# MEENAKSHI SUNDARARAJAN ENGINEERING COLLEGE

(An Autonomous Institution)

# AlgoPulse-X

**Capturing the rhythm of algorithms and innovation**

*February, 2025*

# With Sincere Gratitude

We express our heartfelt appreciation to our esteemed Secretary, Mr. N. Sreekanth Sir, our respected Principal, Mr. S. V. Saravanan Sir, and the visionary Head of the Computer Science Department, Dr. S. Aarthi Ma'am, for their unwavering support and commitment to fostering extracurricular excellence at our college.
Their encouragement has not only empowered us to explore our talents but has also shaped us into confident leaders, critical thinkers, and passionate innovators. Through their guidance, we continue to grow beyond academics, creating experiences that inspire, challenge, and shape our future.
Thank you for believing in us and for being the pillars of our journey!

# The Inkspire Corner: Student Voices Unleashed

## *The Future is Here: AI and Data Analysis Are Reshaping Our World*

*Ilakiya Emily J (CSE-II year)*

Imagine a world where your computer predicts your needs before you even think about them. Sounds like a sci-fi plot? Not anymore—AI and data analytics are making it a reality.

We grew up watching futuristic AI in movies—whether it was J.A.R.V.I.S. from Iron Man or the eerie AI in The Matrix. Fast forward to today, and while we don't have fully sentient robots (yet), digital assistants like Siri, Alexa, and Google Assistant are bringing us closer to that vision.

At the heart of AI's magic is data. Just like Minority Report imagined predicting crimes before they happen, data analytics is already forecasting stock trends, consumer behavior, and even health risks. Netflix guesses your next binge, Spotify curates your playlists, and AI in healthcare is diagnosing diseases faster than human doctors.

**AI is also revolutionizing industries:**

- Healthcare – AI can detect diseases, personalize treatments, and improve diagnostics.
- Finance – AI predicts market trends and flags fraudulent transactions.
- Education – Intelligent tutoring systems are making AI the ultimate personalized teacher.
- Retail – Virtual assistants and AI-powered shopping experiences are redefining how people buy products.


But AI isn't just about convenience; it's also tackling global challenges. AI helps predict climate change patterns, track pandemics, and optimize disaster responses. It is transforming problem-solving on a global scale.

Yet, with all this power, we must be careful. AI movies love warning us about dystopian futures—The Terminator, Ex Machina, Her. Ethical concerns like data privacy, algorithm bias, and job automation need serious attention. The goal is to ensure AI works for us, not against us.

As future innovators, we must embrace AI while staying mindful of its impact. Learning Python, machine learning, and data science, participating in hackathons, and staying informed about AI ethics are key steps toward shaping this future.

The AI revolution isn't coming—it's already here. The question is: Are you ready to be part of it?

# The Digital Digest: Random Internet Reads

## *From Algorithms to Atoms: NVIDIA ALCHEMI NIM Catalyzes Sustainable Materials Research for EV Batteries, Solar Panels and More*

***The new microservice accelerates novel materials discovery to help developers and researchers speed the renewable energy transition.***

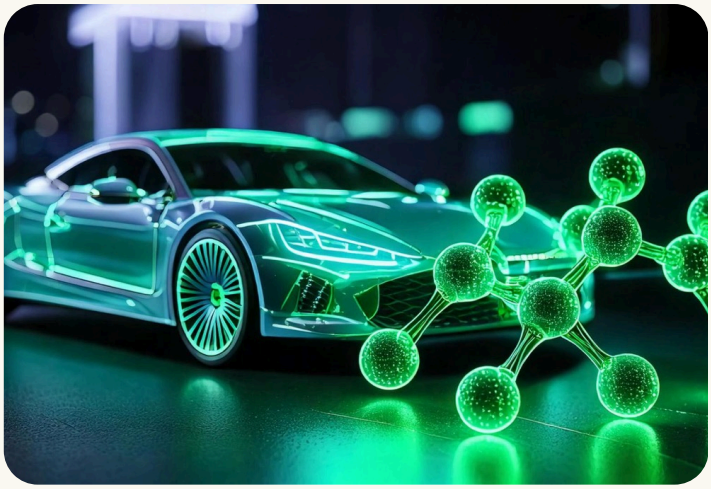
*November 18, 2024 by Geetika Gupta*

More than 96% of all manufactured goods — ranging from everyday products, like laundry detergent and food packaging, to advanced industrial components, such as semiconductors, batteries and solar panels — rely on chemicals that cannot be replaced with alternative materials.

With AI and the latest technological advancements, researchers and developers are studying ways to create novel materials that could address the world's toughest challenges, such as energy storage and environmental remediation.

Announced today at the Supercomputing 2024 conference in Atlanta, the NVIDIA ALCHEMI NIM microservice accelerates such research by optimizing AI inference for chemical simulations that could lead to more efficient and sustainable materials to support the renewable energy transition.

It's one of the many ways NVIDIA is supporting researchers, developers and enterprises to boost energy and resource efficiency in their workflows, including to meet requirements aligned with the global Net Zero Initiative.



NVIDIA ALCHEMI for Material and Chemical Simulations

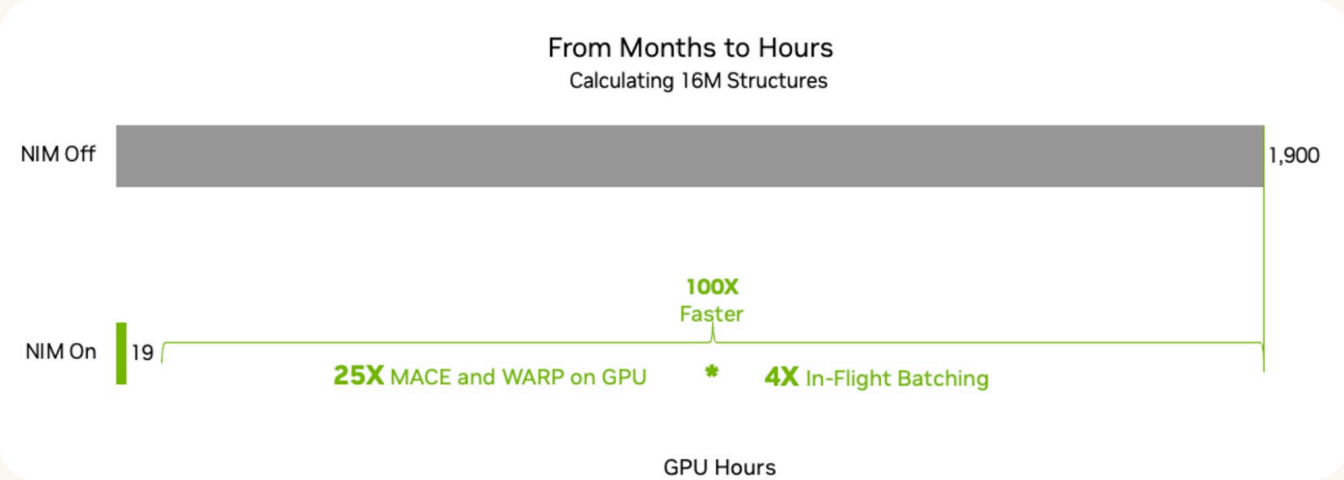
Exploring the universe of potential materials, using the nearly infinite combinations of chemicals — each with unique characteristics — can be extremely complex and time consuming. Novel materials are typically discovered through laborious, trial-and-error synthesis and testing in a traditional lab.

Many of today's plastics, for example, are still based on material discoveries made in the mid-1900s.

More recently, AI has emerged as a promising accelerant for chemicals and materials innovation.

With the new ALCHEMI NIM microservice, researchers can test chemical compounds and material stability in simulation, in a virtual AI lab, which reduces costs, energy consumption and time to discovery.

For example, running MACE-MP-0, a pretrained foundation model for materials chemistry, on an NVIDIA H100 Tensor Core GPU, the new NIM microservice speeds evaluations of a potential composition's simulated long-term stability 100x. The below figure shows a 25x speedup from using the NVIDIA Warp Python framework for high-performance simulation, followed by a 4x speedup with in-flight batching. All in all, evaluating 16 million structures would have taken months — with the NIM microservice, it can be done in just hours.




By letting scientists examine more structures in less time, the NIM microservice can boost research on materials for use with solar and electric batteries, for example, to bolster the renewable energy transition.

NVIDIA also plans to release NIM microservices that can be used to simulate the manufacturability of novel materials — to determine how they might be brought from test tubes into the real world in the form of batteries, solar panels, fertilizers, pesticides and other essential products that can contribute to a healthier, greener planet.

SES AI, a leading developer of lithium-metal batteries, is using the NVIDIA ALCHEMI NIM microservice with the AIMNet2 model to accelerate the identification of electrolyte materials used for electric vehicles.

“SES AI is dedicated to advancing lithium battery technology through AI-accelerated material discovery, using our Molecular Universe Project to explore and identify promising candidates for lithium metal electrolyte discovery,” said Qichao Hu, CEO of SES AI. “Using the ALCHEMI NIM microservice with AIMNet2 could drastically improve our ability to map molecular properties, reducing time and costs significantly and accelerating innovation.”

SES AI recently mapped 100,000 molecules in half a day, with the potential to achieve this in under an hour using ALCHEMI. This signals how the microservice is poised to have a transformative impact on material screening efficiency.

Looking ahead, SES AI aims to map the properties of up to 10 billion molecules within the next couple of years, pushing the boundaries of AI-driven, high-throughput discovery.

The new microservice will soon be available for researchers to test for free through the NVIDIA NGC catalog — be notified of ALCHEMI’s launch. It will also be downloadable from build.nvidia.com, and the production-grade NIM microservice will be offered through the NVIDIA AI Enterprise software platform.

Learn more about the NVIDIA ALCHEMI NIM microservice, and hear the latest on how AI and supercomputing are supercharging researchers and developers’ workflows by joining NVIDIA at SC24, running through Friday, Nov. 22.

# Beyond the Books: Club Events & Activities

## *EINSTEIN CHALLENGE*

On 12th February 2025, the Adyant Coding Club organized the "Einstein Challenge" at the ECE Seminar Hall. The event aimed to test participants' knowledge, explanation skills, and ability to think quickly under pressure.

The competition was structured into two rounds:

✓ Round 1 – Quiz Round: Teams participated in a multi-domain quiz, answering questions across various subjects. The top 10 teams with the highest scores advanced to the next round.

✓ Round 2 – The Einstein Challenge: Teams were given a specific topic and provided 1 minute 30 seconds of preparation time. After presenting their explanation, an expert panel conducted a rapid-fire Q&A session to assess their depth of understanding. The topics covered both technical and non-technical areas, challenging participants to think critically and articulate their ideas effectively.

The event received overwhelmingly positive feedback, with participants appreciating the engaging format and learning experience. The Einstein Challenge successfully highlighted teamwork, intellectual agility, and quick thinking, making it a truly memorable and impactful competition.


# Beyond the Books: Club Events & Activities

## *CODATHON*

25th February 2025, the Adyant Coding Club hosted the much-anticipated CODATHON, an event that brought together coding enthusiasts to showcase their Python skills in an exciting and competitive environment. The event was conducted on CodeCombat, a unique platform where coding determines survival!

**Event Overview**

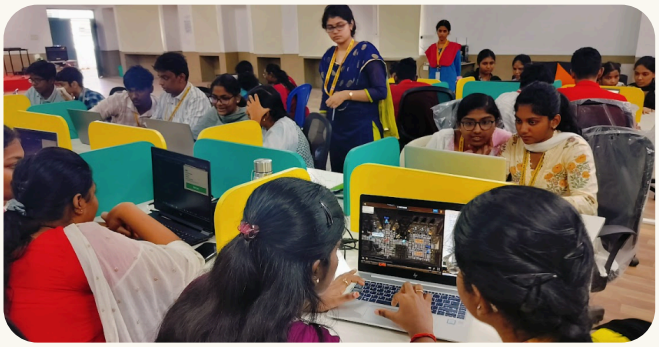
The challenge was simple yet thrilling—participants had to code their in-game soldier to collect gems, navigate obstacles, avoid traps, and battle enemies using Python. Each level increased in complexity, demanding quick thinking, logical reasoning, and efficient coding to advance.

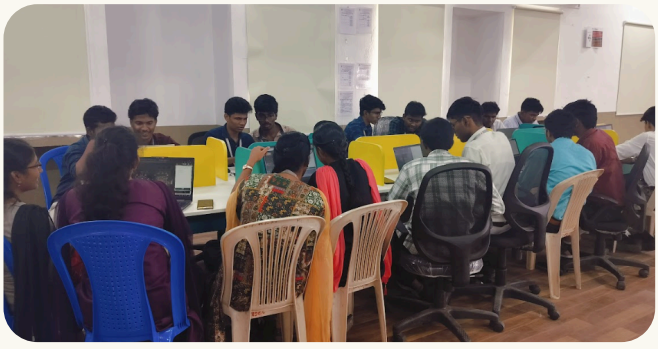
**The Competition**

✓ Coding for Survival – Every move and action was dictated by Python code, making strategic programming the key to success.

✓ Racing Against Time – The pressure intensified as participants raced through levels, solving challenges before time ran out.

✓ Leaderboard Battles – Competitors climbed the ranks, with every well-written line of code bringing them closer to victory.





# Beyond the Books: Club Events & Activities

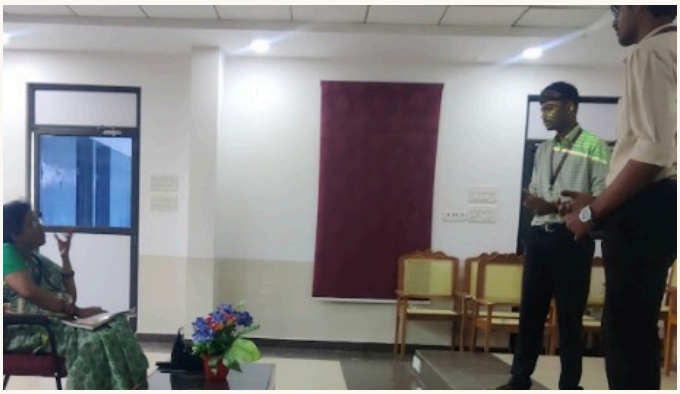
## *POSTER PRESENTATION*

The Poster Presentation event on Feb 27, 2025, allowed students to showcase creative project ideas through engaging posters. It aimed to foster innovation, enhance technical knowledge, and improve communication skills in an interactive, professional setting.

**Registration and Presentation Process:**
Participants registered by submitting poster designs with project details, methodologies.
On event day, they presented their posters to judges and answered questions from both judges & the audience.

**Evaluation criteria:**
✓ Originality & Innovation – Uniqueness and creativity.
✓ Practicality & Feasibility – Real-world applicability.
✓ Design & Visual Appeal – Organization and clarity.
✓ Presentation Skills – Effective communication.

**Impact and Key Takeaways:**
- Provided a platform for idea exchange and skill refinement.
- Encouraged critical thinking, problem-solving, and confident communication.
- Inspired creativity, collaboration, and continuous learning.
- Left participants with a memorable and enriching experience.




# Beyond the Books: Club Events & Activities

## *LONG TERM PROJECT- SMART IRRIGATION*

Our club is currently working on a **Smart Irrigation System**, aimed at automating the watering process using Arduino UNO and soil moisture sensors. This project focuses on optimizing water usage while ensuring plants receive the necessary hydration without human intervention.

In the initial phase, our team gathered system requirements, studied various irrigation techniques, aligned the field layout, and conducted a thorough simulation to assess the feasibility of the system. The simulation allowed us to evaluate how effectively the system can monitor soil moisture levels and control water distribution efficiently.

Through this process, we analyzed the best sensor placements, water flow control mechanisms, and power requirements for a smooth and sustainable irrigation system. The simulation results were carefully reviewed, and we are now awaiting approval before moving forward with the physical implementation.

Project Progress & Phases:

✓ Requirement Gathering – Identified system needs and key components.

✓ Field Alignment – Planned the irrigation layout for efficiency.

✓ Simulation Testing – Conducted virtual trials to refine the design.

✓ Analysis & Review – Evaluated performance and addressed challenges.

✓ Next Steps – Awaiting approval to begin hardware implementation.

This project showcases our commitment to sustainable technology, aiming to conserve water, reduce manual effort, and improve irrigation efficiency. We are excited to move forward with real-world testing and implementation.

# VALUE ADDED COURSES YEAR 1

## *BIOLOGY FOR ENGINEERS*

We recently attended a **Value Added Course on "Biology for Engineers,"** and I'm thrilled to share my experience. This program bridged the gap between **biology and engineering, providing a comprehensive understanding of biological principles and their applications in engineering.**

**Course Overview**
The course covered a range of topics, including:
✓ **Biomaterials** and their role in engineering applications.
✓ **Biomedical devices** and their impact on healthcare innovations.
✓ **Genetic engineering** and its significance in modern biotechnology.

**Guest Lecture**
The highlight of the course was a **guest lecture by Dr. Sharadha, a renowned expert in the field. She shared valuable insights and experiences, highlighting the latest advancements and trends in biology and engineering**.

**Learning Experience**
The sessions were engaging, featuring **interactive lectures, case studies, and group discussions**. This approach made the learning process more effective and encouraged us to explore new perspectives.

**Conclusion**
We gained **valuable insights** into how **biological concepts can be applied to engineering design, development, and problem-solving.** This course has not only enhanced my knowledge but also sparked new ideas and interests.



# VALUE ADDED COURSES YEAR 2

## *POWER BI*

Value Added Course on Power BI – Event Report
We recently completed a Value Added Course on Power BI, an insightful program that introduced us to the fundamentals of data visualization and business intelligence. This self-paced course, delivered through a series of informative video tutorials, guided us through the essential features and applications of Power BI.

**Course Overview**

The course covered a range of topics, including:

✓ Importing and cleaning data to ensure accuracy and consistency.

✓ Creating interactive dashboards to visualize key insights.

✓ Building dynamic reports to present data effectively.

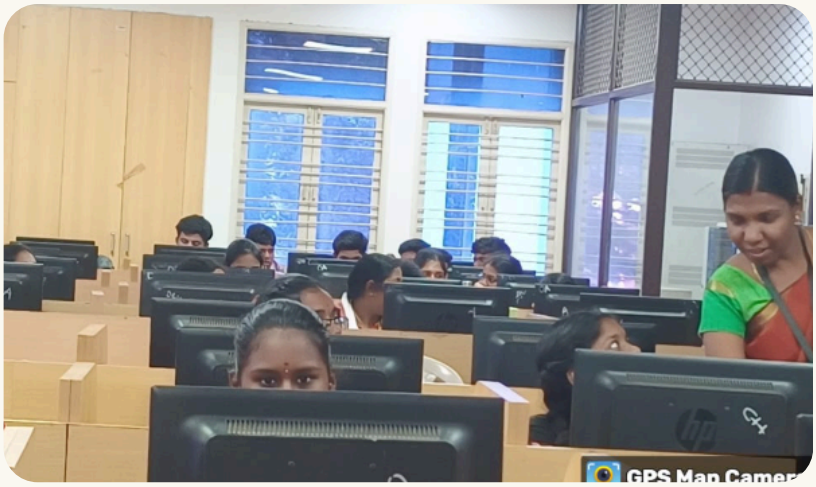
✓ Applying Power BI tools to analyze real-world datasets.

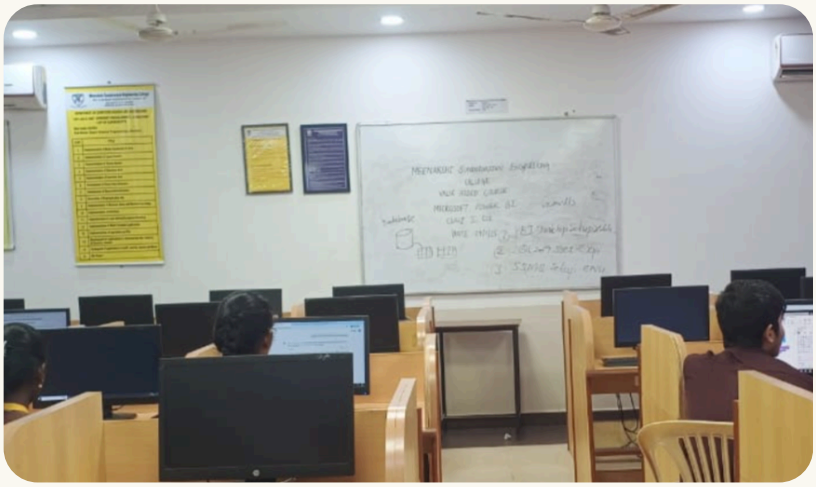
**Project Submission**

To reinforce our learning, we were required to apply our skills in a project, where we used Power BI to analyze data, generate reports, and create visual representations. This hands-on approach helped us understand the practical applications of Power BI in decision-making and business analytics.

**Conclusion**

This course provided us with a strong foundation in Power BI, allowing us to explore its vast capabilities in data analysis and visualization. The structured learning through video tutorials made it accessible and easy to follow, making it a great resource for students and professionals looking to develop data-driven insights.





# VALUE ADDED COURSES YEAR 3

## *WEB TECHNOLOGY*

A Value Added Course on Web Technology was conducted for 3rd-year students, providing an in-depth understanding of UI/UX, Frontend, and Backend development. Unlike traditional lectures, students themselves took charge of the sessions, presenting key concepts and demonstrating practical applications.

**Course Overview**

The course was structured into three key areas, with students delivering seminars on each topic:

✓ **UI/UX Design** – ***Seysanth & Ramya*** explained the fundamentals of user interface and user experience design, covering wireframing, prototyping, and intuitive design principles.

✓ **Frontend Development** – ***Chandan*** introduced HTML, CSS, and Bootstrap, focusing on building responsive and visually appealing web pages.

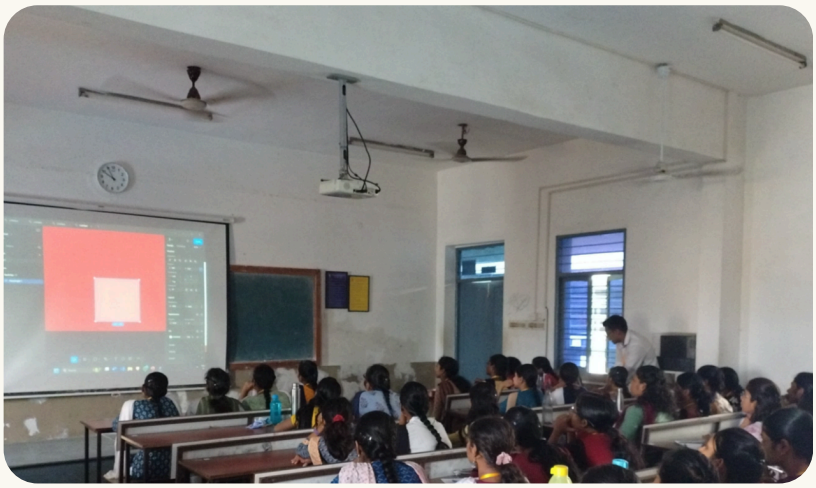
✓ **Backend Development** – ***Ganesh & Mohammed Abrar*** presented Flask, Django, and MongoDB, explaining backend logic, database management, and server-side scripting.

**Learning Experience**

By taking the lead in presenting topics, students not only enhanced their technical knowledge but also developed communication and teaching skills. The interactive nature of the course encouraged discussions and practical demonstrations, making it a highly engaging experience.

**Conclusion**

The Value Added Course on Web Technology provided students with hands-on exposure to modern web development technologies. This approach of peer-led seminars fostered collaborative learning, deeper subject understanding, and confidence-building, equipping participants with essential industry-ready skills



# Rising Stars: Showcasing Student Success

## *BRAIN STROMERS*

Brain Stormers, a thrilling Marvel/DC-themed showdown by the Product Development Club, put teams through two rounds of intense creative problem-solving. Team Web Spiders—**Ilakiya Emily J, Jessicaa V, and Mary Kanakam Oommen** from 2nd-year CSE—swung to second place with their brilliant ideas. Kudos to our champions! 🕸️💥🏆

## *BOLT HACK*

Bolt Hack—where innovation met AI! Team Web Spiders from 2nd-year CSE spun a brand-new college website using just prompts in Bolt.AI—no coding, just creativity! Whether a tech wizard or total newbie, everyone built a fully functional, responsive site in minutes. Kudos to **Ilakiya Emily J, Mary Kanakam Oommen, and Jessicaa V** for web-weaving their way to first runner-up! 🕸️🚀💻

# Rising Stars: Showcasing Student Success

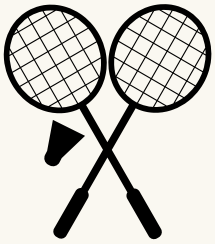
## *Einstein Challenge*

**Zaara, Sharon, and Jeyavarshini** from 2nd-year CSE cracked the Einstein Challenge, proving their genius with quick thinking and sharp explanations! 🏆⚡ With brains faster than a lightning round, they clinched 3rd place in this intense battle of wits. Kudos to our champions! 🚀🧠

## *CARROM*

In a masterclass of flicks and strikes, **Sashong (4th yr)** and **Soundhar (2nd yr)** ruled the Carrom tournament, pocketing victory with precision and flair! 🎯🏆 Their unstoppable aim and sharp strategy made them the true kings of the board! 🔥👏

# Rising Stars: Showcasing Student Success



## *BADMINTON*

**Sharon Joyce (2nd year)** and **Shruthi (1st year, CSE B)** served up dominance, smashing through ECE, outplaying AIDS, and crushing MECH to seize the badminton championship! 🏆🏸 With unstoppable swings and a winning streak, they ruled the court like true champions!🔥💪

## *CHESS*

In a game of kings and checkmates, **Mohideen Abdul Aziz (3rd CSE), Allocious Franklin (1st CSE A), Shreeganth (3rd CSE)**, and **Mohammad Saif (2nd CSE)** outplayed the competition with masterful moves! ♟️🔥 Their strategic brilliance earned them the runners-up spot, proving that every move counts!🏆♟️🚀

# Rising Stars: Showcasing Student Success

## *CRICKET*

On 16th February, in a thrilling college practice match against Alpha Engineering College, **Pratik (2nd year)** swung for the stars and clinched the B**est Batsman medal!** 🏏🔥 With his bat doing all the talking, he turned Kolapakkam into his own run-scoring playground! 🏆💥

## *CRICKET*

With bats blazing and wickets tumbling, the cricket team's 11 warriors stormed to victory! 🏏🔥 Under the fearless **leadership of Captain Sashong (4th year, CSE)**, they turned the field into their battleground, delivering a power-packed performance that left no doubts—champions through and through! 🏆💪

# Rising Stars: Showcasing Student Success

## *TABLE TENNIS*

With lightning-fast reflexes and unstoppable smashes, **Mohammed Abrar (3rd year)** and **Yathindhra (4th year)** kept the table hot, finishing as runners-up! 🏓🔥 Their spin game was lethal, their precision unmatched—a rally well played! 🏆👏

## *INTER COLLEGE SYMPOSIUM*

**Gopika (2nd year)** made victory whisper her name, securing first place at SRM College's Whisper Challenge! 🏆🔥 With confidence and skill, she outshone the competition and proved she's a champion through and through! 👑🎉

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🚀 ***Exciting Stories Await! Catch Us in Next Month's Edition!***

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***Thanks for reading—see you in the next debug session!*** 💻🚀