



**CHANDIGARH
ENGINEERING COLLEGE
CGC, LANDRAN, MOHALI**
Building Careers. Transforming Lives.

25
YEARS OF TRUST AND
ACADEMIC EXCELLENCE



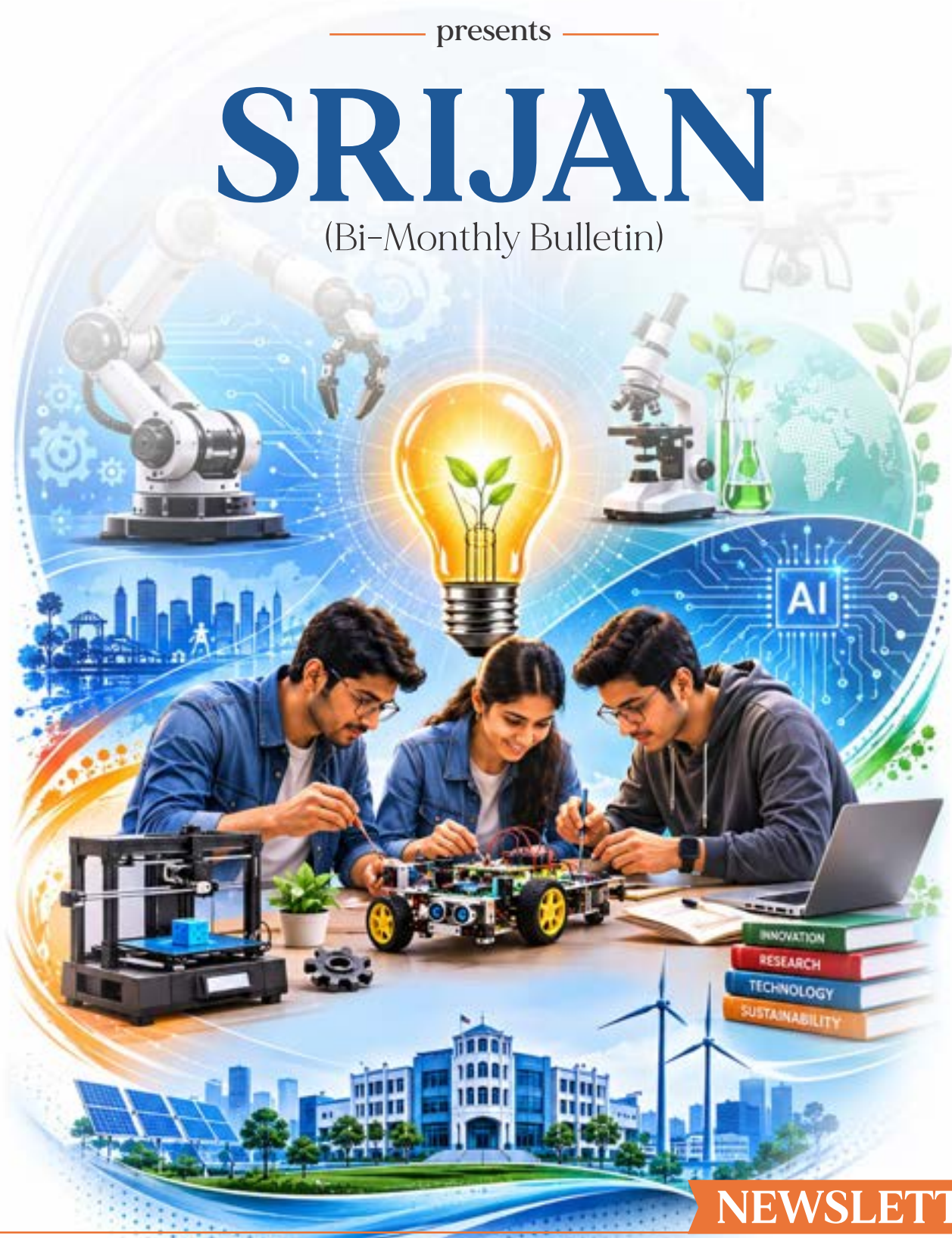
AICTE-IDEA LAB

(Idea Development, Evaluation & Application Lab)

— presents —

SRIJAN

(Bi-Monthly Bulletin)



NEWSLETTER

— VOLUME-I | APRIL-MAY 2026 —

The Minds Behind AICTE-IDEA Lab



Dr. Rajdeep Singh
Campus Director
CGC, Landran, Mohali
Chief Mentor, AICTE-IDEA Lab



Dr. Sukhpreet Kaur
Director- Principal
CEC-CGC, Landran, Mohali



Dr. Rachin Goyal
HOD-ME, CEC-CGC, Landran, Mohali
Coordinator, AICTE-IDEA Lab



Dr. Vinay Bhatia
HOD-ECE, CEC-CGC, Landran, Mohali
Co-Coordinator, AICTE-IDEA Lab



Dr. Sachin Mohal
Associate Professor-ME
Tech Guru, AICTE-IDEA Lab



Dr. Deepak Dhadwal
Associate Professor-ECE
Tech Guru, AICTE-IDEA Lab



Ms. Ritu Sharma
Sr. Tech. Supervisor-ECE
Tech Guru, AICTE-IDEA Lab



Er. Satwinder Singh
Vertical Head-Department of RISE
Tech Guru, AICTE-IDEA Lab



Ms. Nitika Bansal
Assistant Professor
IT Department
Editor-Srijan,
Newsletter,
AICTE-IDEA Lab



Ms. Namita Sharma
Assistant Professor
Applied Science
Editor-Srijan,
Newsletter,
AICTE-IDEA Lab



Dr. Ekta Rastogi
Assistant Professor
MBA
Department Coordinator,
AICTE-IDEA Lab



Ms. Vanmala
Assistant Professor
Emerging Technology
Department Coordinator,
AICTE-IDEA Lab



Ms. Dapinty Sain
Assistant Professor
CSE
Department Coordinator,
AICTE-IDEA Lab

Words of Wisdom



Dr. Rajdeep Singh
Campus Director
CGC, Landran, Mohali
Chief Mentor, AICTE-IDEA Lab

Message by Campus Director

It gives me immense pleasure to extend my heartfelt congratulations to the AICTE-IDEA Lab team and Chandigarh Engineering College-CGC, Landran, Mohali on the publication of this edition of the AICTE-IDEA Lab Newsletter. This newsletter serves as a reflection of the innovative spirit, creativity, and problem-solving mindset that define the academic culture at CGC, Landran, Mohali. We proudly marks 25 years of trust and excellence, reflecting a sustained commitment to quality education, industry alignment, and the holistic development of students.

Over the years, Chandigarh Engineering College-CGC, Landran, Mohali has established itself as a center of academic distinction, producing skilled engineers, innovators, and leaders who contribute significantly across diverse industries. The institution continues to uphold its commitment to excellence through a dynamic and industry-oriented learning environment, where students are empowered with strong technical knowledge, problem-solving abilities, and professional competencies essential for success in the modern world.

Innovation is the driving force behind progress, and AICTE-IDEA Lab plays a pivotal role in nurturing curiosity, creativity, and interdisciplinary collaboration among students. Through ideation sessions, prototype development, research projects, hackathons, innovation challenges, and industry interactions, our students are encouraged to think beyond conventional boundaries and address real-world challenges with confidence and ingenuity.

As we move forward, our focus remains on fostering innovation, promoting research excellence, strengthening global engagement, and creating an environment that nurtures entrepreneurship, leadership, and adaptability. Building upon a strong foundation of values and academic rigor, we continue to prepare our students to become responsible professionals and future-ready leaders.

I encourage all students to uphold the values of integrity, professionalism, perseverance, and lifelong learning as they strive towards achieving their aspirations. Let us continue our journey towards greater milestones and remarkable achievements.

Wishing you all continued success and a bright future.

With warm regards,
Dr. Rajdeep Singh
Campus Director
CGC, Landran, Mohali
Chief Mentor, AICTE-IDEA Lab

Words of Wisdom



Dr. Sukhpreet Kaur
Director-Principal
CEC-CGC, Landran, Mohali

Message by Director-Principal

It is a matter of great pride and pleasure to present this edition of the Chandigarh Engineering College-CGC, Landran, Mohali, AICTE-IDEA Lab newsletter, which captures the spirit of innovation, learning, and achievement that defines our institution. This publication reflects the remarkable efforts, accomplishments, and aspirations of our students, faculty, and staff, while showcasing the vibrant academic and co-curricular environment that continues to thrive at CEC-CGC, Landran, Mohali Landran.

Marking 25 years of trust and excellence at CGC Landran, CEC-CGC, Landran, Mohali continues its legacy of empowering students through quality education, industry-oriented training, and holistic development.

Our students have consistently demonstrated excellence across academics, research, innovation, entrepreneurship, sports, and cultural activities. Their achievements at national and international platforms reflect their dedication, resilience, and pursuit of excellence.

In today's rapidly evolving technological world, it is essential to cultivate a mindset of continuous learning, adaptability, and innovation.

As we move forward, we remain focused on strengthening our culture of excellence, promoting interdisciplinary learning, encouraging research and innovation, and creating an inclusive environment that empowers every student to achieve their aspirations. Together, we will continue to build upon our legacy and contribute meaningfully to society through knowledge, creativity, and leadership.

I congratulate everyone associated with this newsletter and appreciate their efforts in documenting the achievements and milestones of our institution. May this publication continue to inspire, inform, and celebrate the spirit of CEC-CGC, Landran, Mohali. Wishing all our students, faculty members, and stakeholders continued success and a bright future ahead.

With best wishes,
Dr. Sukhpreet Kaur
Director-Principal
CEC-CGC, Landran, Mohali

Voices of AICTE-IDEA Lab



Dr. Rachin Goyal
HOD-ME, CEC-CGC, Landran, Mohali
Coordinator, AICTE-IDEA Lab

The AICTE-IDEA Lab is more than just a laboratory—it is a dynamic environment where ideas take shape and innovation comes to life. By encouraging creativity, collaboration, and hands-on learning, we empower students to explore new possibilities, develop practical skills, and transform their vision into meaningful achievements that create a lasting impact.



Dr. Vinay Bhatia
HOD-ECE, CEC-CGC, Landran, Mohali
Co-Coordinator, AICTE-IDEA Lab

Every innovation begins with a question and grows through curiosity, creativity, and experimentation. The AICTE-IDEA Lab empowers students to transform ideas into impactful solutions through hands-on learning and collaboration. We encourage every learner to embrace opportunities, develop skills, pursue excellence, and contribute meaningfully to a future driven by innovation.

Closing Message

"Together, through curiosity and collaboration, we can build innovations that shape a better future. The AICTE-IDEA Lab is our shared space to dream, experiment, and achieve."

Editorial Note

Celebrating innovation, creativity, and achievement—this edition highlights the remarkable contributions and inspiring journeys of the AICTE-IDEA Lab community. It stands as a testament to the power of collaboration, curiosity, and innovation in shaping a brighter future.

Ms. Nitika Bansal
(Editor)

Celebrating ideas that inspire, innovations that transform, and achievements that matter—this edition captures the energy, ambition, and collaborative spirit of the AICTE-IDEA Lab community. As we showcase groundbreaking initiatives and success stories, we reaffirm our commitment to nurturing creativity, empowering innovators, and building solutions that create meaningful impact.

Ms. Namita Sharma
(Editor)

Closing Message

Together, through innovation, determination, and shared learning, we can transform ideas into solutions that make a meaningful difference. The AICTE-IDEA Lab remains a place where creativity is nurtured, possibilities are explored, and future innovators are empowered to dream big, experiment boldly, and achieve excellence.

VISION

The AICTE-IDEA Lab strives to be a transformative space where creativity thrives, and culture of innovation and collaboration develops and inspire as well as empower individuals to ideate, prototype as well as implement solutions to pressing global challenges.

MISSION

The mission of the AICTE-IDEA (Idea Development, Evaluation and Application) Lab is to foster innovation, creativity, and entrepreneurial thinking among students, faculty, and stakeholders. The lab aims to provide state-of-the-art facilities, mentorship, and hands-on learning opportunities that encourage critical thinking, problem-solving, design, prototyping, and product development.



Where Ideas Turn Into Reality: AICTE-IDEA Lab

Chandigarh Engineering College-CGC, Landran, Mohali with a rich legacy of 25 years of academic excellence, proudly announces the establishment of the AICTE-IDEA Lab, reinforcing its sustained commitment to innovation and skill-based technical education.

The AICTE-IDEA Lab is an initiative of AICTE to promote innovation, creativity and experiential learning in technical education.

The lab provides an open and collaborative ecosystem for students to design, develop and build innovative solutions. It encourages the application of Science, Technology, Engineering and Mathematics (STEM) fundamentals through hands-on and project-based learning.

This Lab emphasizes the philosophy of “Learning by Doing” and outcome-based education. The lab aims to strengthen 21st century skill sets-critical thinking, problem-solving, design thinking and teamwork by enabling students to work on real-world engineering problems through interdisciplinary project execution. The facility supports innovation, research, skill development, and entrepreneurship. It strengthens product visualization, rapid prototyping, and technology integration capabilities.

The institute have facilities such as :

- **ACIC Supported by NITI Aayog which supports startup ideas services through incubation centre.**

- **Boudhik Sampada (IPR) This cell provides support to faculty, staff, and students in safeguarding their intellectual property rights through guidance and facilitation services.**

Facility Usage Guide

Requisition forms for availing facilities available at the AICTE-IDEA Lab, Chandigarh Engineering College - CGC, Landran, Mohali can be obtained by writing to the Coordinator/In-charge, AICTE-IDEA Lab, or by visiting the official idea lab webpage:

<https://www.cecmohali.org/aicte-idea-lab/>

The AICTE-IDEA Lab shall remain accessible on a 24 × 7 basis to support innovation, research, prototyping, and project development.

AICTE Lab has been established as a shared innovation platform and we are happy to extend its facilities to students, faculty members, alumni, nearby educational institutions, industries, startups and research organizations for academic, technical, research and innovation driven activities. We also invite students and faculty members from CGC, Landran, Mohali.

Usage charges wherever applicable, will be levied to recover the cost of consumable and operational expenses.

Details regarding equipment usage, prototyping requirements, and experimental conditions should be clearly mentioned in the request form. The forms must be duly signed by the Head of Department/Institution/Industry with official seal.

The completed forms should be submitted in person at the AICTE-IDEA Lab office or mailed to the below-mentioned email IDs for further processing. In activities where the user's presence is required, prior appointment for experimentation, testing, or fabrication should be sought.

Contact Person

Mr. Satwinder Singh, Tech Guru, AICTE-IDEA Lab

Email id: idealab.ceclandran@cgc.edu.in, satwinder.rise@cgc.edu.in

Contact No. 9814934815

MoU With Nasscom

Strategic Partnership with Nasscom

The MoU between Nasscom and the AICTE-IDEA Lab marks a significant step toward fostering innovation, entrepreneurship, and technological excellence. Through this collaboration, students gain access to industry insights, expert mentorship, and opportunities that bridge the gap between classroom learning and real-world applications.



MoU Signed with Nasscom for AICTE-IDEA Lab

AICTE-IDEA Lab Major Equipments

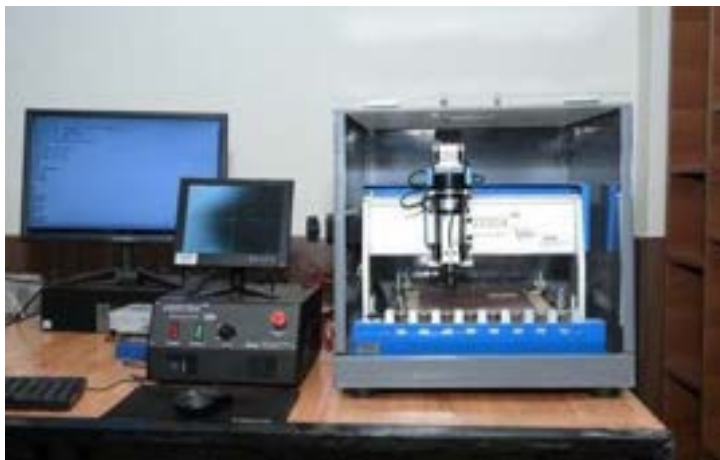


Laser Cutter

A Laser Cutter Machine is a machine that uses a high-powered laser beam to cut, engrave or mark materials with very high precision. The laser beam melts, burns or vaporizes the material to create the required shape or design.

PCB Milling Machine

A PCB Milling Machine is a computer-controlled system used to fabricate printed circuit boards (PCBs) by removing unwanted copper from a copper-clad board. It performs precise milling, drilling, and cutting operations to create circuit tracks, pads, and component holes directly from digital PCB design files.



PCB Prototyping Machine

A PCB Prototyping Machine is an advanced computer-controlled machine designed for the rapid development of prototype printed circuit boards. It enables milling, drilling, engraving, and routing of PCB layouts directly from digital designs.

Benchtop Wood Lathe

Benchtop Wood Lathe is a woodworking machine used to shape wooden workpieces by rotating them against a cutting tool. It is commonly used to produce cylindrical objects such as table legs, bowls, pens, handles, and decorative wooden items. This compact lathe is suitable for workshops, training labs, and prototype development.





CNC Router

A CNC Router is a computer-controlled cutting and carving machine used for shaping wood and wood-based materials with high precision and accuracy. It is widely used for cutting, engraving, carving and designing on materials such as plywood, MDF and hard wood.



Mini Desktop Lathe Cum Milling Machine

The Mini Desktop Lathe Cum Milling Machine is a multi-purpose machine tool used for turning, milling, drilling, threading and boring operations. It combines the functions of a lathe and milling machine in a single compact unit, making it suitable for training, prototyping and small mechanical workshops.



Air Compressor



Benchtop Grinder Machine



D.C Regulated Power Supply



D.C Regulated Power Supply



Solder Station

Inauguration of AICTE-IDEA Lab

Chandigarh Engineering College – CGC, Landran, Mohali

25th March 2026



Welcoming the guests

Inauguration of AICTE-IDEA Lab

The inauguration of the AICTE-IDEA (Idea Development, Evaluation & Application) Lab at Chandigarh Engineering College-CGC, Landran, Mohali marked a significant milestone in the institution's journey towards fostering innovation, creativity, and experiential learning. Established with the support of AICTE, the lab serves as a state-of-the-art facility where students can transform innovative ideas into functional prototypes and practical solutions.

Innovation Through Collaboration

As the institution celebrates 25 years of excellence, the AICTE-IDEA Lab stands as a symbol of CGC Landran's dedication to empowering future innovators and transforming ideas into impactful solutions for society. A significant milestone in the lab's journey was the signing of a Memorandum of Understanding (MoU) between the AICTE-IDEA Lab and NASSCOM. This collaboration strengthened industry-academia engagement, creating new avenues for skill development, innovation-driven learning, industry exposure, and career readiness among students.



Inauguration Ceremony of AICTE-IDEA Lab

Distinguished Guests

The inauguration ceremony was graced by eminent dignitaries including Mr. Sunil Mehta, AVP, Mitsubishi Electric India, as Chief Guest, along with Dr. J. P. Singh, Deputy Director, Higher Education, Punjab; Mr. Puneet Verma, President, TiE Chandigarh; Ms. Sheeba Thomas, Head - Content & Partnerships, NASSCOM, as Guests of Honour. The event was also graced by distinguished guests Mr. Manoj Gupta from Mitsubishi Electric India, Ms. Kriti Gupta, Partner Relationship Manager, NASSCOM, and Ms. Harshita Saraswat, Deputy Manager, NASSCOM, India as distinguished guests.



Group Photograph with Hon'ble Management



Cake cutting Ceremony



The initiative is being led under the guidance of Chief Mentor, AICTE-IDEA Lab Dr. Rajdeep Singh, coordinated by Dr. Rachin Goyal, Co-ordinator, AICTE-IDEA Lab, along with Dr. Vinay Bhatia, Co-Coordinator, AICTE-IDEA Lab, whose leadership is instrumental in strengthening a strong culture of innovation and research within the institution. With the establishment of the AICTE-IDEA (Idea Development, Evaluation & Application) Lab and its strategic collaboration with NASSCOM, Chandigarh Engineering College-CGC, Landran, Mohali reaffirms its commitment to fostering a culture of innovation, creativity, and experiential learning. This initiative reflects the institution's vision of empowering students with industry-relevant skills and technological expertise.

PROJECT DISPLAY



Project Display held in AICTE-IDEA Lab



Hon'ble Chief Guest interacting with students

The AICTE-IDEA Lab, CEC- CGC, Landran, Mohali successfully organized an “Open Day for School Students”

To inspire the next generation of innovators, the AICTE-IDEA Lab, Chandigarh Engineering College-CGC, Landran, Mohali organized a successful "Open Day for School Students," showcasing cutting-edge technologies, creative projects, and experiential learning opportunities. It was successfully organized an "Open Day for School Students" on 30th April 2026, aimed at fostering curiosity, creativity and innovation among young learners. The event welcomed students from various schools, providing them with an opportunity to explore advanced technologies, hands-on projects.



The program commenced with a warm welcome where students were briefed about the purpose and facilities of the AICTE-IDEA Lab. This was followed by guided tours of different sections, including robotics, 3D printing, electronics and design workspaces.

Interactive demonstrations were a major highlight of the event. Lab mentors and student volunteers explained ongoing projects, encouraging participants to ask questions and participate in small activities.



Students Participating in Open Day Event



Students attending awareness session on AICTE-IDEA Lab Machines



Idea to Prototype: Exploring Creativity through Modern Fabrication Technologies

The AICTE-IDEA Lab at Chandigarh Engineering College-CGC, Landran, Mohali serves as a dynamic innovation hub where creativity meets technology and ideas are transformed into tangible solutions. Equipped with state-of-the-art fabrication tools and advanced prototyping facilities, the lab provides students with a unique platform to experiment, design, and develop innovative products that address real-world challenges. The journey from concept to prototype is a crucial step in the innovation process. In this Lab, students are empowered to transform their creative visions into functional models, test their feasibility, and refine their designs through continuous experimentation. This experiential learning environment fosters critical thinking, problem-solving abilities, and an entrepreneurial mindset.



The participants gained valuable insights into the working principles and diverse applications of advanced fabrication technologies in areas such as product design, manufacturing, electronics, and creative innovation. Through interactive demonstrations and expert guidance, students explored how these technologies are transforming modern engineering and design practices.

Professional Version

This practical exposure enabled participants to understand the complete innovation cycle, from idea generation and conceptualization to prototype development and testing. The experience encouraged them to think creatively, apply technology-driven solutions, and transform their ideas into tangible outcomes.



The students actively interacted with the mentors, asked questions and enthusiastically participated in the activities. The event proved to be highly informative, interactive, and inspiring, motivating the students to develop interest in innovation, science, and modern fabrication technologies.



Student Perspectives on Emerging Trends

AI in Everyday Life

How Artificial Intelligence is Transforming Daily Experiences



Virtual Assistants

AI-powered virtual assistants such as Siri, Alexa, and Google Assistant have become an essential part of modern daily life. They assist users in managing schedules, setting reminders, answering questions, sending messages, playing music, and controlling smart home devices through simple voice commands. By utilizing advanced technologies such as artificial intelligence and natural language processing (NLP), these assistants can understand, interpret, and respond to human language in a conversational manner. As these systems continue to evolve, they are becoming increasingly capable of providing personalized assistance, improving productivity, and enhancing the overall user experience.

AI in Online Shopping

E-commerce platforms leverage artificial intelligence to enhance the online shopping experience by analyzing customers' browsing history, purchase behavior, and personal preferences to deliver highly personalized product recommendations. These AI-driven suggestions help users discover relevant products more quickly and improve customer satisfaction. Additionally, AI-powered chatbots provide instant customer support 24/7, answering queries, resolving common issues, and assisting with purchases without human intervention. Dynamic pricing algorithms continuously monitor market trends, demand, and competitor pricing to optimize product prices in real time.

AI in Entertainment

Streaming platforms such as Netflix and Spotify utilize artificial intelligence to analyze users' viewing and listening habits, enabling them to recommend movies, television shows, podcasts, and music that match individual preferences. AI-powered recommendation systems help users discover new content while providing a more personalized entertainment experience. Intelligent non-player characters (NPCs), adaptive difficulty levels, and immersive virtual environments. These advancements make entertainment more engaging, interactive, and tailored to the preferences of each user.

AI in Personal Finance

Banks and financial institutions increasingly use artificial intelligence to enhance security, improve decision-making, and provide better customer services. AI-powered systems can detect fraudulent activities by analyzing transaction patterns and identifying suspicious behavior in real time, helping to prevent financial crimes and protect customer accounts. Additionally, AI assists in credit scoring by evaluating financial data more accurately, enabling lenders to make informed decisions. Many banking applications also offer personalized financial advice, create budgets, and make smarter investment choices.

**Riya (2337014, 7th SEM),
Shreya (2421401, 5th SEM)
(CSE Deptt.)**

Role of Colleges in Preparing Students for AI Careers

Building the Next Generation of AI Professionals Through Education



AI-Focused Curriculum

Colleges are redesigning their curricula to include specialized courses in Artificial Intelligence, Machine Learning, Deep Learning, Natural Language Processing, and Computer Vision. These programs equip students with both theoretical knowledge and practical skills needed to excel in AI-driven industries. Interdisciplinary approaches combining AI with healthcare, finance, and engineering are becoming increasingly popular.

Research & Innovation Labs

Leading institutions are establishing dedicated AI research labs and innovation centers where students can work on cutting-edge projects. These labs provide access to high-performance computing resources, datasets, and mentorship from industry experts. Students gain hands-on experience developing AI models, conducting experiments, and publishing research papers that contribute to the global AI knowledge base.



Industry Partnerships

Colleges are forming strategic partnerships with tech companies like Google, Microsoft, and IBM to offer internships, guest lectures, and collaborative projects. These partnerships bridge the gap between academic learning and industry requirements, ensuring graduates are job-ready. Corporate-sponsored hackathons and AI challenges provide students with real-world problem-solving experience.



Skill Development Programs

Beyond technical skills, colleges focus on developing soft skills essential for AI careers including critical thinking, ethical reasoning, communication, and teamwork. Workshops on data ethics, responsible AI development, and bias mitigation prepare students to build AI systems that are fair, transparent, and beneficial to society. Certification programs in cloud computing and AI tools add practical value.

Conclusion

Colleges play a pivotal role in shaping the future AI workforce. By offering specialized curricula, fostering research, building industry connections, and developing well-rounded professionals, educational institutions ensure that students are prepared to lead innovation and drive positive change in an AI-powered world.

Kavya (2337422), Palak (2337447)
7th SEM
(IT Deptt.)

The Future of IoT & Smart Technologies

How Connected Devices are Reshaping Industries and Daily Life



Smart Cities

IoT-enabled smart cities use interconnected sensors and devices to manage traffic flow, monitor air quality, optimize energy consumption, and improve waste management. Smart streetlights adjust brightness based on pedestrian activity, while intelligent parking systems guide drivers to available spots. These innovations reduce congestion, lower and create more livable urban environments for millions of residents worldwide.

Wearable Technology

Smartwatches, fitness trackers, and health monitors collect real-time data on heart rate, sleep patterns, physical activity, and blood oxygen levels. These wearable devices empower individuals to take control of their health by providing actionable insights and early warnings for potential health issues. Advanced wearables now integrate and enabling remote patient monitoring and reducing the need for frequent hospital visits.



Industrial IoT (IIoT)

Factories and manufacturing plants leverage IoT sensors for predictive maintenance, real-time quality monitoring, and supply chain optimization. Connected machines communicate with each other to detect faults before breakdowns occur, reducing downtime and maintenance costs. Smart factories achieve higher efficiency, lower waste, and improved safety through continuous data-driven decision making.



Security & Privacy Challenges

As billions of devices connect to the internet, cybersecurity becomes a critical concern. IoT devices often lack robust security protocols, making them vulnerable to hacking and data breaches. Protecting personal data, ensuring device authentication, and implementing end-to-end encryption are essential steps toward building a secure IoT ecosystem that users can trust with their sensitive information.

Conclusion

The Internet of Things is revolutionizing how we live, work, and interact with our environment. From smart cities and wearable health devices to industrial automation and connected homes, IoT technologies promise a more efficient, convenient, and data-driven future. Addressing security challenges will be key to unlocking the full potential of this transformative technology.

Saloni (2422467), Pranshu(2422464)
5th SEM
(ET Deptt.)

Tech Trends: Robotics & Automation

How Robotics and Automation are Shaping Modern Society



Smart Homes

Smart doorbells, motion sensors, and surveillance cameras monitor homes and send real-time alerts, allowing homeowners to stay connected to their property from anywhere. These devices enhance security by detecting unusual activities, preventing unauthorized access, and providing instant notifications during emergencies. In addition, smart home technologies such as automated lighting, smart thermostats, and voice-controlled assistants help reduce energy consumption, increase convenience, and improve daily comfort. By integrating these intelligent systems, people can save time, lower utility costs, and enjoy a safer, more efficient, and personalized living experience.

Impact on Healthcare

Robotic-assisted surgeries enable doctors to perform complex medical procedures with greater precision, flexibility, and control, often resulting in smaller incisions, reduced pain, and faster recovery times for patients. In addition, automation in healthcare helps manage patient records, appointment scheduling, billing, and medication dispensing with improved accuracy and efficiency. These advanced technologies reduce the chances of human error, enhance patient care, and allow healthcare professionals to focus more on diagnosis and treatment. As a result, healthcare services become more reliable, accessible, and effective for both patients and medical staff.

Revolutionizing Transportation

Modern vehicles are equipped with advanced driver-assistance systems (ADAS) such as automatic emergency braking, lane departure warnings, adaptive cruise control, and parking assistance, which enhance safety and make driving more convenient. These technologies help drivers avoid collisions, maintain proper lane positioning, and navigate challenging traffic conditions with greater confidence. Furthermore, self-driving technology is being developed to reduce accidents caused by human errors such as distraction, fatigue, and poor decision-making.

Robotics in Manufacturing

Manufacturing plants increasingly rely on automation and robotics for tasks such as assembling products, welding components, packaging goods, and conducting quality inspections. These automated systems can operate with high speed and precision, significantly increasing productivity while reducing operational costs. Automation also ensures consistent product quality by minimizing human errors and maintaining standardized production processes.

Innovative Projects in Mechanical Engineering

Exploring Cutting-Edge Designs and Technologies in the Mechanical Domain



3D Printing & Additive Manufacturing

3D printing has revolutionized mechanical engineering by enabling rapid prototyping and the production of complex geometries that traditional manufacturing cannot achieve. Engineers use additive manufacturing to create lightweight yet strong components for aerospace, automotive, and biomedical applications. This technology reduces material waste, shortens development cycles, 3D printing continues to push the boundaries of what is mechanically possible.

Autonomous Vehicles & Drones

Mechanical engineering projects in autonomous mobility focus on designing chassis structures, suspension systems, and aerodynamic bodies for self-driving cars and unmanned aerial vehicles. Engineers develop lightweight frames using advanced composites, design efficient drivetrain systems. Drone projects range from agricultural spraying systems to delivery platforms, each requiring careful thermal management and vibration analysis.

Renewable Energy Systems: Powering a Sustainable Future

Mechanical engineers play a vital role in designing and optimizing renewable energy systems such as wind turbines, solar thermal collectors, and hydroelectric generators. Projects in this domain focus on improving turbine blade aerodynamics, developing efficient heat exchangers, and creating compact energy storage solutions. and hybrid energy platforms that combine multiple renewable sources for maximum efficiency and reliability in diverse conditions.

Smart Materials & Mechanisms

Shape-memory alloys, piezoelectric materials, and self-healing polymers are transforming mechanical design. Projects involving smart materials include adaptive wing structures that change shape during flight, vibration-damping systems for machinery, or electrical signals, enabling engineers to create mechanisms that adapt to their environment in real time.

Karan (2337674), Savan (2337674)
7th SEM
(ME Deptt.)

Shaping The Future Through Innovation



**CHANDIGARH
ENGINEERING COLLEGE
CGC, LANDRAN, MOHALI**

Building Careers. Transforming Lives.

**NAAC
GRADE A+**

Campus: Sector 112, Landran Mohali, Punjab-140307

Admission Helpline: +91-95921-24444, +91-172-3984212

Toll Free Number: 1800 200 3575 | **General Helpline:** +91-0172-3984200 | www.cec Mohali.org