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SAINIK

SRC AI NEXUS FOR INNOVATION & KNOWLEDGE

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Learn. Create. Inspire. Transform.



"The true measure of education lies not merely in what we know, but in what we create and how we transform society."

-Prof. B. Santhi ,Dean, SRC

It gives me immense pleasure to present the fourth issue of SAINIK – SRC AI Nexus for Innovation & Knowledge, showcasing the spirit of innovation, creativity, and technological excellence at Srinivasa Ramanujan Centre, SASTRA Deemed University.

In an era where Artificial Intelligence is transforming every sphere of life, our vision at SRC is to nurture not just learners of technology, but creators, innovators, and responsible leaders of tomorrow.

This edition highlights our journey from ideas to impactful applications through AI-enabled academic administration, intelligent question paper preparation, and innovative student projects. The MEDHA initiative, supported by Tata Advanced Systems Limited (TASL) through its CSR programme, extends our commitment to empowering school mathematics teachers with AI-driven educational tools. Our NVIDIA DGX Spark infrastructure further strengthens opportunities for advanced research, experiential learning, and interdisciplinary innovation.

I firmly believe that the true power of technology lies in making knowledge accessible, empowering people, and creating meaningful societal impact. Our goal is to transform SRC into a vibrant ecosystem where curiosity inspires research, learning leads to innovation, and innovation serves society.

To our students, I offer a simple message: "Do not merely use technology—create it. Do not wait for opportunities—build them. Let every challenge become an opportunity to innovate."

I congratulate our dedicated faculty, enthusiastic students, research scholars, and the SAINIK editorial team for their collective efforts in advancing this vision.

May SAINIK continue to inspire us to move from learning to discovery, from innovation to impact, and from individual excellence to collective progress.

"Let curiosity inspire discovery, knowledge drive innovation, and innovation serve humanity."

IS IT INTELLIGENCE OR JUST A REALLY GOOD GUESS?

-Pavish S – II BTech CSE

AI can explain quantum physics and write C++ code in seconds. Our first assumption would be that it understands physics, but how does it work? Many AI chatbots are trained to predict the next token, one after the other. Large Language Models (LLMs) use Transformer neural networks to learn patterns in data and estimate what comes next. Try this as an example: "The Sun rises in ..." East? West? Sandwich? The context makes some predictions more likely than others. Can predictions create intelligence? AI can code, break down complex ideas, solve problems, etc., and yet, even a convincing answer can be wrong. Confidence in its answer does not guarantee the truth. Think about it: if an AI solves a problem in a new way, is it reasoning or applying patterns learned from previous examples?

How much intelligence can emerge from predicting what comes next?

AI INITIATIVES AT SRC

DEPARTMENT OF COMPUTER SCIENCE

1.Digitializing CIA Examination Process at SRC Campus Using AI Models

-N.Sivakumar, Technical Assistant, CSE Department



Introduction

The Continuous Internal Assessment (CIA) examination is an important part of academic evaluation at the Srinivasa Ramanujan Centre (SRC), Kumbakonam. Conducting it for a large number of students involves hall planning, communication of hall details, attendance, invigilation, report generation, verification, and documentation. To manage this, the Department of CSE at SRC has implemented a computerized CIA process through an application developed by the SRC CSE technical team using AI models. Students scan a QR code to get their hall details, invigilators record attendance in the application, and attendance reports are generated automatically within the prescribed time. CIA coordinators can view the reports online and download them in the required format.

Digital CIA Examination Process

Hall details are provided through a QR code instead of printed hall plans. Students scan it on their mobile devices to find their examination hall. During the examination, invigilators record attendance in the application, and the system generates the reports automatically.

This has contributed substantially to paperless administration, saving an estimated 15,000 sheets of paper and 15 toner cartridges per academic year.

AI-Enabled Architecture and Workflow

The application can be enhanced by adding an AI intelligence layer between the examination database and the reporting system: Student Layer → QR/Hall Plan Module → Examination Application → Attendance Database → AI/ML Intelligence Layer → CIA Coordinator Dashboard → Reports and Analytics.The architecture follows the principle: Capture → Store → Validate → Analyze → Alert → Human Verification → Report

Benefits of AI-Enabled Digitalization

Automated validation and report checking can reduce repetitive work for coordinators and invigilators, and can identify inconsistencies before reports are finalized. AI-generated summaries and anomaly alerts give coordinators useful information for verification and decision-making

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Historical CIA data can be used to understand participation and attendance trends, subject to access control and institutional data-protection policies.

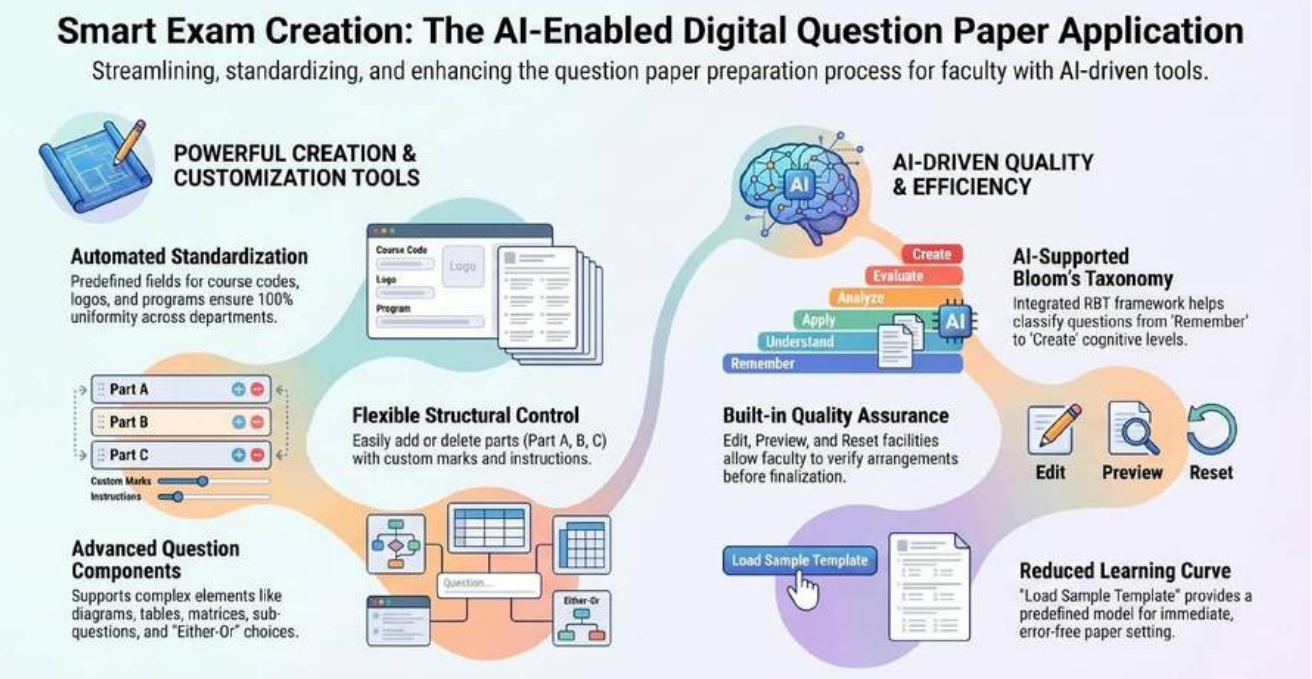
Conclusion

Digitalizing the CIA examination process is an important step toward efficient, paperless, technology-enabled academic administration at SRC.

The vision is a Smart AI-Enabled CIA Examination Management System that combines digital examination processes with responsible AI, while retaining human supervision and institutional control. The initiative was developed by N.sivakumar and guided by the Dean, SRC, Dr. B. Santhi, whose support and encouragement contributed to the implementation.

2.AI-Enabled Digital Question Paper Setting Application for Continuous Internal Assessment Examinations

-Dr.B.Santhi ,Dean,SRC and R.Mahesh priya ,Ph.D Research Scholar



Introduction

As part of the continuous efforts to digitalize academic and examination processes at the Srinivasa Ramanujan Centre (SRC), SASTRA Deemed University, an AI-enabled Digital Question Paper Setting Application has been developed to simplify and standardize the preparation of question papers for Continuous Internal Assessment (CIA) examinations. It is available at https://cia-beta.vercel.app/ and was developed during the current semester by Dr. B. Santhi, Dean (SRC), and R. Mahesh Priya, SRC Ph.D. Research Scholar, to give faculty members a simple, efficient, structured and user-friendly platform for preparing CIA question papers. A large number of SRC campus faculty members are already using it to set question papers for their courses, showing

Major Features

Faculty members can enter the Institution/School name, Course Code, Course Name, Duration of the Examination, Maximum Marks, Month and Year of Examination, University/Institution Logo, Semester, Examination title (First, Second or Third CIA), and select single or multiple programmes. The multiple programme option is useful when the same course is offered to more than one programme, as the same question paper need not be prepared separately. The flexible Exam Structure module lets faculty create multiple sections or parts, such as Part A, B, C and D, using the ADD and DELETE options..

AI-Supported Preparation

The application includes Revised Bloom's Taxonomy (RBT) options (Remember, Understand, Apply, Analyze, Evaluate and Create), encouraging faculty to consider the cognitive level of each question.The Load Sample Template option provides a predefined model of the detailed question paper structure, which reduces the learning curve and promotes consistency among question papers prepared by different faculty members.

Question Entry, Edit and Preview

The ADD option for individual questions lets faculty build more comprehensive questions by adding diagrams, tables, matrices and sub-questions. The EITHEROR option is useful when students must answer one question from a pair or choice. The EDIT facility allows questions and examination details to be modified after entry, PREVIEW lets faculty inspect the paper before finalizing it, and RESET clears the entered information to start afresh.

Benefits

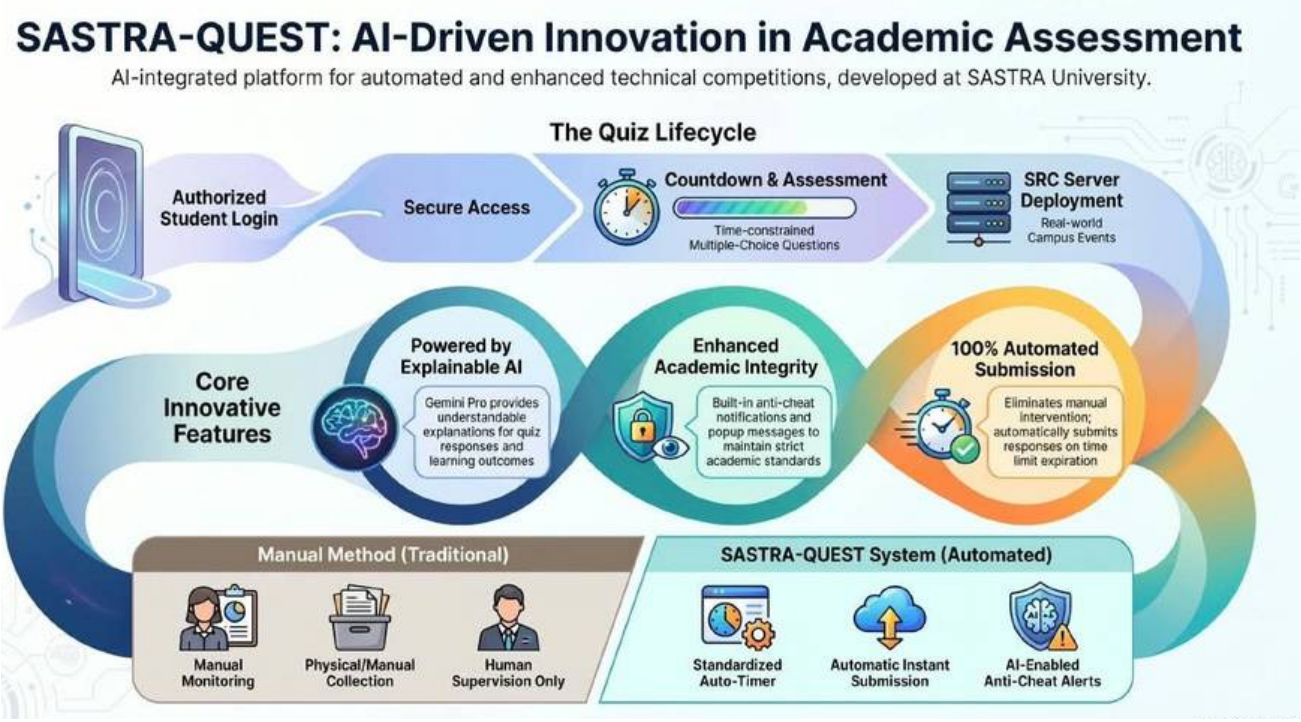
The application reduces manual effort, saves time, standardizes formatting, reduces formatting-related errors, supports common question papers for multiple programmes, and offers a simple interface that needs no advanced technical knowledge.Avoids repeated work when the same course is offered to more than one programme.Makes corrections easy with the EDIT and RESET options, without re-typing the whole paper.Lets faculty check the final layout with PREVIEW before the paper is finalized.Is available through a web interface, so faculty members can prepare question papers without installing any software.

Conclusion

By bringing formatting, section creation and repeated corrections into a single digital platform, the application lets faculty concentrate more on the academic quality and appropriateness of questions. Overall, this initiative is a significant step towards a smart, technology-enabled and AI-supported examination ecosystem at SRC.

3.AI-Based Online Quiz Competition Application Using Explainable AI with Gemini Pro

-Mr.Arikaran III-Bsc CS



Introduction

To encourage innovation and application-oriented learning among students, Mr. Arikaran (Reg. No. 227171009), a final year B.Sc. Computer Science student, has developed an online quiz competition application using Artificial Intelligence and Explainable AI techniques with Gemini Pro. The application gives participants a structured, time-controlled and user-friendly platform. It has been deployed on the SRC server and is being used to conduct technical events and quiz competitions.

Objectives

The application aims to provide an online platform for quiz competitions with multiple-choice assessments, and to automate the timing and submission process. It gives controlled access through student login credentials and promotes academic integrity through anti-cheating notifications. It also explores the practical use of Explainable AI with Gemini Pro and gives students hands-on experience in developing and deploying AI-enabled applications.

Major Features

Only authorized participants can enter the competition, through a student login. The quiz consists of multiple-choice questions, and a countdown timer before the start lets participants prepare. All participants must finish within a fixed time limit, and when it expires the responses are submitted automatically, which removes manual submission and keeps things uniform for everyone. Anti-cheating messages and popup notifications remind students to follow the rules during the competition.

Explainable AI Using Gemini Pro

The application uses Gemini Pro with an emphasis on Explainable AI. This makes it possible to present understandable explanations related to quiz responses and learning outcomes.

Deployment and Use in Technical Events

The application has been deployed on the SRC server and is used for online quiz competitions within the campus. The process runs from student login, pre-timer, quiz questions and time monitoring to answer submission and automatic submission. This reduces manual intervention and a structured way to conduct online competitions.

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Student Innovation

The project shows how an undergraduate student can apply Artificial Intelligence, Explainable AI, web development and server deployment together. Mr. Arikaran has turned his technical knowledge into a working application that is actually used in technical events, not just built as an academic project.

Outcomes

The application has led to effective conduct of online quiz competitions, controlled access through login authentication, automatic submission after the stipulated time. Participants have become more aware of academic integrity through the anti-cheating notifications and have gained practical exposure to AI and Explainable AI.It also stands as a successful deployment of a student-developed application on the SRC server, applying classroom knowledge to a real requirement..

Scope for Future Enhancement

The application has significant scope for future development. An editable question bank can allow departments to update questions without changing the code, and the platform can be expanded to include subjects such as Mathematics, Commerce, and General Awareness. A live leaderboard and detailed performance reports can make assessments more engaging and useful. The Explainable AI feature can also be improved by providing short explanations for answers, helping students understand their mistakes. With stronger server capacity, the platform can support larger groups, inter-department competitions, and inter-college events, making it a common assessment platform across SRC.

Conclusion

The application is a commendable example of student innovation and application-oriented learning. Its deployment on the SRC server and practical use in technical events show how undergraduate students can build useful solutions for real academic needs. Such initiatives should be encouraged to promote innovation, experimentation and technology-driven learning at SRC. It also provides students with valuable hands-on experience in developing, testing and implementing real-world applications. The project demonstrates the effective integration of programming skills with technologies to solve practical problems.

MEDHA – TASL Project Mathematics Education through Digital and Human-centred AI

Technical workshop on AI Tools for MathematicsTeachers

By

-Dr.B.Santhi,Dean



A Technical Workshop on AI Tools for Mathematics School Teachers was successfully conducted today at the Srinivasa Ramanujan Centre (SRC), SASTRA Deemed to be University, under the MEDHA Project. The workshop was organized with the objective of introducing school Mathematics teachers to emerging AI and digital tools that can support effective teaching, learning, content preparation, and visualization of mathematical concepts. A total of 48 school Mathematics teachers actively participated in the workshop.

Workshop Sessions

The first session, on AI Tools for Teaching and Learning, gave teachers hands-on experience with three tools. With NotebookLM, participants uploaded their own textbook chapters and lesson notes and generated source-grounded summaries, study guides, FAQs, quiz questions and audio overviews. They saw how it can prepare revision material while keeping responses tied to the uploaded content. With “”Overleaf””, they learned to typeset mathematical expressions, equations, worksheets and question papers in LaTeX, and to produce neat, professional, reusable documents that are hard to create in conventional word processors. With “”Napkin AI””, they turned plain text explanations into visual summaries, flowcharts, concept maps and infographics that can be used directly in classroom slides and handouts.

The second session focused on AI and digital tools for Mathematics concept visualization, with a detailed demonstration of GeoGebra.Participants were shown how to construct geometric figures, graph functions, and use sliders to vary parameters and observe the effect in real time. Examples included transformations, properties of triangles and circles, linear and quadratic graphs, and trigonometric functions.The session showed how such dynamic visualizations move students from memorizing formulas to exploring, conjecturing and verifying results themselves, making abstract ideas more concrete and engaging.

The third session featured a series of demonstration videos prepared by the MEDHA Project team members, showing how these tools can be applied in real classroom situations, from lesson planning and generating practice problems to creating visual explanations and assessments. After each demonstration, teachers practised the steps on their own devices, which kept the sessions interactive and practice-oriented. Dr. B. Santhi, Dean (SRC), served as the Resource Person and interacted ctively with the participants throughout the programme. She clarified their doubts and guided them on how to apply the tools in everyday teaching, including how to choose the right tool for a given topic and how to verify AI-generated content before using it with students.





Visit to Ramanujan Mathematics Museum

Before leaving the SRC campus, all participating teachers visited the Ramanujan Mathematics Museum at SASTRA SRC. The visit provided an additional opportunity for the teachers to explore mathematical exhibits and appreciate the connection between mathematical concepts, visualization, and experiential learning.

The workshop concluded successfully with enthusiastic participation from the teachers. The programme served as a significant step towards the MEDHA Project's broader objective of developing an AI-enabled ecosystem for Mathematics education, supported by reusable digital resources and innovative classroom practices.

As part of the workshop, manuals covering AI Tools for Learning, AI Tools for Teaching, and AI Tools for Mathematics Concept Visualization were shared with all the participating teachers. These manuals will serve as practical reference materials to support the teachers in applying the tools introduced during the workshop in their classroom teaching and learning activities.

Learning Outcomes of the Technical Workshop

At the end of the technical workshop, the participating Mathematics teachers will be able to:

1. Understand the role of AI in Mathematics educationand recognize its potential to enhance teaching, learning, and classroom engagement.

2. Use NotebookLM to organize, explore, summarize, and interact with learning resources for effective lesson preparation and student learning

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3. Use Overleaf for preparing structured Mathematics documents, worksheets, assignments, question papers, and other academic materials using LaTeX.

4. Use Napkin AI to convert ideas and textual descriptions into visual representations, diagrams, and presentation materials for Mathematics teaching. R

5. Use GeoGebra to dynamically visualize Mathematics concepts, particularly in geometry, algebra, graphs, functions, trigonometry, and other mathematical topics.

6. Integrate AI tools with conventional teaching methodsto make Mathematics learning more interactive, visual, and learner-centred.

7. Develop confidence in selecting appropriate AI toolsfor different teaching and learning requirements.

8. Apply the demonstrated AI and digital tools in classroom activities for concept explanation, resource preparation, visualization, and student engagement.

9. Use the manuals and demonstration resources provided during the workshop as reference materials for continued self-learning and classroom implementation.

10. Recognize the importance of responsible use of AI, including checking the accuracy of AI-generated content and using AI as a support for, rather than a replacement for, mathematical reasoning.

The workshop enables Mathematics teachers to confidently explore and integrate AI and digital tools such as NotebookLM, Overleaf, Napkin AI, and GeoGebra into their teaching practices, thereby promoting interactive, visual, and technology-enabled Mathematics learning for school students.



Workshop on DGX Spark for AI Models

-Dr.R.Raja Kumar,AP,CSE.

The SAINIK Association of Srinivasa Ramanujan Centre (SRC), SASTRA Deemed University, Kumbakonam, organized a one-day workshop titled "Getting Started with NVIDIA DGX Spark: Building and Developing AI & ML Applications" on 26 September 2026 at the SRC Computer Lab. The workshop was organized to provide practical exposure to the newly available NVIDIA DGX Spark computing environment and to familiarize faculty members, research scholars and technical staff with AI and Machine Learning application development.

The workshop was inaugurated by Dr. B. Santhi, Dean (SRC), who is also the Principal Investigator of the MEDHA Project. In her inaugural address, she highlighted the importance of developing institutional capabilities in Artificial Intelligence and utilizing advanced computing infrastructure for teaching, learning and research. She encouraged the participants to make effective use of the DGX Spark systems for developing innovative AI/ML applications.

Dr. R. Rajakumar, Assistant Professor, Department of Computer Science & Engineering, served as the resource person and conducted the technical sessions throughout the day. The sessions provided a practical introduction to the NVIDIA DGX Spark platform, its architecture, features, connectivity and application development environment.





The workshop covered a wide range of topics, including NVIDIA DGX Spark introduction, SSH connectivity, NVIDIA Sync, VS Code and WinSCP, execution of Python, Java, C and C++ programs, Conda installation and environment configuration, GPU-supported application development, Machine Learning model development, Jupyter Notebook configuration, Computer Vision models, Vision Transformer (ViT), Swin Transformer, Ollama installation and AI model development, and Vibe Coding using Ollama. Participants were also introduced to the development of AI applications using tools such as Gradio and Streamlit.

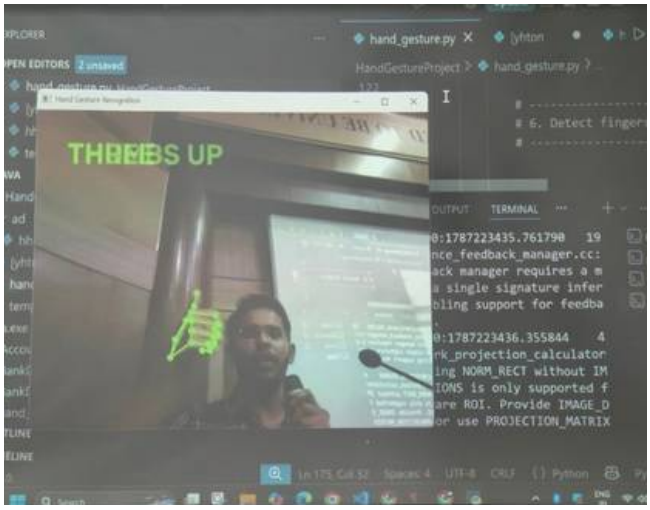
The hands-on sessions enabled participants to understand how the DGX Spark environment can be utilized for AI/ML model development, image processing, computer vision, transformer-based models, Large Language Models (LLMs), and AI-assisted application development.
A total of 39 faculty members, research scholars and technical assistants actively participated in the workshop.

The participants interacted with the resource person and gained practical knowledge through demonstrations and hands-on activities. The event was coordinated by Dr. S. Meganathan, Associate Professor, Department of CSE, SRC, under the guidance and support of the Dean (SRC). The workshop provided a valuable platform for strengthening AI and ML skills and promoting effective utilization of the NVIDIA DGX Spark infrastructure for academic, research and application-development activities at SRC.

STUDENT MICRO LECTURE SERIES
Department of Computer Science and Engineering
(2026-27)

1.Technical Talk on Real Time Hand Tracking and Gesture Analysis

The SAINIK Association, Department of Computer Science and Engineering (CSE), SASTRA SRC Campus, organized a technical talk titled "Real-Time Hand Tracking & Gesture Analysis Using Google MediaPipe and OpenCV" on 20 August 2026 at 3:15 PM in Room No. 201, SRC Campus. The session was delivered by Pavish S, II B.Tech CSE, and was attended by 280 students. The talk provided participants with practical exposure to computer vision and real-time hand-tracking technologies, introducing students to the growing role of AI in interactive applications.



The session also highlighted practical applications of hand-tracking technology in AI, human–computer interaction, and computer vision projects. The speaker discussed how such technologies can be used to develop interactive and intelligent systems that respond to human gestures. The practical approach of the session helped students connect theoretical concepts with real-world applications and encouraged them to experiment with computer vision tools. The event provided students with valuable hands-on knowledge and encouraged them to explore real-time AI-based applications and develop innovative projects using modern computer vision technologies.



The speaker explained the fundamentals of hand tracking and demonstrated the use of Google MediaPipe for hand landmark detection and gesture recognition, along with OpenCV for image processing, visualization, and analysis of hand movements. Through practical demonstrations, students gained a better understanding of how hand movements can be detected and interpreted in real time using software-based tools. The session also helped participants understand the basic workflow involved in capturing hand movements, identifying key points, and processing the detected information for further applications.



2.Workshop on Web Development Using AI



The SAINIK Association, Department of Computer Science and Engineering (CSE), SASTRA SRC Campus, organized a technical workshop on "Web Development Using AI" on 10 September 2026 at 3:15 PM at the Auditorium, SRC Campus. The session was conducted by Mohamed Tharik M H, II B.Tech CSE, and was attended by 110 students.

The workshop provided participants with practical exposure to AI-assisted web development. The resource person demonstrated modern development workflows, including setting up the development environment, using GitHub Copilot and ChatGPT for AI-assisted coding, integrating APIs, adding dynamic features, and deploying web applications. The session also introduced students to various AI-based tools and techniques for improving coding productivity, development speed, and project implementation. The workshop helped participants understand how AI can be effectively integrated into web development and encouraged them to build smarter and more efficient real-world applications.

The session also introduced students to various AI-based tools and techniques for improving coding productivity, development speed, and project implementation. The workshop helped participants understand how AI can be effectively integrated into web development and encouraged them to build smarter and more efficient real-world applications.

3.Technical Talk on CoppeliaSim Robot Simulation

As part of the Student Lecture Series, the SAINIK Association, Department of Computer Science and Engineering (CSE), SASTRA SRC Campus, organized a technical session on "CoppeliaSim Robot Simulation" on 7 September 2026 at 3:15 PM at the IED Hall, SRC Campus. The session was delivered by Priyaranjan R, IV B.Tech CSE, and was attended by 160 students. The lecture provided practical insights into robotics simulation, robot design and programming, and virtual testing of robotic movements and behaviours using CoppeliaSim. The speaker also explained how algorithms developed in a simulated environment can be adapted for real-world robotic applications. The session enhanced students' understanding of robotics simulation and encouraged them to explore practical applications of robotics, programming, and AI technologies.



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Note to Readers:

In putting together this edition of the SAINIK Newsletter, we invited AI tools to work alongside us. They helped us shape sentences, tidy our language, and organize our material, but every idea, every story, and every final decision came from our editorial team. We believe new technology can be a useful companion to creativity, so long as the heart and voice of SAINIK remain our own