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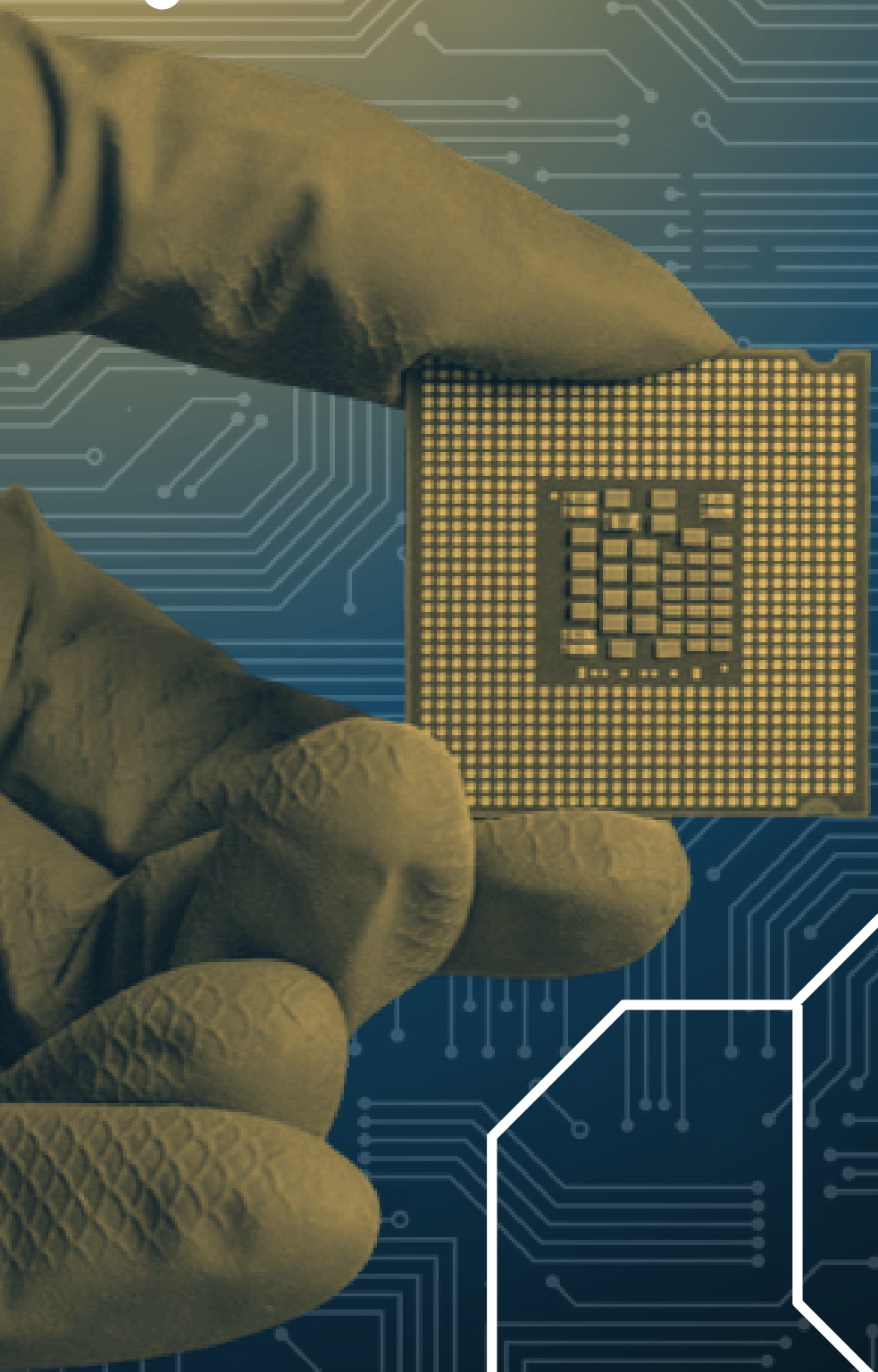

Chips and Semiconductors

PES UNIVERSITY

CENTRE FOR INNOVATION & ENTREPRENEURSHIP

CONTENT

Foreword

The semiconductor industry has emerged as a cornerstone of the global knowledge economy, catalyzing innovation across sectors that define modern society, including communications, healthcare, and energy. As India strives to establish itself as a leading hub in the global semiconductor arena, the responsibility for democratizing education and research rests significantly with the nation's universities.

Dr. Madhura Purnaprajna
Director, CHIPS, PES University

India's rapidly growing semiconductor industry presents a multitude of opportunities for students, with the university ecosystem serving as the key to unlocking these prospects. Education and research together form the backbone of innovation, each continually informing and enriching the other. While education imparts the foundational knowledge that cultivates curiosity, research channels that curiosity toward the discovery of novel technologies and solutions.

When universities integrate these two pillars, they create a self-sustaining cycle of innovation: laboratory discoveries enhance the curricula, while the classroom fuels the next wave of scientific inquiry. By prioritizing forward-thinking curricula and a creative mindset, universities empower students to become trailblazers in the field.

Our Mission at CHIPS

At the Centre for Heterogeneous and Intelligent Processing Systems (CHIPS), we operate at the intersection of computer architecture and compilation techniques. While off-the-shelf devices offer cost-efficiency, they often lack the performance of purpose-built, domain-specific systems. We believe the future lies in the ability to seamlessly adapt architectures to evolving workloads—maximizing both resource efficiency and operational impact.

By pioneering solutions in low-cost, high-performance computing, we aim to open new frontiers for previously unattainable applications. Our emphasis on cost and performance is designed to propel transformative progress in human-centric computing, with a far-reaching impact on affordable healthcare and accessible open-source technologies for education.

As an institution, PES University exemplifies how academic leadership can extend opportunities far beyond the boundaries of conventional classrooms. In this spirit, the Centre for Innovation and Entrepreneurship (CIE) provides a robust ecosystem that nurtures student-led startups, fosters industry collaborations, and offers hands-on programs in innovation and entrepreneurship.

Best wishes to CIE for continued success!
Dr. Madhura Purnaprajna
Director, CHIPS

Director's Desk

Professor Sathya Prasad
Director, Centre for Innovation and Entrepreneurship (CIE),
PES University

We are delighted to welcome you to the 11th edition of the CIE Newsletter. After ten editions, the eleventh marks a transition into a new cycle, an invitation to step beyond what is familiar. Eleven is also a prime number: indivisible, unconventional, and independent. Fittingly, this edition spotlight ideas that do not merely conform to established norms but seek to redefine what is possible. This year also marks an important milestone for us at the Centre for Innovation and Entrepreneurship (CIE), as we complete eight years of serving as a springboard for student innovators and entrepreneurs at PES University.

PES University exemplifies how academic leadership can extend opportunities beyond conventional boundaries. This year alone, the university successfully sent six semiconductor chips for manufacturing (tapeout). We could not have asked for a more fitting contributor to this edition's foreword than Dr. Madhura Purnaprajna, Director of CHIPS, who brings a ringside view of the high-performance architecture ecosystem.

Below are a few highlights, of ongoing semiconductor-related activities across various Centres of Excellence (CoEs) at PES University:

- New hardware security designs at C-HACS, targeted for tapeout in early 2026.
- Multiple RISC-V–based designs at the CHIPS CoE, including hardware accelerators and heterogeneous computing elements, planned for tapeout next year.
- A combined CPU (RISC-V) and machine learning accelerator chip under development at CIE, with a tapeout timeline of early to mid 2026.
- Complex analog circuit designs at various stages of development across the EC Campus.
- An active student club dedicated to semiconductors, aptly named Silicon, which has conducted multiple engagements and activities this year. In addition, several stealth projects, including work in photonics, are currently underway!

Another landmark initiative is the launch of the "Essentials of Innovation and Entrepreneurship" (EIE) course, now offered to students across 21 disciplines - spanning Engineering, Commerce, Law, Performing Arts, and Management at PES University. This academic offering engages approximately 4,500 students across two campuses, carries four academic credits over the course of two semesters, and is delivered as a large-scale online program.

A key highlight is the semester-long ideathon, conducted through CIE Spark and CIE Ignite, which immerses students in hands-on innovation. The curriculum is delivered by three instructors with nearly a century of collective industry experience, supported by five teaching assistants and the active involvement of over ten startup founders and industry leaders.

On the research front, CIE's paper titled "Strategic Product Management Education in the Era of Artificial Intelligence" has been accepted at IEEE TEMSCON 2025 (San Diego) and is available on IEEE Xplore. The work examines how product management education must evolve to inspire innovation in the age of AI.

Research paper title : Strategic Product Management Education in the Era of Artificial Intelligence

IEEE Xplore Website

Authors:
Prof. Sathya Prasad
Raghavendra Deshmukh
Madhukar Narasimha

We also continue to strengthen our engagement with industry and startups. A few recent examples are:

- SiMa.ai, a chip and software company specializing in physical AI, visited CIE and PES University, leading to the selection of three interns in semiconductor and chip design.
- Elecktron RE (energy management systems) engaged with CIE and offered five internships based on the quality of student interactions.
- Tsavorite, a semiconductor startup, selected three students for eighth-semester internships, students who had already gained hands-on silicon design experience through CIE.
- AiNions, an agentic AI startup, selected two students after a rigorous evaluation involving test assignments and projects.

All of this, and much more, has been made possible by the incredible commitment of our CIE Industry Mentors (CIE-IMs). Launched two years ago, with a combined strength of 7 mentors, this initiative has delivered remarkable outcomes and is now being explored as a model by other PES University CoEs to further bridge the gap between academia and industry. As we look ahead, we do so with optimism and purpose. Here's wishing everyone a healthy, joyful, and productive 2026.

SiMa.ai Team with Interns at CIE

CIE COURSE - EIE

CIE offers Essentials of Innovation and Entrepreneurship (EIE) course which is a comprehensive 4-credit course at PES University designed to cultivate the next generation of founders. Spread across two semesters, the program provides 2 credits in the 3rd semester (Part 1) and 2 credits in the 4th semester (Part 2).

Every Wednesday, students engage in virtual sessions led by mentors Prof. Sathya Prasad, Raghavendra Deshmukh, and Madhukar Narasimha. To foster a truly interdisciplinary culture, these sessions accommodate 4,500 students from all disciplines across both the EC and RR campuses simultaneously. Moving beyond standard lectures, the program focuses on the "why" and "how" of startups, teaching students that successful innovation requires as much resilience as it does creativity.

The course bridges the gap to the PESU Alumni network, inviting successful graduates to share unfiltered "start-to-end" narratives of their entrepreneurial journeys. To ensure engagement, the faculty utilizes a two-tier quiz system: real-time "Mindset Pulse Checks" and post-session quizzes to reinforce key insights

In the 3rd & 4th semester, EIE shifts focus towards idea and launching ventures.
Following a 24-module roadmap, students navigate:

- Strategy: Design thinking, team leadership, and value propositions.
- Operations: Intellectual Property (IP), startup finance, and pitching.
- Innovation: The role of AI in modern entrepreneurship.

The journey culminates in a concrete Entrepreneurial Action Plan, turning campus ideas into market-ready blueprints.

<table>
<tr><td colspan="3">Lectures</td><td rowspan="3">Internal assessment</td><td rowspan="3">External assessment</td></tr>
<tr><td colspan="2">Case Studies</td><td>Video Discussions</td></tr>
<tr><td>In-Session Quiz</td><td>End-Session Quiz</td><td>External Speakers</td></tr>
<tr><td colspan="5">Integrated Hackathon and Mentorship</td></tr>
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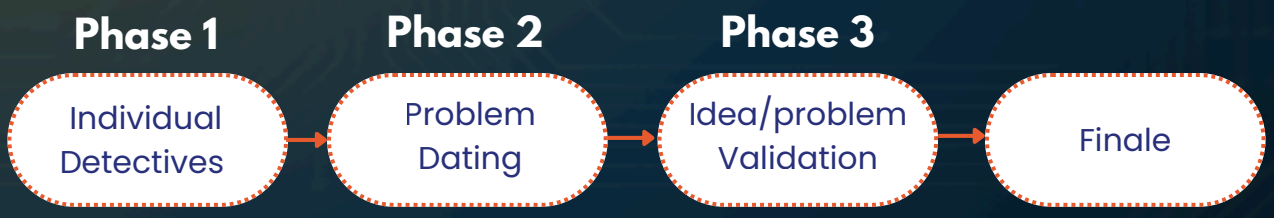
EIE Course Structure for the 3rd and 4th semesters

CIE Spark

Complementing the weekly EIE-I sessions is CIE Spark, an offline innovation challenge that brings the classroom concepts to life. While EIE provides the framework, Spark offers the hands-on practice. It serves as a physical forum where students from different branches step forward with diverse ideas and problems to explore how to validate them in the real world.

SPARK
by CIE

Idea/Problem Validation Structure:



CIE offers a semester-long focus exclusively on Problem Discovery and Validation. Solution-building is explicitly forbidden until a problem is rigorously proven to be:

- Frequent - Affects many people regularly
- Intense - Causes significant pain or cost
- Worth-Solving - Has economic or social impact

Unlike typical hackathons that rush to solutions, Spark flips the script by pushing students to first identify the right problem through user interviews and design thinking. This discipline acts as a precursor to the flagship CIE Ignite ideathon, ensuring that by the time students reach the next stage, they have a validated, high-impact foundation.

CIE Programs

Practical Approach to Machine Learning (PAML)

It is a comprehensive yet approachable introduction to the vast field of Machine Learning. While the curriculum covers topics available elsewhere, the delivery is what truly sets it apart. It offers a well-balanced mix of theoretical fundamentals, hands-on coding sessions, and assignments, all anchored by engaging in-class interactions.

With the Mentorship of Mr. Prasanna Chandran along with TAs Amogh Varsh, Rishab Jawagal, Prajwal M K, Vignesh Kamath, the in-person sessions led by approachable and well-read Teaching Assistants under expert guidance make complex concepts much easier to grasp and absorb than a standard online course. True to the CIE spirit, PAML fosters a community of enthusiastic and committed students who collaborate on a final project. This capstone experience ensures you aren't just "taking a course" but are actually experimenting and building real-world solutions.

Practical Approach to Machine Learning workshop 2025

The workshop has produced several standout projects that demonstrate the power of AI across diverse sectors:

- Ocular Disease Screening: An AI-powered diagnostic tool capable of detecting over 10 different eye diseases.
- ClipCatch: A smart video analysis platform designed to identify and extract the most engaging clips from longer content.
- NeuroCombat: Real-time computer vision integration specifically optimized for the high-demand environment of live streaming.
- Sparsha: A comprehensive AI healthcare ecosystem focused on providing deeply personalized patient care.
- Synthetic Commodity Portfolio: Advanced financial modeling used for precise asset tracking and market analysis.

Product Management in the AI Era (PMAIE)

Designed for final-year engineering students, PMAIE is a 2-credit course that bridges the gap between technical engineering and strategic product leadership. The program emphasizes a "learning by doing" philosophy, engaging 62 students organized into 10 teams to solve 5 real-world problems.

The course is delivered through 28 hours of instruction across 12 specialized modules, structured into five core pillars:

- PM Foundation: Students master the PM function, its history, and the end-to-end Product Life Cycle (SDLC).
- Strategic Leadership: Focuses on crafting a compelling vision and mission while mastering the art of product roadmaps.
- Build & Execution: Covers the mechanics of co-innovation, prototyping, and the strategic role of the MVP.
- Launch & Growth: Students learn to execute Go-to-Market (GTM) strategies and track essential post-launch metrics.
- Innovate with AI: Explores AI's impact on PM tools, ethics, and process optimization to future-proof student careers.

Under the guidance of Prof. Sathya Prasad and Mr. Raghavendra Deshmukh, and supported by TAs Chirag Shekar and Pulkit Aggarwal, students navigate a challenging academic roadmap. The experience is anchored by 12 handpicked Harvard Business Review (HBR) case studies and a dual-track assessment model:

1. Individual Growth: Evaluated through interim MCQ assessments and deep-dive case study analyses.
2. Team Collaboration: Focused on a case-based mini-project and a comprehensive capstone final project.

To ensure true market relevance, all final projects are evaluated by an external industry jury.

By the end of the program, students are equipped to own the product lifecycle, drive research-backed decisions, and write clear Product Requirement Documents (PRDs). Most importantly, they leave with the ability to utilize practical AI tools to optimize the entire PM process.

Product Management in the AI Era Course participants 2025

CIE Summer Internships

For many students, summer means a break; for CIE interns, it meant building, learning, and pushing boundaries. The Centre for Innovation and Entrepreneurship (CIE) Summer Internship Program offered a hands-on platform where student teams collaborated with experienced mentors to transform ambitious ideas into impactful projects.

At CIE, innovation isn't just about creating something new, it's about solving something meaningful. This year's program brought together driven minds and bold thinking, resulting in projects spanning healthcare, education, finance, and immersive technology.

Digital Health Gets a Pulse

In 2025, CIE teams explored how Artificial Intelligence can make healthcare more accessible and inclusive, tackling challenges that traditional medical systems often struggle to address.

NeuroVision: Diagnostics Without Boundaries
Advanced medical imaging shouldn't be a luxury reserved for big-city hospitals. Led by Prateek P and Karthik S under the mentorship of Samhitha Harish, the NeuroVision team was driven by a powerful frustration: Why should a patient's location dictate the quality of their care?

- The Breakthrough: They built a lightweight, browser-based platform that brings 3D brain tumor segmentation to a standard laptop.
- The Result: By achieving an 89.9% accuracy rate in as little as 8 seconds, they've ensured that a doctor in a remote clinic has the same diagnostic power as one in a major medical hub.

As the developers shared during their presentation, "Cutting-edge diagnostics should not require cutting-edge hardware".

Dermify AI: Skin Deep, Soul Strong
The team identified a critical gap in medical AI: most skin cancer models underperform on darker skin tones due to biased datasets. Their solution involves generating high-fidelity synthetic data to ensure accurate detection across all skin types.
"We did not just build a model," the team shares, "we built a more equitable future for healthcare." Their work highlights how innovation can actively reshape fairness in medicine.

Building the Campus of Tomorrow

While much of our research focuses on specialized hardware, innovation at CIE also tackles the immediate, everyday challenges of campus life. The following three projects demonstrate how our innovators are reimagining the very feel of education.

University Management System (UMS): Ending the Paper Trail
Team SW4 set out to solve a universal student frustration: the "tyranny of scattered Google Forms and lost submissions". Mentored by Prasanna S. Chandran and led by Karthik G. S., they built a comprehensive, AI-powered ecosystem designed to make campus operations seamless.

- The Single Ecosystem: A unified platform where administrators, faculty, and students operate without friction.
- Beyond Digitization: The system integrates resume-screening tools, data analytics dashboards, and smart automation.

As the team reflected on the project's scale, they quote "We did not just build an app; we built an ecosystem".

IgniteChain: Gamifying the Campus Experience

Mentored by Raghavendra Deshmukh, the IgniteChain team asked a powerful question: What if attending a workshop felt as rewarding as winning a game?

- The Solution: A blockchain-based rewards system that gamifies learning and participation.
- The "Magic" Wallet: Students automatically receive wallets and earn tokens for assignments or events—no crypto knowledge required.
- The Hidden Tech: By keeping the complexity in the background, the team ensures students only feel the excitement of earning tangible perks.

"We hid the blockchain so well that students only feel the excitement."

CIE-GPT: Your 24/7 Academic Companion

Another project under the mentorship of Raghavendra Deshmukh, CIE-GPT is an AI-powered mentor capable of processing text, slides, PDFs, and even videos.

- Precision Support: Its Self-Evaluating RAG system achieved a 92% context relevance score during testing.
- Context-Aware: It provides reliable, precise academic support exactly when a student needs it most.
- The Impact: It functions as a round-the-clock mentor, ensuring students are never stuck on a concept for long.

Where Vision Meets Virtual Reality

A single tap on a phone can now transport a student from a crowded lecture hall to a shared virtual lab. At CIE, several teams are quietly redefining the boundaries of reality by turning practical constraints into creative solutions.

VR-Distributed

High-end VR rigs are often prohibitively expensive, leading Prakyath P. Nayak and Prajwal R., mentored by Samhitha Harish, to ask: What if the only hardware you needed was already in your pocket?

- The Breakthrough: They developed a browser-based VR system that runs on a smartphone and streams immersive experiences via a peer-to-peer WebRTC platform.
- High Performance: With latency under 100 milliseconds and smooth 21-point hand tracking, it delivers a full VR experience without the need for a dedicated headset.
- Global Access: By lowering the barrier to entry, this technology could revolutionize remote education and defense training, making immersion accessible to anyone with a smartphone.

Vision Edge

While one team builds new worlds, Mallikarjun Yeshlur and the Vision Edge team, mentored by Prasanna S. Chandran, are making our current world clearer. They tackled a pervasive problem in security: poor video quality.

- The "Superpower" Algorithm: Their system cleans up blurry, hazy, or rain-obscured footage in real time, making video data from traffic or surveillance cameras instantly more reliable.
- Real-World Impact: Whether applied to nighttime driving or public safety, the technology ensures that critical details are never lost to the elements.

Reflecting on the importance of clarity, Mallikarjun noted that the project's goal goes beyond technical refinement: “We are not just cleaning video; we are revealing truths hidden in the noise.”

Demystifying the World of Finance

For many first-time investors, the world of IPOs feels like an intimidating maze of dense documents and unpredictable trends. At CIE, a student-led team is turning that complexity into a clear path forward.

Intelligent IPO Advisory: Translating Complexity into Clarity
Created by Shreya Sai Rajesh, Neha Nair, Niharika Saha, and Nupur Dambal, this platform is designed to be a "confidence booster" for anyone stepping into the financial world.

- Automated Analysis: The system automatically scans Draft Red Herring Prospectuses (DRHPs) and analyzes company fundamentals, saving users hours of manual research.
- Real-Time Sentiment: It tracks social media and news sources to gauge market mood, helping investors stay ahead of the curve.
- Personalized Guidance: Beyond data, the app offers tailored risk profiles and exit strategy suggestions to help beginners navigate high-stakes decisions.

the team noted that their primary mission was simple: “Our goal is to translate complexity into clarity.”

2025 Summer Interns at CIE

A Blueprint for Tomorrow

Step back and look at these projects together, and one thing becomes clear: this is innovation with purpose. Every team is driven by the same idea, using technology to become more meaningful, more accessible, and more impactful for real people.

The CIE Summer Internship is not just a program; it is a launchpad for ideas that matter. It is where creativity meets mentorship, and where student ambition turns into real world solutions. More than anything, it reminds us that innovation does not wait until graduation. It is already happening right here, right now, in our classrooms, labs, and community spaces!

From reducing the cost of medical AI to improving healthcare data transparency, from reimagining learning through play to building trust with emerging technologies, these projects offer a glimpse into what is coming next. The students at CIE are not just experimenting with technology - they are redefining how it can serve people. And if their work is any indication, the future of innovation is not something we have to wait for. It is already here, in very capable hands.

CIE Summer workshop 2025

Industry Mentors

At the PESU Center for Innovation & Entrepreneurship (CIE), mentorship is a continuous relay of belief and expertise, turning student ambition into professional performance.

The journey began with the dedicated guidance of Rajesh Banginwar, Raghavendra Deshmukh, Prasanna Chandran, Nagendra Prasad Nonavinakere, and Jayaram MG. Their mix of rigor and care helped bridge the gap between the classroom and the industry, transforming raw ideas into tangible prototypes.

In 2025, the program's technical depth accelerated with the addition of Radhakrishnan Mahalikudi and Kuldeep Simha, who brought veteran silicon and systems expertise to student reviews. As 2026 unfolds, Grama Srinivasan further elevates this landscape, introducing specialized industry-grade challenges in processor and SoC design.
The contribution of our mentors is the catalyst that turns quiet dreams into definitive outcomes.

We invite senior professionals interested in shaping the next generation through reviews and labs to connect with us at cieprogram@pes.edu.

CIE Industry Mentors 2026

Deep Dive

Why Semiconductors Matter Today

"If the 20th century was built on oil, the 21st is being etched in silicon."
We live in an era where the most valuable real estate on Earth isn't measured in acres, but in nanometers. At the heart of this revolution are semiconductors, unique materials that sit in the "sweet spot" of physics. Unlike conductors that always let electricity flow, or insulators that always block it, a semiconductor can be tuned to do both by adding tiny amounts of impurities called dopants.

As we stand at the threshold of the 2nm frontier, the semiconductor industry is moving beyond traditional limits. We are now entering the era of Gate-All-Around (GAA) transistors, a design where the gate that controls the flow of electricity wraps around the channel on all four sides like a ring, preventing the leaks that used to waste power and generate heat in older chips. In this issue, we take a deep dive into the microscopic world that powers our macroscopic ambitions.

Source: https://www.mckinsey.com/industries/semiconductors/our-insights/exploring-new-regions-the-greenfield-opportunity-in-semiconductors

But why does this matter today more than ever? In 2026, semiconductors have moved from being simple components to becoming strategic global assets. They are the fundamental fuel for the Generative AI explosion, providing the massive computational "muscle" required for large language models to think and learn. Without the advancement of the 2nm frontier and Gate-All-Around (GAA) transistors, our smartphones would overheat in seconds, and the global AI cloud would grind to a halt. This story is now being written across the landscape of India, where the industry is undergoing a historic boom.

The journey of a single "Made-in-India" chip now begins in the design hubs of Bengaluru and moves through high-tech cleanrooms in Dholera and Sanand. Driven by the India Semiconductor Mission, the country has shed its role as a mere consumer to become a creator. Through strategic incentives and a surge of homegrown startups, we are building a self-reliant ecosystem that transforms raw silicon into the "brains" of 5G networks and electric vehicles. As these mega-fabs begin commercial production in 2026, India isn't just catching up, it is setting the pace.

As India cements its place on the global semiconductor map, the focus is rapidly shifting from simply hosting factories to owning the designs within them. This shift demands a new breed of architects who can turn complex logic into efficient hardware. At PES University, we have embraced this challenge, turning our corridors into a local heartbeat for the national mission by focusing on the "brain" of the silicon.

This strategic initiative is led by a network of specialized research hubs, including the Embedded Systems Center (ESC) and the Center for Artificial Intelligence and Machine Learning Applications in EEE. These centers move beyond one size fits all computing, allowing our researchers to align hardware architecture perfectly with specific, real-world tasks. It is here that theory meets the breadboard, and where the next generation of India's semiconductor talent is being forged.

Projected Targets under ISM for 2026–27:

Scheme	Key Indicator	Projected Target
Modified Scheme for Semiconductor Fabs (Fabs to be Supported – 1)	Investment during the year	**₹4,000 crore**
	Employment generated	**1,500 persons**
Modified Scheme for Compound Semiconductors, Silicon Photonics, Sensors, Discrete Fabs and Assembly, Testing, Marking, and Packaging (ATMP)/ Outsourced Semiconductor Assembly and Test (OSAT) (Units to be Supported – 9)	Investment by units during the year	**₹11,000 crore**
	Employment generated by supported units	**3,000 persons**
Design Linked Incentive Scheme (Design companies to be supported – 30)	Semiconductor IP cores to be developed	**10**
	Semiconductor design manpower employed	**200 persons**

Source: https://www.pib.gov.in/PressReleasePage.aspx?PRID=2224839®=3&lang=2

The specialized research at PES University has moved beyond theory to high-stakes prototyping by leveraging the AI and ML Center in EEE to offload complex algorithms directly into custom hardware pathways. This design philosophy ensures that the next generation of technology is faster and more energy-resilient, particularly as we optimize smart grids and develop Edge AI to process data exactly where it is generated. Our center serves as a unique forge for innovation where student-led breakthroughs are tempered for industrial utility.

By uniting minds from EEE, Computer Science, and Mechanical Engineering, this holistic "Hardware-First" ecosystem ensures that the next big tech startup starts right here, beginning with a single semiconductor designed on our campus.

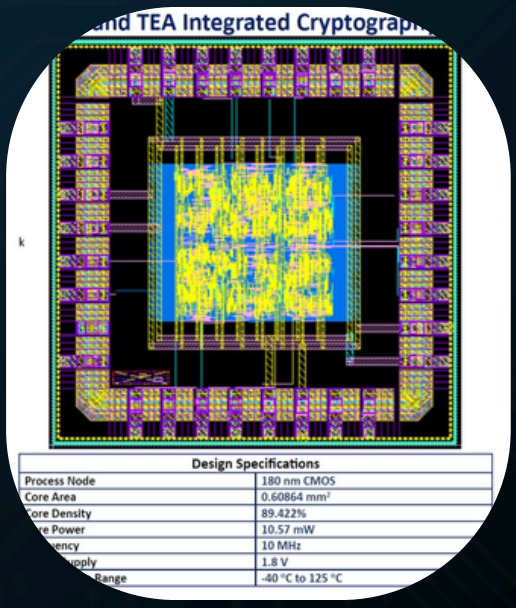
- **Hardware-Accelerated KNN Engine**: This is a high-speed processing unit specifically engineered for rapid data classification. By moving the K-Nearest Neighbors algorithm onto silicon, we achieve significant performance gains over traditional software-based methods.

- **CHACS Framework:** This specialized implementation is designed for advanced hardware-software co-design. It allows for a more seamless integration between high-level logic and the underlying hardware architecture, ensuring that every cycle of the processor is used effectively.

C-HACS

The student team at the Center for Hardware Acceleration and Chip Security (C-HACS)—led by Guna SG, Lasya Hegde, and Chandan M achieved an important milestone under the PES University Chip Tapeout Program. Their work is scheduled for fabrication in SCL 180 nm technology through the MPW Shuttle IV batch of the Chips to Startup (C2S) Programme, a prestigious initiative by the Ministry of Electronics and Information Technology (MeitY). Facilitated by the ChipIN Centre at C-DAC Bengaluru, this project marks a transition from academic theory to physical silicon.

The team developed a sophisticated cryptographic IP core that integrates two elegant and lightweight block ciphers: SIMON and TEA (Tiny Encryption Algorithm). Beyond standard encryption and decryption, the design introduces a unique Chained configuration. This mode was specifically engineered to test and strengthen resilience against side-channel attacks, addressing one of the most critical vulnerabilities in modern secure embedded systems. By providing both Normal and Chained modes, the CHACS team is not just building secure hardware; they are pioneering new methods to protect the data that powers our digital world.



EDA tools at the Center for Hardware Acceleration and Chip Security (CHACS)

SPOTLIGHT - CHIPS

Where Students Build the Future of Computing

The *Centre for Heterogeneous and Intelligent Processing Systems* (CHIPS) at PES University is where computing theory turns into real, working systems. In an era shaped by AI, mobile devices, and high-performance computing, CHIPS explores how smart engineering can push the boundaries of speed, efficiency, and sustainability. By combining CPUs, GPUs, and FPGAs, students dive into heterogeneous computing - learning how different processors work together to deliver high performance while keeping energy use low.

At CHIPS, students learn by building. They design FPGA accelerators, develop low-power RISC-V cores, map workloads to the right hardware, and create open-source tools to uncover performance bottlenecks. Projects span graph acceleration, matrix multipliers, and AI-focused instruction sets, blending deep technical learning with teamwork and real-world problem solving.

The centre's work has earned national and international recognition, including awards at major VLSI conferences, industry-funded research on RISC-V and custom hardware overlays, and the development of award-winning FPGA-based AI accelerators. Beyond research, CHIPS runs summer schools and hands-on workshops in FPGA, ASIC, and system design, preparing students for industry and advanced research.
More than a lab, CHIPS is a launchpad—where students turn complex ideas into scalable, industry-relevant solutions, proving that at PES University, learning happens best through creation.

STUDENT STARTUPS

Cognitive Labs - Adithya Kolavi

From Solo Experiment to AI Frontier.
While the world marveled at ChatGPT, Adithya Kolavi built his own AI. What started as a one-man experiment became Cognitive Labs, a student-run venture redefining what's possible in artificial intelligence.
It began with Ambari, a Kannada language model Adithya fine-tuned in one week. The model went viral, sparking a chain reaction that transformed the lab into a research-driven startup building multilingual AI and open-source tools used worldwide.

Their flagship project, OmniParse, converts messy data into clean, usable information. Released open-source, it earned over 6,700 GitHub stars and cemented their reputation for speed and precision.
The breakthrough came when Meta awarded them a non-dilutive grant to develop Nayana, a multimodal AI that understands images with regional language text—a challenge few global models solve well. It proved student-led research could compete at the frontier.

"I committed to coding every single day and pushing to GitHub—exams, vacations, everything," Adithya says. The lab still runs like a close-knit research group, a proving ground where students fail safely, build boldly, and leave believing their ideas matter.

Adithya S Kolavi
& his Cognitive Labs Team

Authify - Ajay Vasisht and team

When a Class Project Becomes a Business

Four students - Ajay, Anish, Aman, and Akshay - founded Authify almost by accident. What started as a university project at CIE, became a real company with real clients.

Their first product, Securock, used blockchain and NFC to fight counterfeiting. Within months, over 250 supplement stores across India were using it—proof that a student project could solve genuine market problems.

That success fueled bigger ambitions. They rebranded to Authify and expanded into consulting, research, and product development. Today, while still in college, they're building India's first multi-lane radar system for traffic enforcement. Their research division, Authify Labs, now works with government intelligence agencies and organizations handling India's airport communications.

But their turning point wasn't a product launch. It was a conversation. Over coffee in Koramangala, a Stanford graduate who'd sold his company for $400 million spent two hours challenging every claim, demanding data behind their pitch.

Authify team

"We walked in with our pitch deck thinking we had it all figured out," Ajay laughs. "He tore it apart. That conversation was the difference between staying a college project and becoming a real business."

Consuma.AI - Abhilash Madhubhushi

If Cognitive Labs focuses on exploring intelligence and Authify focuses on building it, Consuma focuses on understanding it, specifically how people think, buy, and behave. Founded in 2021 by Abhilash, Yash, and Ankur, Consuma was born from a simple frustration: research takes too long. "I'd send out surveys and wait two weeks for 20 useless responses," Abhilash says. "That's when I realized research shouldn't be this painful."
That frustration became the foundation of Consuma. The team set out to replace surveys, focus groups, and guesswork with AI-driven insights. Instead of waiting months, brands could now understand consumer behavior in minutes. The journey, however, was far from smooth; models that didn't scale, systems that were scrapped, and multiple restarts marked their early days.

Each failure brought them closer to the solution: an AI platform that reads live data from sources like Twitter, Reddit, and Amazon to map real consumer behavior.

After countless iterations, Consuma hit its breakthrough, cutting research time from three months to just thirty minutes without sacrificing quality.
Today, Consuma works with global media agencies and consulting firms, proving that students can rethink how billion-dollar brands make decisions. What sets them apart is their honesty. "We've failed more times than we've succeeded," Abhilash admits, "but that's the only way you build something that lasts."

Consuma.AI team

Agnihotri Aerospace - Mahabaleshwar

Mahabaleshwar is the founder of Agnihotri Aerospace, a young innovator shaping India's private space-tech landscape. His interest in space began during his engineering years. Initially operating with basic lab resources, the team's persistence caught the attention of Deshpande Startups. This incubation period transformed their academic project into a rigorous engineering effort, eventually securing over ₹2.5 crores in funding from Social Alpha and the BIG Foundation.

The company now focuses on specialized modules for reusable launch vehicles, including:

- Propulsion Units: High-efficiency engines designed for multiple flights.
- Reaction Control Systems: Precision modules for vehicle recovery and refurbishment.
- National Collaboration: Through partnerships with ISRO and IN-SPACe, the team accesses world-class testing facilities to ensure their tech is flight-ready.

Mahabaleshwar encourages students to act on their ideas early, proving that impactful innovation can emerge directly from the classroom. As the company prepares for full-scale flight demonstrations, its journey reflects a powerful belief: "The sky isn't the limit; it's only the beginning."

Agnihotri Aerospace Team

EVENTS BY STUDENT CLUBS

E-Cell

'The Last One Standing '25' was an overnight entrepreneurial marathon held on September 12th and 13th, 2025, at the MRD Auditorium. The event brought together 92 ambitious students for an intense experience designed to challenge critical thinking and foster high-pressure collaboration.

The competition began with a fast-paced elevator pitch round, leading into a hands-on prototyping segment where teams calculated real-world costs for their models. One of the most interactive highlights was the networking and investment round. Here, students managed virtual portfolios in a custom-built stock market, investing in their peers' budding ventures.

As the pressure mounted, teams moved through ad campaign creation and a crisis management round, where judges tested their ability to handle product-specific challenges. The journey concluded with a high-stakes, "Shark Tank" style final pitch. The top 10 teams presented complete business models to a panel of experts, proving that innovation thrives best when creativity meets teamwork.

Meraki

At MERAKI, we go beyond the ramp and focus on creating complete experiences. The club brings together fashion, passion, and creativity, giving students a space to express themselves through style. From models who bring confidence and elegance to the stage to designers who turn ideas into outfits that tell a story, every aspect of MERAKI reflects creativity. Behind the scenes, the operations team ensures everything runs smoothly, photographers capture every moment, and the social media team brings these stories to life online.

MERAKI has performed on some of the biggest stages at PES University, including events like Engenium and Arohi. Each showcase is built around strong themes and storytelling, making our performances more than just fashion walks. Through every show, MERAKI has proudly represented the spirit of PES while continuously raising the standard for creativity, confidence, and expression in college fashion.

CMS (Terrathon)

Terrathon 5.0, the flagship hackathon organised by The Changemakers' Society, was held on 25–26 October 2025 on the 13th floor of BE Block. The 24-hour hackathon brought together 30 teams (120 participants) for an intense, high-energy coding experience focused on building impactful solutions. The event was sponsored by CARIAD India.

The event covered a wide range of domains, including Generative AI and the Creator Economy, Web3 and the Decentralised Economy, Next-Gen FinTech and Financial Inclusion, Next-Gen Web Experiences, the Future of Work and Education; and Open Innovation. Interest was massive as more than 77 teams (308 students) registered, and the top 30 teams were shortlisted to compete.

Team registrations closed at 10:00 a.m., and the event was inaugurated at 10:30 a.m., marking the start of 24 hours of coding, collaboration, learning and innovation. Terrathon 5.0 proved once again to be a platform where ideas turned into working solutions and where students came together to push the boundaries of technology.

Students in Focus

Rahul Jaikrishna and Rahul Biliyar

When Rahul J and Rahul B crossed paths in college, they bonded over a shared belief: technology should serve a purpose beyond convenience. That conviction became the foundation of WildSense, an AI-powered initiative aimed at reducing wildlife roadkill on India's highways.

The idea emerged during a college ideathon. Rahul J had an "aha" moment about using computer vision to detect animals crossing roads. The overlap was instant, and what began as a passing thought quickly turned into a shared mission.

WildSense uses thermal cameras combined with artificial intelligence to detect animals near forest roads and send real-time alerts to approaching vehicles. The goal is twofold: prevent accidents and protect fragile ecosystems while accommodating human infrastructure.

The project sits at the intersection of technology and empathy, guided by the belief that progress doesn't have to come at nature's expense. With months of iteration and mentorship, their early prototype evolved into a nationally recognized innovation. The team placed among the top three in India at the Intel Global AI Impact Festival and later presented at CNBC's Global AI Conclave alongside industry leaders and Intel executives.

WildSense is a reminder of what's possible when compassion meets code - proof that even a small idea, pursued with intent, can make roads safer for both humans and the wildlife that share them!

Rahul Jaikrishna
&
Rahul Biliyar

Vachan S M

With profound sorrow and heartfelt admiration, we share the story of Vachan, a student whose curiosity and pursuit of excellence at PES University touched everyone around him. His journey was tragically cut short, and we extend our deepest condolences to his family, friends, and peers. This account is based on an interview with Vachan before his untimely passing. This tribute celebrates a life steeped in passion, enthusiasm, and an unending quest to embrace all things technology and automotive.

Driven by curiosity and a discipline for speed, Vachan, a fourth-semester Electrical Engineering student, recently secured a rare, fully sponsored spot at a prestigious motorsport bootcamp in Madrid, Spain, along with Pranav Rao from the 8th sem. In December 2024, Vachan discovered the United Motorsports Academy on Instagram and applied on a whim. He outshone the competition through a rigorous selection process, leveraging years of F1 fandom and hands-on learning from his PESU I/O course.

Under the mentorship of Omkar Rane, the intensive program (August 19 – September 7) pushed Vachan into the technical heart of racing:

- Vehicle Dynamics: He studied car setups and aerodynamics, learning how millisecond decisions define winning teams.
- Expert Insights: He analyzed F1 aerodynamic strategies and explored vehicle "skeletons" with a Porsche engineer.
- Real-World Thrills: The theory hit home during a full-speed lap in a race car alongside a bootcamp engineer.

This trip marked Vachan's first flight, his first international experience, and his 20th birthday. Living independently in Madrid while surrounded by machinery from Ferrari and BMW reshaped his worldview. For Vachan, it proved that doors unlock when passion meets preparation.

Vachan S M

The Newsletter Team

Shreya Sharma
Fold in the cheese.

Roshan
Here for the grand masti

Aditi Hubli
Chalantly balancing creativity and logic

Neha Rastogi
if it's meant to be, it'll be

Shamika Mahesh
Onwards and Upwards

Harshita
Curious, vibeful, Strategic

Avantika Kishore
You can decide

Aryan Musale
A work in progress

Shreya Kandrika
Problem-solver, innovative, curious and versatile

Vinitha U S
Grace in Chaos, Fire in Focus

Archit Rishabh
first to submit

Abhinav J
Unconventional Mercurial, Inventive, and Intuitive

Samika Ojha
no notes

Pooja Peddasomayajulu
bubbly, bold and creative

Pratyush Bhatia
"THIS GUY IS NOT REAL DA"

Samiksha J
See you at the top

Anant Sharma
I love gajar ka Halwa

Saksham Bajpayi
Imitation isn't flattery, it's annoying me

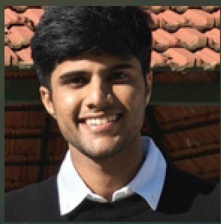
Our Interns 2026

Where potential meets purpose



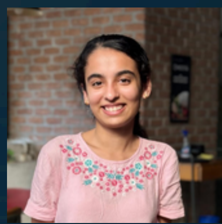


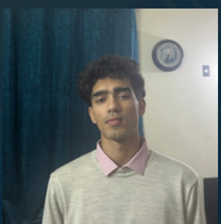




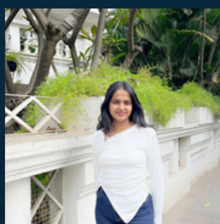


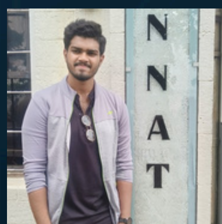


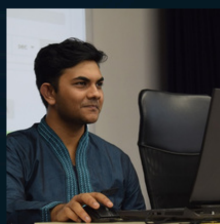



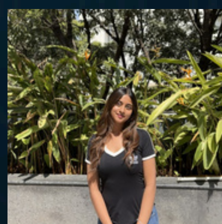





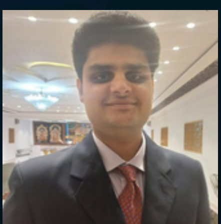
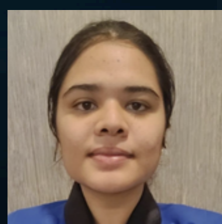
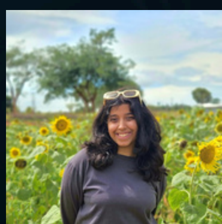








And many more to join...

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CENTRE FOR INNOVATION & ENTREPRENEURSHIP

CONTACT US

Centre for Innovation and Entrepreneurship
(MRD BLOCK 1st floor)

Mail us - cieinfo@pes.edu

See what we are building today