# R&D NEWS Letter

**FEB 2026**

JEPPIAAR INSTITUTE OF TECHNOLOGY

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(An Autonomous Institution)

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# JIT IEEE

# Student

# Branch

# Newsletter

# February 2026

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## Event Conducted :

February was a month defined by rapid acceleration and a fundamental shift toward resource-constrained engineering. While our technical societies explored breakthroughs in autonomous robotics and orbital manufacturing, the branch prioritized the critical interplay between cutting-edge innovation and the ethical integrity required to navigate a volatile global tech landscape.
We successfully shifted the campus culture from theoretical learning to high-intensity, "build-first" engineering by hosting the first-ever 24-hour hackathon.

### 1. ReCode It: Reverse Coding Contest:

On February 03, 2026, from 01:30 PM to 03:00 PM, the JIT IEEE SSIT Student Branch organized a technical challenge titled "ReCode It" at the Ground Floor Auditorium of Jeppiaar Institute of Technology. This offline event pushed participants to move beyond standard programming by engaging in the intricate art of reverse engineering.

**Focus & Execution:** Under the tagline "Think Backwards. Code Smarter," participants were tasked with analyzing pre-compiled outputs or specific code behaviors to reconstruct the original logic. The contest tested their ability to deconstruct complex problems and rewrite the underlying source code accurately from a finished result.

**Skill Development:** The challenge was specifically designed to strengthen algorithmic thinking, debugging skills, and logical reasoning. By forcing a "backwards" approach to development, the event helped students understand deep-level code architecture and improved their efficiency in writing clean, optimized scripts.

**Impact/Outcome:** The session provided students with a practical, hands-on understanding of software forensics and logical deconstruction. It successfully highlighted the most adaptable programmers within the CSE and ECE departments, rewarding every participant with an E-Certificate for their contribution to this high-intensity coding environment.


IEEE
SSIT
ReCode It
Reverse Coding Contest
REGISTER NOW
Tuesday
Time
Location
Ground Floor
Auditorium
E-Certificate
"Think Backwards. Code Smarter."
Student Coordinators
Staff Coordinators
Ms. Dhanalakshmi V
JEPPIAAR
INSTITUTE OF TECHNOLOGY
www.jeppiaarinstitute.org
TNEA
COUNSELLING
CODE
1140

**1. Innovation Mindset:** From Stage Fear to Global Success

On Saturday, February 14, 2026, at 10:30 AM, the Institution's Innovation Council (IIC 8.0) in collaboration with the JIT IEEE Student Branch and IEEE Women in Engineering (WiE) organized a guest lecture titled "Innovation Mindset: From Stage Fear to Global Success". The session was held at the 3rd Floor Auditorium of Jeppiaar Institute of Technology.

**Focus & Execution:** The guest lecture featured Mr. Kumaran Gandhi, a Trainee at VA Tech Wabag Ltd and an active IEEE Volunteer. The session focused on the psychological and professional transition from overcoming personal barriers—specifically public speaking anxiety—to achieving international professional milestones. By sharing personal anecdotes and industry insights, the speaker provided a roadmap for navigating modern career challenges.

**Skill Development:** The event was designed to cultivate a growth mindset and enhance soft skills crucial for the global job market. Key areas of development included public speaking confidence, innovation-driven thinking, and professional networking strategies. It encouraged students to view technical expertise and personal presentation as equally vital components of a successful career.

**Impact/Outcome:** Participants gained valuable perspective on how to leverage institutional resources like the IIC and IEEE to build a global profile. The lecture successfully motivated students to step outside their comfort zones, transforming their perceived limitations into strengths that can drive innovation and professional excellence.


INSTITUTION'S INNOVATION COUNCIL - IIC 8.0
JIT-IEEE
IEEE
Guest Lecture
Innovation Mindset: From Stage Fear to Global Success
Mr.Kumaran Gandhi
Trainee, VA Tech Wabag Ltd
IEEE Volunteer
Saturday
14-02-2026
10:30 AM
3rd Floor Auditorium
JIT
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## 1. AI-Based Robotics & Automation for Sustainable Future

**On Monday, February 16, 2026, from 10:00 AM to 11:00 AM, the IEEE Robotics & Automation Society (RAS), in collaboration with the JIT IEEE Student Branch and the Institution's Innovation Council (IIC 8.0), hosted an insightful online guest lecture titled "AI-Based Robotics & Automation for Sustainable Future".**

**Focus & Execution: The session featured G. Deenadayalan, Assistant Professor from the Department of Robotics & Artificial Intelligence at Dayananda Sagar College of Engineering, Bengaluru. The lecture focused on the convergence of AI and robotics, exploring how automated systems can be engineered to solve environmental challenges and promote sustainable industrial practices.**

**Skill Development: This event aimed to broaden students' understanding of intelligent automation, sustainable engineering, and the practical application of AI in robotics. It encouraged participants to think critically about how emerging technologies can be leveraged to create eco-friendly solutions and optimize resource efficiency in various sectors.**

**Impact/Outcome: Participants gained a deeper perspective on the role of robotics in global sustainability efforts. The session successfully connected students with academic expertise, highlighting the career and research opportunities available at the intersection of AI and green technology.**


INSTITUTION'S INNOVATION COUNCIL - IIC 8.0
IEEE
Robotics & Automation society
PRESENTS
AI - BASED ROBOTICS & AUTOMATION FOR SUSTAINABLE FUTURE
Guest Speaker
G. DEENADAYALAN,
ASSISTANT PROFESSOR,
DEPARTMENT OF ROBOTICS & ARTIFICIAL INTELLIGENCE,
DAYANANDA SAGAR COLLEGE OF ENGINEERING, BENGALURU
Online
16th February 2026
10:00 AM to 11:00 AM
JIT
JEPPIAAR INSTITUTE OF TECHNOLOGY
TNEA COUNSELLING CODE
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1. IEEE Student Success Talk

On Thursday, February 19, 2026, from 09:30 AM to 11:30 AM, the IEEE Robotics & Automation Society (RAS), in collaboration with the JIT IEEE Student Branch and the Institution’s Innovation Council (IIC 8.0), organized an inspiring session titled "IEEE Student Success Talk". The event was held at the 3rd Floor Auditorium of Jeppiaar Institute of Technology.

**Focus & Execution:** The session featured Mr. C.A. Abishek, a Trainee Engineer at Avasoft and a distinguished IEEE AESS & SysC Scholarship Awardee '25. The talk focused on navigating the academic and professional landscape within the IEEE ecosystem. By highlighting his own journey to winning prestigious international scholarships, the speaker provided a roadmap for students to leverage global opportunities and professional recognition.

**Skill Development:** The event was designed to enhance career planning, scholarship application strategies, and professional networking. It encouraged students to aim for international standards of excellence and provided practical advice on how to build a competitive profile that resonates with global organizations like IEEE.

**Impact/Outcome:** Participants gained firsthand knowledge on the tangible benefits of active professional membership. The session successfully motivated students to pursue specialized research and scholarship opportunities, reinforcing the idea that consistent involvement in technical societies can lead to significant career milestones and global success.

INSTITUTION'S INNOVATION'S COUNCIL - IIC 8.0

IEEE

JIT IEEE

IEEE
Robotics & Automation society

PRESENTS

# IEEE STUDENT SUCCESS TALK
## (Journey of innovation and achievements)

GUEST SPEAKER

C.A. ABISHEK
Trainee Engineer at Avasoft
IEEE AESS Scholarship Awardee'25
IEEE SysC Scholarship Awardee'25

19th February 2026

9:30 AM Onwards

3rd Floor Auditorium

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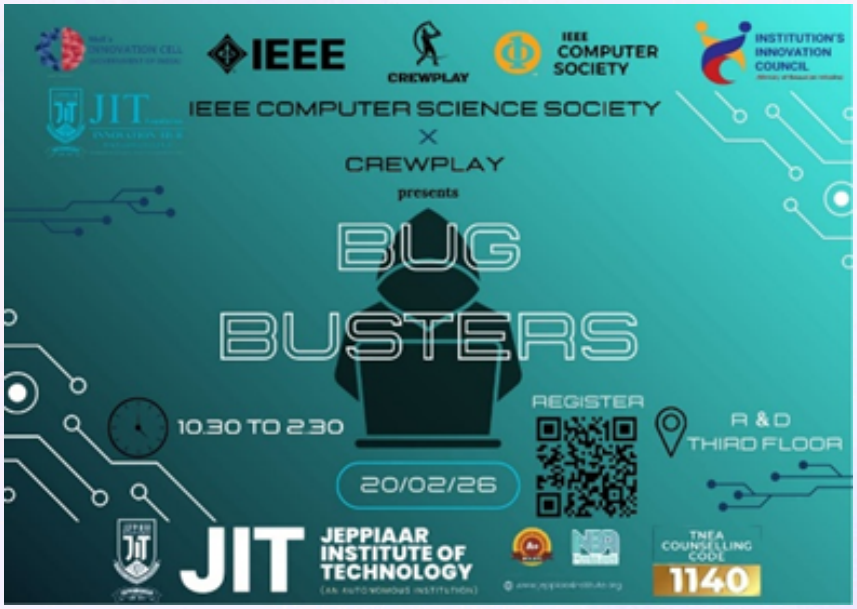
## 1. Bug Busters: Technical Debugging Challenge

On Friday, February 20, 2026, from 10:30 AM to 02:30 PM, the IEEE Computer Society in collaboration with CrewPlay, the JIT IEEE Student Branch, and the Institution's Innovation Council (IIC 8.0) organized a high-intensity technical event titled "Bug Busters". The challenge was conducted at the R & D Lab on the Third Floor of Jeppiaar Institute of Technology.

**Focus & Execution:** This collaborative session between academia and industry partner CrewPlay was centered on identifying, analyzing, and resolving complex software defects. Participants were immersed in a competitive environment where they had to navigate through intentionally flawed codebases, applying systematic troubleshooting techniques to restore full functionality to the programs.

**Skill Development:** The event was strategically designed to sharpen critical debugging skills, code comprehension, and technical endurance. It encouraged students to improve their mastery of programming syntax and logic while learning how to use professional-grade diagnostic tools to isolate "bugs" under time constraints.

**Impact/Outcome:** By bridging the gap between theoretical coding and industry-standard software maintenance, the event provided students with a realistic preview of the software development life cycle. The "Bug Busters" challenge successfully identified the top problem-solvers on campus, fostering a culture of technical precision and persistent inquiry within the
Computer Science community.


IEEE
CREWPLAY
IEEE COMPUTER SOCIETY
INSTITUTION'S INNOVATION COUNCIL
JIT
IEEE COMPUTER SCIENCE SOCIETY
X
CREWPLAY
presents
BUG BUSTERS
10.30 TO 2.30
REGISTER
R & D THIRD FLOOR
20/02/26
JIT
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## 1. Robotic Surgery: Algorithms Powering Innovation:

**On Friday, February 20, 2026, from 06:00 PM to 07:30 PM, the IEEE Robotics & Automation Society (RAS), in collaboration with the JIT IEEE Student Branch and the Institution's Innovation Council (IIC 8.0), conducted an advanced online technical session titled "Robotic Surgery: Algorithms Powering Innovation".**

**Focus & Execution: The session featured Dr. E. Sathish, a Senior Software Engineer (Controls) in Surgical Robotics at the Medtronic Engineering & Innovation Center, Hyderabad. The lecture delved into the complex intersection of healthcare and engineering, focusing on the high-precision control algorithms and sensor integration required to perform minimally invasive robotic surgeries.**

**Skill Development: This event targeted the development of specialized knowledge in control systems, biomedical engineering, and algorithmic optimization. Participants were introduced to the real-world challenges of latency, haptic feedback, and safety protocols in medical robotics, encouraging them to explore how software logic can enhance surgical precision and patient outcomes.**

**Impact/Outcome: Students gained direct exposure to industry-level standards in surgical technology from a leading professional in the field. The session successfully bridged the gap between academic robotics and life-saving medical applications, inspiring participants to pursue careers in high-stakes automation and healthcare innovation.**

INSTITUTION'S INNOVATION'S COUNCIL - IIC 8.0

IEEE

Robotics & Automation society

PRESENTS

# ROBOTIC SURGERY : ALGORITHMS POWERING INNOVATION

## Guest Speaker

Dr.E.Sathish, M.E, M.B.A, Ph.D
Senior Software Engg. (Controls),
Surgical Robotics, 20th Floor B wing,
Medtronic Engineering & Innovation Center,
Nanakramguda Rd, Madhava Reddy Colony,
Gachibowli, Hyderabad, Nanakramguda, Telangana
500032.

Online

20TH February 2026

6:00 PM to 7:30 PM

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## 1. Vibe Coding: Coding with AI:

**On Saturday, February 21, 2026, starting from 06:30 PM, the IEEE Women in Engineering (WiE), in collaboration with the JIT IEEE Student Branch and the Institution's Innovation Council (IIC 8.0), hosted a virtual hands-on workshop titled "Vibe Coding: Coding with AI".**

**Focus & Execution: The workshop was led by D. Meenakshi Sundaram, an AI Technical Expert and Director of DMS Academy. Under the theme "Build with AI. Think with Logic. Code with Confidence," the session focused on the modern paradigm of "Vibe Coding"—using natural language and AI assistance to streamline the development process. Unlike traditional workshops, this session required no software installation, allowing participants to dive directly into building applications using only a browser and a GitHub account.**

**Skill Development: This session was specifically designed to enhance AI-assisted development, logic-based problem solving, and technical agility. Participants learned how to bridge the gap between high-level conceptual thinking and rapid prototyping, gaining confidence in their ability to lead projects using cutting-edge AI tools to handle repetitive syntax and boilerplate code.**

**Impact/Outcome: The workshop provided a low-barrier entry point for students from all colleges to explore the future of software engineering. By demonstrating that technical confidence stems from logical architecture rather than just memorizing syntax, the event successfully empowered a diverse group of participants to leverage AI as a collaborative partner in their coding journey.**

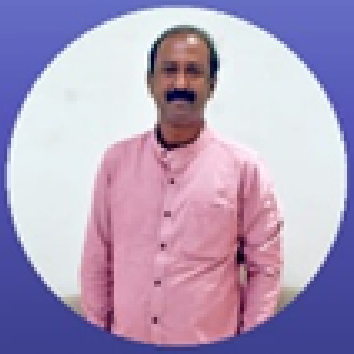
IEEE Women in Engineering
Presents

# VIBE CODING - CODING WITH AI

Build with AI . Think with Logic . Code with Confidence

## Hands-On Workshop

Open to All Colleges | Free Registration



D. Meenakshi Sundaram
AI Technical Expert | Director - DMS Academy

Register Now. Free Entry
https://tinyurl.com/vibecodeai

**Prerequisite: GitHub Account Required**
**No Software Installation Needed**

Saturday, 21 February 2026

06:30 PM onwards

Online - Mic

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**1. Wings of Innovation: Future of Drones:**

**On Monday, February 23, 2026, starting at 10:00 AM, the IEEE Robotics & Automation Society (RAS), in collaboration with the JIT IEEE Student Branch and the Institution's Innovation Council (IIC 8.0), organized a specialized technical lecture titled "Wings of Innovation: Future of Drones". The session was held at Lecture Hall no: 1 of Jeppiaar Institute of Technology.**

**Focus & Execution: The event featured Mr. Thanush J, an Automation Engineer at Gopinath Industries and a winner of the SAE National Level Autonomous Drone Development Challenge. The session focused on the rapid evolution of Unmanned Aerial Vehicles (UAVs), exploring the engineering behind autonomous flight, real-time navigation systems, and the expanding industrial applications of drone technology.**

**Skill Development: This lecture was designed to enhance students' knowledge in aerodynamics, autonomous navigation, and embedded systems control. By analyzing the technical requirements of national-level drone competitions, participants gained insights into the practical challenges of hardware-software integration and the precision required for stable autonomous flight.**

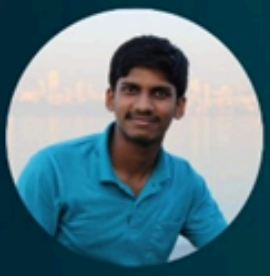
**Impact/Outcome: Participants received a firsthand look at the future of the aerospace and automation industries. The session successfully bridged the gap between student projects and professional engineering standards, motivating attendees to engage with emerging UAV technologies and participate in national-level technical challenges.**

INSTITUTION'S INNOVATION'S COUNCIL - IIC 8.0

IEEE Robotics & Automation society

PRESENTS

# WINGS OF INNOVATION : FUTURE OF DRONES



## Guest Speaker

**Mr. Thanush J**

Automation Engineer at Gopinath Industries
Winner SAE National Level Autonomous Drone Development Challenge

23rd February 2026

10:00 AM Onwards

Lecture Hall no : 1

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**1. Industry 4.0: Innovations and Applications:**

**On Tuesday, February 24, 2026, starting at 10:00 AM, the IEEE Robotics & Automation Society (RAS), in collaboration with the JIT IEEE Student Branch and the Institution's Innovation Council (IIC 8.0), conducted an industry-focused technical session titled "Industry 4.0: Innovations and Applications" at Lecture Hall No. 03 of Jeppiaar Institute of Technology.**

**Focus & Execution: The session was led by Mr. Karkuvel M, an Application Engineer from the AGA R&D Team at AGIIT, Chennai. The lecture centered on the core pillars of the Fourth Industrial Revolution, exploring the transition from traditional manufacturing to smart, connected ecosystems. Detailed discussions were held on the integration of the Internet of Things (IoT), Big Data, and Cyber-Physical Systems within modern factory floorplans.**

**Skill Development: This event was strategically designed to enhance students' understanding of smart manufacturing, automation, and AI-driven industrial logic. Participants were introduced to the practicalities of next-generation industrial technologies, learning how real-time data analytics and automated systems optimize production cycles and resource management in professional R&D environments.**

**Impact/Outcome: By connecting students with an active application engineer, the session successfully bridged the gap between academic theory and the high-demand skills of the modern workforce. Participants gained a realistic perspective on how automation is reshaping global supply chains, motivating them to pursue specialized roles in industrial research,**

INSTITUTION INNOVATION COUNCIL - IIC 8.0

IEEE Advancing Technology for Humanity | JIT@IEEE Student Branch | IEEE Robotics & Automation Society | INSTITUTION'S INNOVATION COUNCIL

IEEE
Robotics & Automation society

PRESENTS

# INDUSTRY 4.0 : INNOVATIONS AND APPLICATIONS

Guest Speaker

**Karkuvel M**
Application Engineer at AGA,
Working in R&Dteam of AGIIT.
Chennai

24th February 2026

10:00 AM Onwards

Lecture Hall no : 03

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**1. SHE-2026 – Science, Health, and Education Awareness Program**
**On Wednesday, February 25, 2026, starting at 12:30 PM, the IEEE Women in Engineering (WIE) Student Branch of Jeppiaar Institute of Technology, in association with the Institution's Innovation Council (IIC 8.0), organized a community outreach program titled "SHE-2026" at St. Anthony's School, CBSE.**

**Focus & Execution: The initiative was designed as an awareness program targeting school students to bridge the gap between foundational education and professional aspirations. The session focused on the tripartite pillars of Science, Health, and Education, aiming to ignite curiosity and confidence in young minds. Faculty Coordinator Dr. M. Benisha and Student Coordinator B. Arifa led the effort to provide a roadmap for students to build successful futures.**

**Skill Development: The program was strategically developed to enhance the mentorship and social leadership skills of the participating WIE members. It emphasized the importance of science in daily life and promoted healthy lifestyle habits. By teaching students to set long-term goals and explore technology fields early, the event fostered a mindset of innovation and personal well-being among the target audience.**

**Impact/Outcome: The session successfully encouraged school students to develop an interest in engineering and technology while emphasizing the value of sustained education. This program reflected the IEEE WIE's commitment to empowering the next generation of innovators through local community engagement. By stepping out of the college campus and into a school environment, the organizers transformed theoretical knowledge into an inspirational tool for future aspiring engineers.**

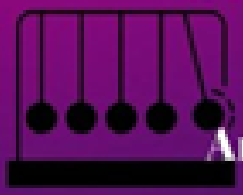
INSTITUTION'S INNOVATION COUNCIL - IIC 8.0

JIT IEEE STUDENT BRANCH | IEEE | WIE

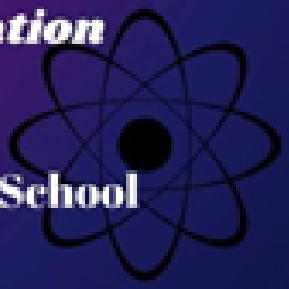
IEEE WIE Presents

# SHE - 2026

## Science - Health - Education



An awareness Program to School Students



Wednesday
23-02-2026

12:30 PM

St. Anthonys School
CBSE

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GPS Map Camera
Check In
Google
Sriperumbudur, Tamil Nadu, India
Vvrf+fqr, Sunguvarchatram, Kunnam, Sriperumbudur, Tamil Nadu 631604, India
Lat 12.891002° Long 79.874452°
Wednesday, 25/02/2026 03:00 PM GMT +05:30

**1. HACK 1.0 FUSION: 24-Hour Innovation Marathon**

**On February 25 and 26, 2026, the JIT IEEE Student Branch, in collaboration with the Institution's Innovation Council (IIC 8.0), hosted its flagship 24-hour national-level hackathon, "HACK 1.0 FUSION". Held at the Ground Floor Auditorium and specialized labs of the Jeppiaar Institute of Technology, the event served as a high-intensity "battlefield" where student innovators converged to solve real-world challenges.**

**Focus & Execution: The hackathon featured two distinct tracks: a Hardware Battlefield focusing on IoT, Robotics, Drone Technology, and VLSI, and a Software Battlefield dedicated to AI/ML, Cyber Security, Web Development, and Blockchain. The event followed a rigorous 24-hour schedule, beginning with an inaugural ceremony at 10:00 AM on Day 1 and concluding with a valedictory function on the afternoon of Day 2. Teams of 3 to 5 participants underwent a "The Grind" phase, characterized by overnight building and two intensive rounds of milestone reviews by an esteemed professional jury.**

**Skill Development: The competition was designed to push students beyond theoretical knowledge, emphasizing System Technology Co-optimization and rapid prototyping. Participants developed critical skills in hardware-software integration, scalability, and technical endurance. Hardware teams focused on physical sensing and control, while software teams worked on creating impactful, real-world digital solutions under strict time constraints.**

**Impact/Outcome: With a cash prize pool at stake, the event successfully identified top-tier talent capable of building with integrity and honor. The jury, including professionals from companies like NULogic, Novac, and Visteon, provided participants with invaluable industry insights. The hackathon fostered a culture of collaborative innovation, culminating in a product launch introduction and the recognition of winners whose projects demonstrated significant potential for real-world impact.**


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HACK 1.0 FUSION
WELCOME OUR ESTEEMED JURY MEMBERS
Mr. Vijay Anbarasan
Mr. Vishal Guleria
Project Manager, hexnode
Mr. Rajendra Prasad
General manager, Navac
Mr. Sanjeev raj
General manager, sri Ranganathar valves PVT Ltd.
Mr. Vijayakumar Subramaniyan
Tech professional, Visteon
Mr. Jagath Varshan
Director, Curious Wings™
Mr. A. Abhishek
Founder & CEO of MechMinds Technologies Pvt ltd
Mr. Shashikumar ezhilarasu
Google student Ambassador
FEBRUARY 25, 2026
09.00 AM
GROUND FLOOR AUDITORIUM


GPS Map Camera
Sirumangadu, Tamil Nadu, India
Vvqg+q43, Sirumangadu, Tamil Nadu 631604, India
Lat 12.889274° Long 79.876298°
Thursday, 26/02/2026 11:18 AM GMT +05:30
Google

**Articles**

## The Engineer’s Anchor: Integrity in an Age of Automation

**Autonomous systems are no longer a futuristic concept; they are a rapidly expanding reality, we are currently witnessing a massive shift where the impossible is becoming a weekly update. Between AI solving Ph.D. level proofs in days and startups launching factories into orbit to escape Earth’s gravity, the velocity of innovation is staggering. But as members of an IEEE Student Branch, we must look past the high-speed benchmarks. The real challenge of our era is not just about how much compute power we can harness; it is about maintaining a solid sense of integrity while the physical and digital layers of our world are being completely rewritten.**

**What this really means is that as our systems become more autonomous, the moral weight on the person behind the keyboard increases. Whether it is NASA’s Perseverance rover navigating the Martian surface or an AI model outperforming mathematicians, we are not just seeing cool code. We are seeing delegated responsibility. Integrity in engineering means ensuring these systems remain transparent and reliable. It is about making sure that a 40 percent jump in efficiency never comes at the cost of truth, safety, or the fundamental honesty of the data we use.**

**The recent spike in prices for entry-level electronics due to the RAM shortage is a loud wake up call for our community. It is a reminder that technology is deeply tied to global equity and the physical layer of our planet. If the basic tools for learning, like a simple Raspberry Pi, become too expensive for a student to buy, we risk an innovation gap where only a few can afford to experiment. Our job is to champion resourceful engineering by building systems that are efficient and accessible, ensuring that the next big breakthrough can come from a dorm room and not just a billionaire's data center.**

**Furthermore, we must stay alert to the conformity trap of AI driven research. While it is impressive that algorithms can now publish papers, there is a growing concern that the space of original ideas is shrinking because researchers are gravitating toward problems that AI finds easy to solve. As future engineers, we have to fight that pull. True progress requires messy human intuition, the kind that does not always fit into a neat benchmark. Your value is not in competing with an algorithm to solve a known problem; it is in having the courage to tackle the open ended, human centric issues that an AI would not even think to ask.**

**Ultimately, every project we touch, from a 10,000 year glass storage disk to a shapeshifting supercomputer, must be built with the intent to better the human condition. Engineering without soul is just optimization; engineering with integrity is what actually moves us forward. As we move through this semester, let us challenge ourselves to build systems that are not just smart, but are also fair, sustainable, and grounded in reality. Let us make sure that when someone looks at the work coming out of our Student Branch, they see more than just advanced hardware. They see the character of the people who designed it.**

**(Adapted from February 2026 IEEE Spectrum coverage on Laser-Written Glass Could Store Data for Millennia, Low-Cost Computers Nearly Double in Price as RAM Shortage Hits, AI Is Acing Math Exams Faster Than Scientists Write Them, and Startups Are Betting on Orbital Growth for Advanced Electronics.)**

**Article by**
**Sahaya Salon A S,**
**Jeppiaar Institute of Technology,**
**IEEE Member Number: 100020367.**

**Etched in Stone: How Materials Science is Saving Our Digital Heritage**

**In an era where digital data is being generated at an unprecedented rate, the challenge of long-term, reliable, and sustainable data storage is becoming critical. Current archival methods, while effective for short to medium terms, suffer from limited lifespans, high maintenance costs, and significant environmental footprints. Imagine a storage medium capable of preserving information for thousands of years, impervious to the elements, and requiring minimal energy – a solution that could secure humanity's digital heritage for millennia.**

**The primary bottleneck in current data archival strategies is the inherent fragility and impermanence of existing media. Magnetic tapes degrade over decades, hard disk drives fail after a few years, and even optical discs have a limited shelf life. These media are susceptible to environmental factors like humidity, temperature fluctuations, and electromagnetic interference. Furthermore, the constant need for "data migration" – copying data from aging media to newer formats – is a resource-intensive and energy-consuming process that adds to operational costs and environmental impact, creating a perpetual cycle of digital obsolescence.**

**Microsoft's Project Silica offers a revolutionary approach to this problem. It leverages femtosecond lasers to write data into robust, transparent quartz glass. These ultra-fast, high-intensity lasers create permanent, three-dimensional nanostructures (known as voxels) within the glass itself. Data is encoded by varying the size, orientation, and depth of these voxels. To read the data, polarized light is passed through the glass, and changes in the light's properties are interpreted by machine learning algorithms, translating the physical structures back into digital information. This method creates an incredibly durable medium, resistant to heat, water, electromagnetic pulses, and even physical scratching.**

**The implications for Project Silica are vast, particularly for sectors requiring immutable, long-term archives. Cloud storage providers could significantly reduce their operational costs and environmental impact by utilizing glass storage for cold data that is infrequently accessed but must be preserved indefinitely. Scientific research data, historical archives, cultural heritage collections, and governmental records could all benefit from a medium that offers truly millennial-scale preservation. It represents a paradigm shift from active, energy-intensive storage to passive, ultra-durable archival, potentially reshaping the architecture of future data centers.**

**Project Silica exemplifies the innovative spirit at the intersection of optics, materials science, and computer science. For CS students, this project highlights the critical importance of designing not just efficient algorithms or powerful processors but also considering the fundamental physical layers of data storage and their long-term sustainability. Understanding how to bridge the gap between abstract data and tangible, resilient physical media will be a crucial skill in an increasingly data-dependent world. This initiative challenges us to think beyond current limitations and imagine truly enduring solutions for our digital future.**

**(Adapted from February 2026 IEEE Spectrum coverage on Laser-Written Glass Could Store Data for Millennia)**

**Article by**
**Vishnu Prasad A,**
**Jeppiaar Institute of Technology,**
**IEEE CS Member Number: 100652984.**

**Building the Impossible: How Space Factories are Redefining Material Science**

**For decades, the pursuit of ever-smaller, more powerful electronics has driven innovation, largely confined to Earth's laboratories and factories. Yet, a new frontier is emerging: manufacturing advanced semiconductors and electronic components in the unique environment of space. A growing number of startups, often led by visionary engineers and scientists, are making substantial investments in orbital growth, betting on microgravity to unlock unprecedented material properties for the next generation of electronics.**

**Earth's gravitational pull, while fundamental to our existence, is a significant impediment to producing perfectly uniform and pure crystals for semiconductors. Gravity induces convection currents in molten materials, leading to impurities, structural defects, and non-uniform growth in crystals like silicon, gallium nitride, or silicon carbide. These imperfections directly translate to reduced performance, higher power consumption, and limitations on the miniaturization of electronic devices. Overcoming these terrestrial constraints has been a persistent challenge for high-performance computing and specialized electronics.**

**The solution lies in microgravity. In orbit, the absence of significant gravitational forces eliminates convection, allowing molten semiconductor materials to cool and crystallize in a far more controlled and uniform manner. This environment facilitates the growth of larger, purer, and more structurally perfect crystals with fewer defects. Such pristine crystals can lead to semiconductors with superior electron mobility, higher power handling capabilities, and enhanced thermal properties. This precise control over the crystallization process promises to yield materials that are impossible to create with current terrestrial methods, opening doors for revolutionary advancements in transistors, sensors, and optical components.**

**Several ambitious startups, backed by significant venture capital, are pioneering this space-manufacturing revolution. Companies like Varda Space Industries are developing autonomous space factories designed to return high-value materials to Earth, focusing initially on pharmaceuticals but with clear long-term ambitions for electronics. Other firms are exploring the growth of exotic materials like ZBLAN fiber optics, which show superior performance when produced in microgravity. The potential market for these space-grown, ultra-high-performance semiconductors spans critical sectors: advanced military and aerospace applications, quantum computing, high-frequency communications, and next-generation artificial intelligence hardware.**

**This burgeoning field highlights the boundless potential when traditional engineering challenges are viewed through a novel lens. For aspiring engineers, particularly women in engineering, it represents a remarkable opportunity to contribute to a truly groundbreaking industry. It emphasizes the importance of pushing boundaries, embracing risk, and leveraging diverse perspectives to solve complex problems. The future of advanced electronics might just be found not on Earth, but among the stars, and it's a future that WIE members are uniquely positioned to help shape.**

**(Adapted from February 2026 IEEE Spectrum coverage on Startups Are Betting on Orbital Growth for Advanced Electronics)**

**Article by**
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**The Ultimate Off-Road Test: AI Lessons from the Martian Frontier**

**Exploring the treacherous, alien landscape of Mars has always been a monumental challenge, constrained by immense distances, communication delays, and the sheer difficulty of remote operation. NASA's Perseverance rover, currently exploring Jezero Crater, represents a leap forward in planetary exploration, largely due to its unprecedented level of autonomy. For the first time, NASA has entrusted an Artificial Intelligence (AI) system with significant driving responsibilities, allowing the rover to navigate vast stretches of Martian terrain with minimal human intervention.**

**The primary bottleneck for Mars rovers has always been the communication lag. Light-speed delays mean that a command sent from Earth takes several minutes to reach Mars, and the rover's response takes just as long to return. This severely limits the amount of ground a rover can cover in a Martian day, as human operators can only issue a few simple commands, requiring the rover to stop and await instructions frequently. Furthermore, the complex, often unpredictable Martian terrain demands constant vigilance to avoid hazards, a task that becomes incredibly slow and tedious when managed from millions of miles away.**

**At the heart of Perseverance's enhanced autonomy is the "AutoNav" AI system. This sophisticated software utilizes a suite of stereo cameras to build a real-time, 3D map of the surrounding Martian terrain. Using this data, AutoNav employs advanced path-planning algorithms to identify safe routes, bypass obstacles, and navigate towards its scientific targets. The AI makes decisions on the fly, autonomously adjusting its trajectory, speed, and even selecting optimal wheel placements to traverse challenging rocky areas or sand dunes. This system can process information and react far quicker than human operators, allowing Perseverance to drive up to 90% autonomously on some journeys, covering significantly more ground per day than its predecessors.**

**The success of Perseverance's AutoNav system has profound implications, not just for future space missions but also for terrestrial applications. The lessons learned in developing AI for extreme, unpredictable environments are directly transferable to autonomous vehicles on Earth, particularly in off-road settings like mining, agriculture, or disaster relief. Robotics in hazardous environments, where human access is impossible or dangerous, will benefit immensely from advanced AI-driven autonomy. This breakthrough accelerates the development of truly intelligent robotic systems capable of independent decision-making in complex, dynamic scenarios.**

**For students interested in robotics and automation, Perseverance's AutoNav system is a powerful case study in the practical application of AI. It demonstrates how intelligent algorithms, combined with robust sensor integration and mechanical design, can unlock capabilities previously considered impossible. This achievement underscores the importance of developing AI systems that can operate reliably under uncertainty, adapt to unforeseen challenges, and perform critical tasks without constant human oversight. The future of exploration and hazardous-environment operations will undoubtedly be driven by increasingly autonomous robotic systems, and RAS members are at the forefront of this exciting frontier.**
**(Adapted from February 2026 IEEE Spectrum coverage on NASA Let AI Drive the Perseverance Rover)**

**Article by**
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**From Static to Fluid: Mapping Workloads to Reconfigurable Fabrics**

**The relentless pursuit of computational power has driven supercomputer design for decades, leading to machines capable of billions of calculations per second. However, this power comes at a significant cost: energy consumption. Supercomputers are notorious energy hogs, with massive data centers requiring megawatts of power and extensive cooling systems. As computational demands continue to soar, particularly for diverse and complex workloads, the energy efficiency of these behemoths is becoming a critical bottleneck.**

**Traditional supercomputers are often built with fixed architectures, typically relying on powerful but generalized CPUs and GPUs. While excellent for certain types of parallelizable tasks, these fixed designs are inherently inefficient for the wide variety of workloads encountered in modern scientific computing, AI training, and data analytics. A processor optimized for vector operations might be idle or inefficiently utilized when executing scalar-heavy code, leading to wasted energy and underperformance. This architectural rigidity means that a significant portion of a supercomputer's energy budget is often spent on computations that are not optimally mapped to its hardware.**

**Sandia National Laboratories' Spectra system offers a compelling solution: a "shapeshifting" supercomputer with reconfigurable accelerators. Instead of fixed CPU/GPU arrays, Spectra incorporates a mix of reconfigurable hardware components, such as Field-Programmable Gate Arrays (FPGAs) and potentially custom Application-Specific Integrated Circuits (ASICs). These accelerators can be dynamically reconfigured at runtime to precisely match the computational requirements of a specific task. This involves altering the logic gates, interconnections, and processing elements on the fly, allowing the hardware to morph into an optimal architecture for each unique workload. This adaptability means less wasted computation and significantly higher energy efficiency compared to static architectures.**

**The concept of reconfigurable computing has the potential to revolutionize high-performance computing (HPC) and data centers. Industries heavily reliant on diverse computational tasks, such as drug discovery, materials science, climate modeling, and large-scale AI model training, could see massive energy savings and performance boosts. This shift towards hardware adaptability aligns with the growing demand for highly specialized, energy-efficient computing at the edge and in the cloud. It signals a future where computing infrastructure is not just powerful, but also intelligently adaptive to the demands placed upon it.**

**For students in the Circuits and Systems Society, Spectra represents a fascinating exploration into the future of computing architecture. It highlights the critical importance of designing not just fast circuits, but intelligent, adaptable systems that optimize energy usage for specific tasks. Understanding reconfigurable hardware, low-power design, and the interplay between software and dynamically changing hardware will be invaluable skills. This initiative challenges us to think beyond conventional processor designs and embrace flexibility as a core principle for sustainable and powerful computing solutions.**

**(Adapted from February 2026 IEEE Spectrum coverage on A Shapeshifting Supercomputer May Be More Energy Efficient)**

**Article by**
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**Privacy vs. Progress: The Human Cost of Competing AI Models**

**Artificial Intelligence is rapidly becoming the defining technology of the 21st century, promising to reshape economies, societies, and geopolitical power dynamics. As the two leading global powers in AI development, the United States and China are pursuing distinctly different strategies, driven by contrasting ideologies, governance structures, and societal priorities. These diverging paths are not merely technical differences but represent fundamentally different visions for how AI will integrate into human society, with profound implications for the world.**

**The core bottleneck in global AI development lies in the lack of a universally agreed-upon ethical framework and governance model. Without common ground, the rapid advancement of AI risks exacerbating existing societal inequalities, eroding privacy, and creating new forms of control or discrimination. Each nation's strategic priorities—whether economic growth, national security, or individual liberties—shape their approach to AI, creating a fragmented global landscape where technological progress outpaces ethical and regulatory consensus.**

**The U.S. approach to AI is largely private sector-led, characterized by open research, venture capital funding, and an emphasis on ethical guidelines developed by academic institutions and industry consortia. This model prioritizes innovation, competition, and a human-centric approach to AI, with strong (though sometimes debated) protections for individual privacy and data rights. In contrast, China's AI strategy is state-led and centrally planned, with massive government investment and a focus on integrating AI into national security, surveillance, and economic development. This approach leverages vast datasets, often with less emphasis on individual privacy, to accelerate progress in areas like facial recognition, smart cities, and autonomous systems for social control.**

**These divergent strategies have significant implications for the global industry landscape. The U.S. model fosters a vibrant ecosystem of startups and tech giants, driving innovation in areas like generative AI, healthcare AI, and autonomous vehicles, often with a global market in mind. China's approach, while also producing significant innovation, particularly in areas like e-commerce, fintech, and advanced manufacturing, often prioritizes domestic applications and state-backed initiatives. This creates distinct technological ecosystems, potentially leading to incompatible standards, data silos, and a "splinternet" where AI services and capabilities are segmented along geopolitical lines.**

**For students in the Society on Social Implications of Technology, this geopolitical divergence in AI development is a critical area of study. It highlights that technology is never neutral; its design and deployment are deeply intertwined with societal values and political systems. Understanding these differing AI futures is essential for anticipating their impacts on human rights, privacy, economic equity, and global stability. It underscores the urgent need for thoughtful policy, ethical design, and robust public discourse to ensure that AI serves humanity's best interests, regardless of national borders.**

**(Adapted from February 2026 IEEE Spectrum coverage on The U.S. and China Are Pursuing Different AI Futures)**

**Article by**
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**Jeppiaar Institute of Technology,**
**IEEE SSIT Member Number: 100643387.**

## Achievements:

**1. Pioneering Innovation:**

**Successfully launched and executed HACK 1.0 FUSION, the first-ever 24-hour hackathon in the history of our institution. This landmark event set a new benchmark for technical endurance and collaborative problem-solving on campus.**

**2. National Scale Competition:**

**Attracted high-caliber talent to compete in a high-intensity national-level technical "battlefield" featuring both hardware and software tracks.**

**3. Elite Industry Validation:**

**Secured an esteemed jury panel featuring experts from NULogic, hexnode, Novac, Visteon, Curious Wings, and Mechimws Technologies, bridging the gap between student prototypes and professional industry standards.**

**4. Social Impact Expansion:**

**Achieved a major outreach milestone with the SHE-2026 program at St. Anthony’s School, successfully transitioning our mission of science and education awareness into the local school community.**

## Success Stories

# Leading the Future: My Transformative Journey with JIT IEEE

**Karthik P,**
**YESIS'12 Ambassador Lead,**
**Jeppiaar Institute of Technology,**
**IEEE Member Number: 98879563**

**"The only way to do great work is to love what you do and lead with purpose..**
**Serving as the Chair of the JIT IEEE Student Branch was one of the most transformative phases of my academic life. What began as a responsibility soon became a journey of leadership, exposure, and personal growth.**

**When I stepped into this role, my primary goal was to create opportunities for students to explore beyond textbooks. Organizing workshops, technical seminars, and collaborative events helped me understand what true leadership means. It is not just about managing a team. It is about inspiring others, making decisions under pressure, and ensuring that every member feels valued.**

**Expanding My Network**
**One of the most valuable experiences I gained through IEEE was networking. Through conferences, meetings, and technical events, I had the opportunity to connect with professionals, researchers, and students from different institutions and backgrounds.**
**These interactions broadened my perspective. I learned how global technical communities operate, how collaborations are built, and how meaningful professional relationships can shape a career.**

**Scholarship Opportunity**
**My active involvement and dedication within IEEE opened doors to scholarship opportunities. The recognition I received was not just financial support. It was validation of my efforts, leadership, and commitment to professional growth. Receiving a scholarship through IEEE strengthened my confidence and motivated me to aim higher in both academics and career aspirations.**

**Skills That Shaped Me**
**Beyond technical knowledge, my journey helped me develop essential life skills:**
**Leadership and team coordination**
**Public speaking and communication**
**Strategic planning and execution**
**Event management**
**Networking and professional etiquette**
**These skills continue to guide me even today.**

**A Message to Students**
**If there is one thing I have learned, it is this: stepping out of your comfort zone creates the biggest growth. Being part of IEEE was not just an extracurricular activity for me. It was a platform that shaped my identity as a leader and professional.**
**I encourage every student to actively participate, take responsibility, and make the most of such opportunities. The experience, connections, and exposure you gain will stay with you long after college.**

**Best Ideas from IEEE Spectrum (February's Technical Foresight)**

**These four articles represent the most critical and unifying technical trends for our entire Student Branch, covering breakthroughs in orbital manufacturing, autonomous exploration, adaptive hardware, and the global ethics of intelligence.**

**• Startups Are Betting on Orbital Growth for Advanced Electronics: Innovation often happens where disciplines collide. By leveraging the microgravity of orbit to grow seed crystals, researchers are creating semiconductor materials with far fewer defects than those made on Earth. This interdisciplinary feat highlights the Grand Challenges of engineering, showcasing how the future of high-performance AI data centers might actually depend on material science breakthroughs happening among the stars. It's a call for our SB especially WIE members to lead in the emerging field of space-based manufacturing.**

**• NASA Let AI Drive the Perseverance Rover: The field of robotics reached a new frontier as NASA's Perseverance rover set a record for autonomous driving on Mars using the AutoNav system. By completing nearly 90% of its travels without human input, it demonstrated the power of processing at the edge to solve the multi-minute communication lag between Earth and Mars. For RAS members, this is a masterclass in sensor fusion and real-time path planning in extreme, unpredictable environments.**

**• A Shapeshifting Supercomputer May Be More Energy Efficient: In hardware innovation, the spotlight is on Sandia National Laboratories' new Spectra system. By utilizing reconfigurable accelerators like FPGAs, Spectra allows hardware to physically adapt its circuitry to suit specific AI tasks, drastically cutting energy consumption. This marks a pivotal shift for CASS and CS enthusiasts from static chip design to dynamic, shapeshifting architectures that can keep pace with the rapidly evolving demands of modern neural networks.**

**• The U.S. and China Are Pursuing Different AI Futures: Addressing the human side of tech, this study explores how the U.S. and China are taking fundamentally different paths in AI governance. While the U.S. model is largely private-sector led with a focus on creative autonomy, China's state-led approach prioritizes Industrial AI and social infrastructure. This serves as a vital reminder for SSIT members that engineering choices are never made in a vacuum; they are deeply rooted in national ideologies, ethics, and the societal goals of the cultures that build them.**

**Upcoming Important SB Events (March 2026 Roadmap)**

**This detailed roadmap showcases the JIT IEEE Student Branch's upcoming technical workshops and challenges, intentionally designed to reinforce Program Outcomes and global Sustainable Development Goals (SDGs).**

| Date | Event Name | Concept / Focus | Organizer |
|---|---|---|---|
| March 6, 2026 | Entrepreneurship in ai & robotics | Student workshop and learn new thing | RAS |
| March 6, 2026 | NextGen Robotics With ROS (Robot Operating System) | Student workshop and learn new thing | RAS |
| March 16, 2026 | Studio in Your Pocket - Create. Edit. Publish. | Hand on workshop for content creation and easy professional editing in mobile | IEEE SB |

**This detailed roadmap shows that every SB activity is intentionally designed to produce the next generation of socially conscious engineers.**