Aparna Bannore
Vice Principal
Dr. K. Lakshmi Sudha
Principal


CSI
SIES
CERTIFICATE
OF ACHIVEMENT
This certificate is presented to
Alisha Fernandes
for securing 1st place in Innovations 2025
, A National-Level Project Presentation Competition held on
29th March 2025 at SIES Graduate School of Technology, Nerul,
Navi Mumbai.
Prof. Namrata Patel
CSI SIES-GST SBC
Dr. Aparna Bannore
Vice Principal
Dr. K. Lakshmi Sudha
Principal

ENIGMA
A Nationallevel Competition

Enigma 3.0, a National Level Poster Presentation Competition organized by CSI Student Chapter of SIES GST was conducted on the 28th of January 2025. The event aimed to raise awareness about digital security and web development practices, emphasizing the importance of data privacy in today's interconnected world. Over 45 teams with 150+ participants from across India competed to showcase their innovative web development skills.

With the growing dependence on online platforms, safeguarding digital assets has become crucial. In response, the CSI SIESGST evolved its competition format from a Poster Presentation to an advanced Web Development Competition, adapting to the fast-paced nature of technology. We were honored to have **Mr. Akeel Ahmad Wani**, Security Analyst at ICICI Bank and a key member of *Cyber Secured India (CSI)*, as the esteemed Chief Guest for the event. Mr. Wani's extensive experience in cybersecurity and his contributions to promoting digital security made his presence invaluable to the event.

The competition also featured a distinguished panel of judges:

- **Mr. Kanda Kumaran Thevar**, Co-Founder of CodScripto and Professor at

Bharati Vidyapeeth

- **Mr. M. Ganeshraman Pillai**, Former Systems and Network Engineer, currently an Internship Coordinator at CodScripto
- **Mr. Pravin Guruputhiran**, Blockchain Expert and Engineer at TCS
- **Mr. Faizan Kalam**, Cyber Security Trainer at Virtual Cyber Labs

The panel evaluated the projects based on technical execution, creativity, and societal impact, fostering innovation while emphasizing the need for robust digital security. This competition not only encouraged technical excellence but also reinforced the importance of securing digital platforms for a safer future.

WINNERS


SIES
Graduate School of Technology
NAAC A+
CSI
CERTIFICATE
OF ACHIEVEMENT
This certificate is presented to
Atharva Gourshete
for securing First Position in ENIGMA 3.0 WebVerse Hackathon on 28.01.2025.
Prof. Namrata Patel
CSI SIESGST SBC
Dr. Aparna Bannore
Vice Principal & HoD
Dr. K. Lakshmi Sudha
Principal

Parent Articles

Social Responsibility of Youth : The Power to Build a Better Tomorrow

In today's rapidly advancing world, where technology and innovation are reshaping our future, there lies an even greater need for compassion, empathy, and social responsibility. And who better to lead this change than the youth , the heartbeat of our nation.

Youth is not just an age group; it is a powerful force. With energy, creativity, and fresh ideas, young minds can bring about meaningful transformations in society. But power comes with responsibility - the responsibility to uplift others, protect our environment, and stand up for what is right. As engineering students, you are already shaping the future through your knowledge and skills. But imagine the impact if each one of you also committed to giving back to society ; be it by educating underprivileged children, helping clean your surroundings, developing low-cost innovations for the poor, or simply spreading awareness about important issues like mental health, gender equality, and sustainability.

We often wait for the "right time" or for someone else to start. But the truth is, change begins with YOU. Each small step , a weekend spent teaching slum kids, building an app for social good, organizing a donation drive, or mentoring someone that contributes to a better world.India doesn't need superheroes. It needs responsible youth who care. If we truly want to see a cleaner, kinder, and stronger India, we must stop being bystanders and become active participants in social change.

Let this be a wake-up call. Let us not just chase success for ourselves but use our talent and education to light up someone else's path. Your degree can give you a career , but your values and actions will define your legacy. Be the change. Be the difference. Be the reason someone believes in good again.

- Priyanka Bobade
Parent of Aahana Bobade (Batch 2021-25)

Student Achievements

SPORTS ACHIEVEMENTS

Sr. No.	Name	Achievement	National/Zonal
1	Sanjana Mohite	Winner Kabbaddi	MU zonal
2	Purva Ambre	Runnerup Badminton	MU zonal
3	Adhya Viju	Winner Badminton	Thane Zonal

TECHNICAL ACHIEVEMENTS

Sr. No.	Name	Achievement	National/Zonal
1	Nadaa Ahmed & Ashika Nadar	won Third prize	Zonal
2	and Ms. Nandana Anil	1st prize Anvenshana	Mumbai Regional
3	KARTHIKEYAN IYER	AICTE Internship	Zonal
4	Surve,Vaishnavi Pradhan & Manasvi Patil	1 st prize in 24 hr TYNET 2025	International Girls Hackathon
5	Saniya Nande & Nandana Anil	Presented Project	National-level competition **Anveshna**
6	Fardeen Sayed & Roshan Ajith	Chakravyuha CTF	MU Zonal
7	Vaibhav Kachare,Ahana Bobde ,Pawan Kamat	won first prize in Texter Paper presentation	College
8	Harirajan	ruuner up in Terna	MU Zonal

Acknowledgement

We would like to extend our sincere gratitude to our management for constant support. We would also like to thank our Principal, Dr. Lakshmisudha K. for his constant encouragement.

We would also like to thank our HOD Dr. Aparna Bannore, Faculty Incharge, Prof. Smruti V. for her support and motivations, shaping Techniz and make this magazine a success.

Lastly we would like to thank all the faculty members, students, alumni and all stakeholders for their valuable inputs and contributing for the final shape of the magazine.

The Editorial Board
- Techniz