

DECRYPTED

A PUBLICATION OF DEPARTMENT OF
COMPUTER ENGINEERING

JAN-JUN
2025



ANJUMAN-I-ISLAM'S KALSEKAR TECHNICAL CAMPUS

School of Engineering

The Anjuman-I-Islam, a prominent educational conglomerate in Mumbai has started its 150 years of successful journey. The educational institute that started with a modest one school in February 1874, now has more than eighty institutions. The educational conglomerate and social organization was founded by a small group of devout and progressive Muslims led by Dr. Badruddin Tyabji, Third President of the Indian National Congress and the First Acting Indian Chief Justice of Bombay High Court, with a desire to see the Muslim Community advance in education and social standing.

PRESIDENT'S MESSAGE



DR. ZAHIR.I.KAZI

President,
Anjuman-I-Islam, Mumbai

**"All Progress Takes Place Outside
the Comfort Zone"**

**"The art challenges the
technology, and the
technology inspires art."**

Dear Students,

I welcome you to Kalsekar Technical Campus (AIKTC), a role model campus of Anjuman-I-Islam and a high-tech educational campus of Navi Mumbai.

Founded through the visionary efforts of Anjuman-I-Islam, Mumbai — a prestigious institution serving the nation since 1874 — AIKTC blends state-of-the-art infrastructure with a vibrant academic culture.

Escape the Ordinary!

**“With You.... Till You
Do Not
Need Us – In Any Way“**

CHAIRMAN'S MESSAGE



MR. BURHAN HARRIS

Hon. Executive Chairman,
BINM

My Dear Students,

A warm welcome to Anjuman-I-Islam's Kalsekar Technical Campus, one of the most esteemed institutions in the proud legacy of Anjuman-I-Islam. Since its inception, our campus has been committed to delivering quality technical education through sincere and ethical practices, fostering a culture of excellence. Here, we encourage every student to explore new horizons of knowledge, skills, attitude, and wisdom. We shape not just skilled technical professionals, but individuals with the right attitude, strong character, and an inspiring mind—lifelong learners ready to make a difference. For this, we go above and beyond to provide you with everything you need to succeed.

DIRECTOR'S MESSAGE



“The distance between Dreams and Reality is called Action”

**“Do what you have to do until you can do what you want to do!
Ask yourself if what you’re doing today is getting you closer to where you want to be tomorrow!”**

DR. RAMJAN AHAMAD KHATIK
Director
AIKTC, New Panvel

My Dear Students,

We take pride in completing 14 years of Innovation in Teaching, Leading, Learning, and Growing together. If you carry a strong passion, have faith in yourself, the vision to dream, and the willingness to put in even 1% more effort than others, then AIKTC is the right place to turn your aspirations into reality. Our commitment is to deliver education of the highest standards, shaping graduates with strong, globally recognized qualities in today’s fast-changing world.

It is our great honor to be recognized as the “Role Model Campus” of Anjuman-I-Islam, Mumbai. With sincerity and dedication, we provide technical education of excellence enriching knowledge and skills, fostering values and character for holistic growth and the well-being of society at large.

DEAN'S MESSAGE



Dr. Rajendra Magar

Dean, SoET
AIKTC, New Panvel

"Dream Believe, act, achieve"

**"Quality education is a
partnership between
students, teachers, and leaders,
and
together we can achieve
greatness"**

Dear Students,

As the Dean of the School of Engineering and Technology (SoET), I am proud to highlight the school's cutting-edge infrastructure and advanced laboratories. Our faculty come from diverse academic and professional backgrounds, bringing with them a wealth of teaching and industry experience.

I wish you a fulfilling and successful academic experience at SoET. May you continue to carry forward the prestige and honor of our esteemed institution. I warmly welcome all prospective students to visit our campus and witness its vibrant, dynamic, and inclusive spirit firsthand.

HOD'S MESSAGE



**"Dreams fuel the journey, but
action paves the way"**

**"In education, we don't just
impart knowledge; we
empower the next
generation
to shape a better world."**

Prof. Tabrez Khan

HOD, Computer Engineering
AIKTC, New Panvel

Dear Students,

It gives me great pleasure to welcome you to the Bachelor's Degree in Computer Engineering at AIKTC. I am honored to lead this innovative and forward-looking department.

Our mission is to create an engaging academic atmosphere where knowledge, creativity, and critical thinking thrive. Beyond academics, we actively encourage students to participate in extracurricular activities, clubs, and competitions. These opportunities not only enhance their technical skills but also promote leadership, collaboration, and a strong sense of community.

Message From **EDITORIAL BOARD AND TEAM**

Dear Students,

Welcome to the latest edition of "DECRYPTED" our own departmental magazine where we dive deep into the ever-evolving world of robotics, artificial intelligence, and automation.



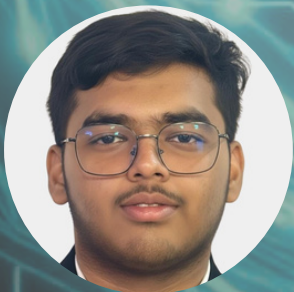
Dr. Muhib Lambay
Assistant Professor, CO

Our mission is to keep you informed about the latest innovations, breakthroughs, and trends shaping the future of technology. One of the highlights of this edition is our emphasis on futuristic computing, where experts share their visions and predictions for the next decade.

I would like to extend my sincere gratitude to everyone who contributed to this magazine. Your passion, dedication, and expertise are the driving forces behind "DECRYPTED".

To our readers, thank you for your continued support and engagement. We hope this magazine not only informs but also inspires you to delve deeper into the world of computing.

Happy reading!!



Umair Faquih



Sumaiya Dadnak



Humaira Kadri



Arshiya Shaik

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1

STUDENT'S RESULTS

ACADEMIC TOPPERS OF B.E. 2025

1



SAMANI RAHIL
CGPA : 9.58
Percentage : 84.52%

2



QADRI MOHAMMED AMBAR
CGPA : 9.42
Percentage : 84.12%

3



SHAIKH MUHAMMAD ISMAIL
CGPA : 9.27
Percentage : 82.16%

2 STUDENT'S ACHIEVEMENTS

2ND-PLACE WINNERS OF CODING COMPETITION



Shaikh Amaan Rafique (BE-CO), Khan Mohammad Moin (SE-CO) and Aman Siraj Antuley (SE-CO) from our Department won **2nd place** in the **coding competition** at *Chhatrapati Shivaji Maharaj University*, outperforming 16 teams from 14 colleges, and also earned the **Best College Award** with a trophy, cash prize, T-shirts, and certificates.

3 FACULTY ACHIEVEMENTS



Dr. Muhib Lambay

Dr. Muhib Lambay has successfully completed his **Ph.D. in “CSE (AIML)”**, marking a significant milestone in his academic and research journey. This achievement adds to the department’s pride and inspires students and colleagues alike.

Prof. Rehaal Qureshi has recently published a research paper on **“A comprehensive study on Machine learning techniques for academic result prediction and the factors influencing student’s performance”** at an **IEEE Conference**, contributing valuable insights to the educational research domain.



Prof. Rehaal Qureshi



Prof. Samreen Banu Kazi

Prof. Samreen Banu Kazi published her paper **“Automated Tomato Leaf Disease Classification using CNN for Real Time Field Application”** at **INDIACom 2025 (IEEE Proceedings)**, April 2–4, 2025.

3 FACULTY ACHIEVEMENTS



Prof. Safia Sadruddin

Prof. Safia Sadruddin published her paper “**An Efficient Skin Cancer Detection and Classification Using DenseNet-121 with Attention Mechanism**” in the *International Journal of Intelligent Engineering & Systems*, Vol. 18, Issue 5, April 2025.

Prof. Nusrat Jahan presented a paper titled “**Exploring Medical Diagnosis using Vision Transformer and CNN**” at the *2nd IEEE DMIHER (DU) International Conference on Artificial Intelligence in Healthcare, Education & Industry (IDICAIHEI-2024)*, held on November 29–30, 2024.



Prof. Nusrat Jahan



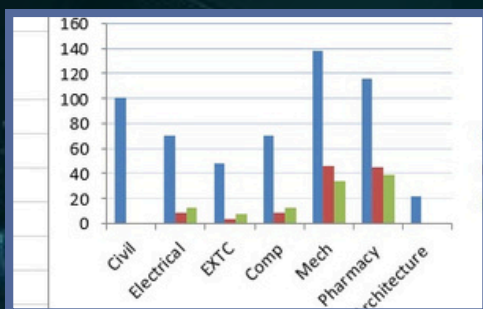
Prof. Irfan Jamkhandikar

Prof. Irfan Jamkhandikar presented a paper titled “**BLOOD SNAP – Blood Group Detection using Image Processing**” at the *4th IEEE International Conference on Information and Communication Technology in Business, Industry and Government (ICTBIG-2024)*, held at *Symbiosis University of Applied Sciences*, Indore, on December 13–14, 2024.

4

TRAINING & PLACEMENT

The Training & Placement (T&P) Cell at AIKTC acts as the vital link between academics and industry. From day one, it focuses on preparing students not just technically—but also in communication, leadership, and adaptability—so they are industry-ready.



Virtually all eligible students are placed each year, and many receive multiple job offers.

The range of packages shows that the Cell helps students reach competitive salaries, with offers stretching from ~₹ 3 LPA to as high as ~₹ 12 LPA in peak years.

ACTIVITIES

- *Regular sessions: aptitude tests, mock interviews, group discussions, personality & soft skills training.
- * Each department has its own T&P Coordinator to tailor the preparation to meet the specific industry needs.
- *Strong industry relations: over 75 companies has visited for campus drives in recent years

	Placement	Higher Studies
2024	20	2
2025	20	0



RECRUITERS AT AIKTC

TOP RECRUITERS SPAN DIVERSE SECTORS, INCLUDING:

- **IT & Software:** TCS, Infosys, Capgemini, L&T Infotech, Cognizant
- **Core Engineering:** Tata Projects, Siemens, Godrej, JSW
- **Consulting & Services:** Wipro, Tech Mahindra, Byju's, HCL
- **Startups & MSMEs:** Local and regional companies offering early-growth opportunities

4

TRAINING & PLACEMENT

Impact:

- Consistently high placement ratio across departments.
- Multiple offers per student in several cases.
- Students placed in roles with career progression opportunities, not just entry-level jobs.
- Graduates excelling in corporates, startups, research, and higher education in India and abroad.



The T&P Cell thus ensures that every AIKTC graduate steps out as a **competent professional, confident communicator and adaptive leader** ready to contribute in a dynamic global workplace.

5

INCUBATION CENTER

AIKTC Incubation Centre (AIKIC)



The Anjuman-I-Islam Kalsekar Incubation Centre (AIKIC) provides a full ecosystem for students & early-stage startups to move from idea to funding to market.



Key Facilities & Support

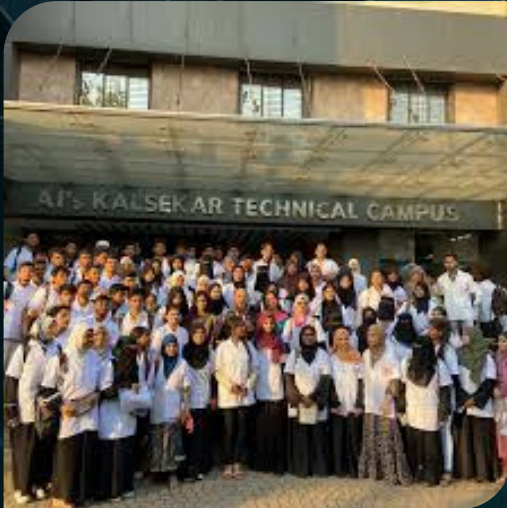
- *Office space, labs, internet & electricity infrastructure.
- *Mentorship in business model development, legal compliance, licenses, company registration, export facilitation etc.
- *Networking via industry visits, expos & exhibitions.
- *Finance support: connects startup teams with angel investors, VCs.

Metric	Value
Total Startups under Support	63 (KTC)
Officially Registered	17 (KTC)
Total Funding Raised	₹ 31.7 Lakh (KTC)

AIKIC has supported **63 startups**, including **17 registered ventures**, and facilitated **funding of ₹ 31.7 lakh**, fostering innovation and positioning AIKTC in India's startup ecosystem.

5

INCUBATION CENTER



ACHIEVEMENTS

Several student startups have won district-level awards (e.g. MSINS) including monetary grants.

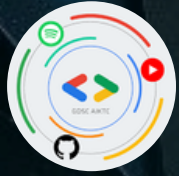
*Participation of multiple student startups in key national events such as Startup Mahakumbh 2024, and expos like MakersMela, etc.

COMPUTER ENGINEERING STARTUPS (2024-25)

🌟 Startup	👤 Founder	💡 Highlights
ARC Industries	Avez Chilmai	Driving industrial innovation through applied engineering knowledge.
Frieghting Softwares	Sufiyan Pawaskar	Offering digital freight & logistics solutions, streamlining transportation.
Azad Infotech	Aman Kazi	Building new-age IT solutions
MechanicPartner	Rehan Shaikh	Connecting mechanics & customers via digital tools for automotive services.
Carconn	Shaikh Tabish	Redefining automotive connectivity & convenience for car owners.
ADVOKE.in	Shaikh Tabish	Expanding into digital services, showcasing multi-venture entrepreneurship.



STUDENTS CLUB



Google Developer Group Club (GDGC) AIKTC: Innovate, Learn, Build

GDGC AIKTC is a student-led community at AIKTC that empowers learners to explore technology, build projects, and innovate. Through workshops, study jams, and hackathons. Students gain hands-on experience in Web & Android Development, Cloud Computing, and Machine Learning. Open to all, it fosters real-world problem-solving and transforms ideas into impactful solutions.



**Prof Samreen
Banu Kazi**

Faculty Co-ordinator



Mrunal Bhosale
GDGC Organizer



Arman Khan
Technical Expert



Siddique Sakharkar
Design Lead



Aashish Chavan
Community Lead



Ayesha Pasha
Documentation Lead



Code Chef Student Chapter AIKTC: Fostering Coding Excellence

The CodeChef AIKTC Chapter is a student-led initiative that promotes coding, problem-solving, and innovation at AIKTC. It organizes coding contests, workshops, webinars, and hackathons, helping students enhance technical skills, logical thinking, and teamwork.



Iman Navdekar - Lead



Ambar Qadri - Co-Lead

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STUDENT'S CLUB



Programmers Club at AIKTC: For the Students, By the Students

The Programmers Club (PC) of AIKTC's Computer Engineering Department is a student-led community that promotes learning, knowledge-sharing, and innovation. Aimed at bridging the gap between academics and industry, it nurtures teamwork, leadership, and professional growth.



**Prof Samreen
Banu Kazi**
Faculty Co-ordinator

The club regularly conducts technical workshops on tools like GitHub, LaTeX, and Figma, encouraging peer-to-peer learning while enhancing communication skills. Its flagship event, the national-level hackathon Algorithm, provides students with a platform to collaborate, tackle real-world challenges, and showcase both their technical expertise and organizational abilities.

Membership offers hands-on experience in event management, teamwork, and leadership, while non-members can still attend events, ensuring inclusivity. The club also facilitates networking with seniors, alumni, and industry mentors, opening doors to internships and career opportunities.

At its core, the Programmers Club embodies AIKTC students' spirit of learning, sharing, and growing together, staying true to its motto:

“FOR THE STUDENTS, BY THE STUDENTS”.



Shadullah Shaikh
Student Coordinator



Ambar Qadri
Guide



Iman Navdekar
Guide



Basheer Bronkar
Lead

7 ALGORITHM 9.0

Algorithm 9.0: Nurturing Innovation through AI at AIKTC

Algorithm 9.0, the ninth edition of AIKTC's national-level hackathon, was held on 21–22 February 2025 by the Programmers Club, Computer Engineering Department. This 32-hour offline coding challenge gathered students nationwide to work on problem statements in Healthcare, Education, Cybersecurity, and Open Innovation under the theme **“AI AND ITS EVOLUTION.”**



The event opened with an inspiring inauguration ceremony attended by distinguished academicians and industry experts. As the clock started ticking, participants immersed themselves in brainstorming, coding, and testing their ideas, .

fueled by a passion to build solutions that could create tangible impact. Throughout the hackathon, mentors and judges provided guidance, offering valuable feedback that helped teams refine their projects

The atmosphere at AIKTC was electric; students teamed up, worked late, and pushed their creativity and skills beyond limit. Beyond competition, Algorithm 9.0 became a hub for knowledge-sharing, peer learning, and networking among innovators from diverse institutions.

7 ALGORITHM 9.0

AIKTC'S TRIUMPH IN THE WINNERS' CIRCLE

While the first prize went to Team Infinite Loops from Rizvi College of Engineering, AIKTC made a strong mark by securing both second and third places.

TEAM CENSOR X (2ND PLACE - AIKTC)

They developed an AI-powered real-time inappropriate content detection and moderation system. Combining computer vision and natural language processing, it filtered harmful visuals, offensive language, and hate speech across live video and chat. Praised for its technical robustness and social relevance, the project aimed at making digital spaces safer.



TEAM PEACEKEEPERS (3RD PLACE - AIKTC)

They presented IRONWALL-EGD, an AI-driven, context-aware threat detection system. With a cloud-based architecture, it monitored networks, USBs, applications, and browsers to prevent cyberattacks. Its scalability, adaptability, and relevance to sectors like healthcare, education, and defense earned special recognition.



Algorithm 9.0 was more than just winning ; it was about growth and discovery. By hosting such events, AIKTC strengthens its role as a hub for nurturing innovators, entrepreneurs, and future leaders. Algorithm 9.0 reflects how the institution blends academics with practical exposure, preparing students to excel in the dynamic field of Artificial Intelligence and technology.

8

BONHOMIE 2025

BONHOMIE 2025: A FESTIVAL OF TALENT, ENERGY, AND TOGETHERNESS

Bonhomie 2025, the annual cultural, technical, and sports extravaganza of Anjuman-I-Islam's Kalsekar Technical Campus (AIKTC), stood as a vibrant celebration of creativity, innovation, and unity. *Bonhomie 2025 reflected the spirit of AIKTC* — a spirit that blends academic excellence with cultural richness and holistic student development.



CELEBRATING SPORTSMANSHIP

The sports segment of Bonhomie 2025 saw enthusiastic participation across athletics, team sports, and endurance events. Races, throws, and matches fostered healthy competition while building discipline, teamwork, and sportsmanship.

CULTURAL BRILLIANCE ON DISPLAY

The cultural segment lit up the festival with Mushaira, powerful dramas, and witty stand-up acts. Competitions like mehendi design, VLOG creation, and debates revealed the artistic and intellectual talents of students.

8

BONHOMIE 2025



BEYOND COMPETITIONS: BUILDING BONDS

What made Bonhomie 2025 truly special was the spirit of friendship and unity it created. Students from all departments came together to cheer, learn, and build connections beyond academics.

Each performance reflected creativity, diversity, and inclusivity, leaving audiences inspired and entertained.

SHOWCASING TECHNICAL PROWESS

Staying true to AIKTC's engineering spirit, the technical events of Bonhomie 2025—hackathons, coding contests, workshops, and project exhibitions—allowed students to apply classroom learning to real-world challenges.



A FESTIVAL OF GROWTH AND PRIDE

Bonhomie 2025 was a celebration of AIKTC's holistic vision, blending sports, culture, and technology to nurture students intellectually, physically, socially, and emotionally. It built *confidence, unity, and pride*, leaving lasting memories and reaffirming AIKTC's commitment to shaping well-rounded, future-ready professionals.



TECHNOSCOPE

2025

Technoscope 2025: Showcasing Innovation, Ideas, and Impact

Technoscope 2025, a flagship national-level project competition at AIKTC, offers final-year students from Engineering, Technology, Pharmacy, and Architecture a platform to turn innovative ideas into practical solutions. More than just a contest, it celebrates *creativity, research, and application*.



Events like Technoscope highlight AIKTC's mission of shaping graduates who are academically strong, industry-ready, and socially responsible. By organizing such competitions annually, the institution reinforces the role of innovation in driving growth. Technoscope 2025 reflects AIKTC's dedication to nurturing talent, encouraging creativity, and offering students a platform to excel.

The event is also strongly backed by AIKTC's faculty and mentors, who guide the students throughout the process. Faculty coordinators ensure smooth execution, bring in a wealth of experience, providing constructive feedback that sharpens students' abilities to present and defend their projects.



Prizes and Recognition

Technoscope 2025 continues its tradition of awarding top-performing teams with cash prizes and certificates, celebrating innovation and motivating future research and entrepreneurship. These rewards aim to foster creativity, encourage problem-solving, and inspire pride in driving technological progress.

Beyond Competition: A Platform for Growth

Beyond technical skills, Technoscope nurtures *leadership, resilience, and adaptability*. Even organizing teams benefits, gaining hands-on experience in logistics, communication, and event management, enhancing their academic journey with practical exposure.

AIKTC's Commitment to Innovation

Technoscope reflects AIKTC's mission to develop graduates who are academically strong, industry-ready, and socially responsible. By consistently hosting such events, the institution reinforces innovation as a key driver of growth.



With high expectations and palpable excitement, students are ready to present projects that could spark startups, research, or community impact. ***The event promises to showcase young brilliance and leave behind a legacy of inspiring ideas.***

10

ARTICLES

THE FUTURE OF COMPUTING: VISIONS FOR THE NEXT DECADE

One of the highlights of this edition is our special feature on computing, where experts and thought leaders share their visions and predictions for the coming decade. As technology evolves at an unprecedented pace, computing continues to redefine industries, reshape education, and reimagine the way humans interact with machines.

1. THE RISE OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Artificial Intelligence (AI) and Machine Learning (ML) are expected to dominate the next decade. From personalized healthcare to autonomous systems, AI will not just support decision-making but also anticipate human needs. The focus will shift toward explainable AI, ensuring transparency, trust, and ethical usage.

2. QUANTUM COMPUTING ON THE HORIZON

While still in its infancy, quantum computing holds the promise of solving complex problems that today's supercomputers cannot handle. Over the next decade, industries like pharmaceuticals, finance, and cybersecurity may witness breakthroughs powered by quantum algorithms.

3. EDGE AND CLOUD CONVERGENCE

The next generation of computing will be hybrid, combining the power of the cloud with the speed of edge computing. This will enable faster data processing for smart cities, IoT devices, and autonomous vehicles—bringing intelligence closer to the source of data.

4. CYBERSECURITY AND DIGITAL TRUST

As computing power grows, so do cyber threats. The decade ahead will focus on zero-trust architectures, biometric authentication, and AI-driven threat detection. Protecting digital identities will become just as important as protecting physical.

5. HUMAN-CENTERED COMPUTING

Finally, computing is moving toward being more human-centric. Natural language processing, immersive interfaces (AR/VR), and brain-computer interactions will make technology more intuitive, bridging the gap between humans and machines.

DR. MUHIB ANWAR LAMBAY
DEPT. OF COMPUTER ENGINEERING,
SOET, AIKTC

10

ARTICLES

AGENTIC AI MOVES BEYOND COPILOTS:

Agentic AI is shifting from passive copilots to autonomous agents that can plan and complete complex tasks across enterprise systems. This evolution is transforming how humans and machines collaborate in real-world operations.

THE SHIFT

Enterprises are moving from reactive copilots that assist within steps to proactive agents that coordinate tools, tools, reason over context, and complete outcomes across ITSM, HR, and customer operations. Major platforms are productizing agent capabilities that act on behalf of teams, signaling mainstream operational adoption beyond chat interfaces.

NEW COLLABORATION MODEL

Workflows now involve "agentic teammates"—AI agents that execute tasks while humans set goals, oversee actions, and step in as needed. A layered system includes guardian oversight to ensure compliance without slowing things down.

RETHINKING AUTONOMY

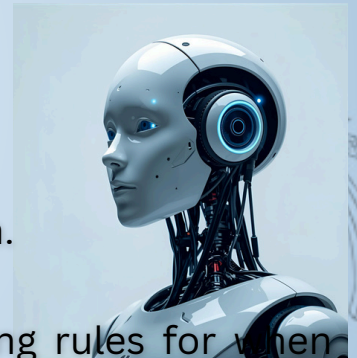
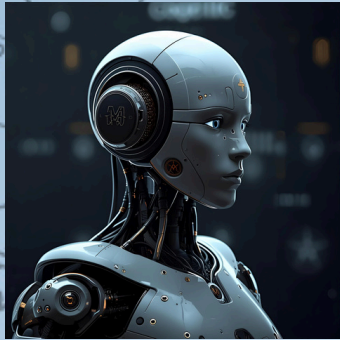
Organizations define autonomy levels based on risk, setting rules for when agents can act, escalate, or require approval. Multiple agents can collaborate using shared memory, enabling safe, context-aware decision-making.

STRONGER GUARDRAILS & GOVERNANCE

Control mechanisms now work at runtime, with RBAC, SSO/MFA, approvals, audit trails, and policy enforcement. Governance includes ongoing monitoring, explainability, and compliance with security standards.

Getting Started

- Redesign one full workflow for agent-led execution.
- Set autonomy rules and human checkpoints by risk level.
- Implement approvals, cost controls, and audit logging from the start.
- Build an agent catalog and tracking system to monitor behavior and updates.



UMAIR FAQUIH - TE CO

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ARTICLES

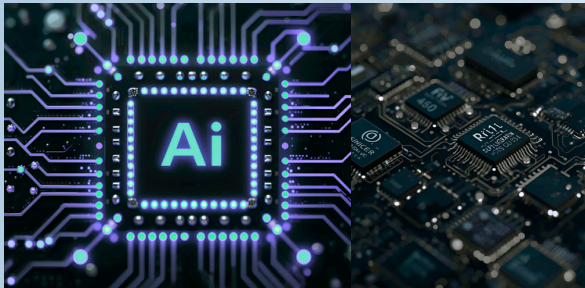
APPLICATION-SPECIFIC SEMICONDUCTORS FOR AI:

AI PCS AND LAPTOPS

Integrated NPUs in laptops are creating a fast-growing installed base for on-device AI, with forecasts pointing to roughly 31–43% of 2025 shipments and a majority of notebook shipments by 2026, establishing critical mass for local inference at the edge. Windows platform work in H1 2025 introduced cross-accelerator development via Windows ML/ONNX and Copilot+ APIs, enabling cross-NPU experiences across the Windows silicon ecosystem.

WHY IT MATTERS

NPUs run AI locally—faster, more private, and more energy-efficient than using CPUs or cloud services. This helps apps work offline and saves power and cloud costs. Early investment in hardware and tools is key to getting useful AI experiences at scale.



KEY SIGNALS:

- Copilot+ PCs now require ~40+ TOPS NPUs and set hardware standards for AI on Windows 11.
- Windows Build 2025 introduced unified development tools (like ONNX Runtime, AI Hub, and Windows Store support) for cross-device AI.
- Windows 10's end-of-life and new AI-ready devices are pushing businesses to upgrade PCs.

WHAT TO WATCH:

- More developers using tools like DirectML, QNN (Qualcomm), and OpenVINO (Intel) for cross-platform AI.
- Enterprises starting to update their fleets for AI-capable PCs as platforms mature.

AI ACCELERATORS IN DATA CENTERS:

In 2025, new chips like custom GPUs and ASICs are being used to meet rising AI demand. These focus on performance while managing cost, heat, and power. New tech like HBM3E memory, 800G/1.6T networking, liquid cooling, and better optics are supporting this growth.

10

ARTICLES

POST-QUANTUM CRYPTOGRAPHY PLANNING

THE IMMINENT QUANTUM THREAT

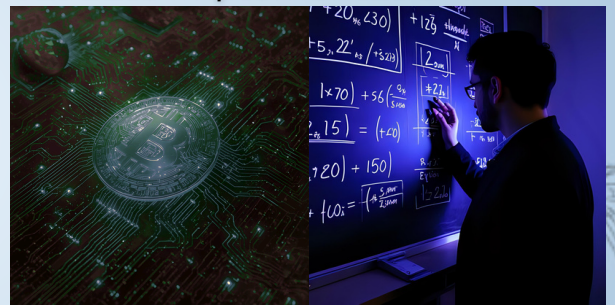
A fundamental shift in cybersecurity is underway, driven by the imminent threat of quantum computers. The core danger lies in their theoretical ability to break the public-key encryption, like RSA and ECC, that underpins global digital security. This is no longer a distant academic problem. Adversaries are actively pursuing a "Harvest Now, Decrypt Later" strategy, capturing and storing encrypted data today with the intent of decrypting it once a powerful quantum computer is operational. This tactic makes the quantum threat an immediate risk to any data requiring long-term confidentiality, forcing a strategic migration to post-quantum cryptography (PQC) onto all 2025 and 2026 enterprise roadmaps.

STRATEGIC SHIFT TO CRYPTO-AGILITY

Transitioning to post-quantum cryptography is a major infrastructure overhaul, not just a routine update. The goal is crypto-agility—the ability to upgrade cryptographic algorithms without disruption. This approach helps organizations assess risks, manage assets, migrate in phases. Momentum is growing, driven by NIST's finalized 2024 standards (e.g., CRYSTALS-Kyber and Dilithium), providing a clear path for adoption.

INDUSTRY & GOVERNMENT MOMENTUM

NIST's standardization has triggered broad adoption, boosted by mandates like U.S. NSM-10, which sets deadlines for federal migration. Tech leaders (Google, Cloudflare, AWS) are already running real-world PQC trials (e.g., TLS 1.3) to test and validate implementation.



DEVELOPER TOOLS AND IMPLEMENT

For developers, the focus is now on practical integration. Open-source libraries like Open Quantum Safe (OQS) are easing the process by embedding PQC algorithms into familiar protocols like OpenSSL. A common implementation strategy is the use of hybrid schemes, which combine a classical and a PQC algorithm to ensure security against all types of threats during the multi-year transition period.

SUMAIYA DADNAK - TE CO

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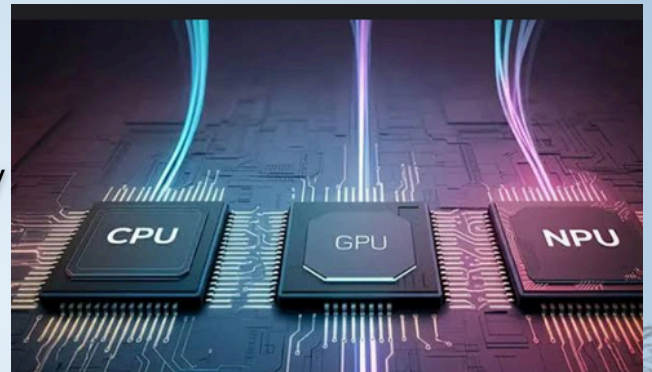
ARTICLES

AI PCS AND ON-DEVICE NPU GO MAINSTREAM:

Integrated NPUs in laptops are rapidly creating an installed base for on-device AI as AI PCs scale from roughly 43% of 2025 shipments to a majority of notebook shipments by 2026, establishing critical mass for local inference at the edge. Windows platform work during H1 2025 introduced cross-accelerator (CPU/GPU/NPU) development via Windows ML/ONNX and Copilot+ APIs, enabling cross-NPU experiences across silicon vendors in the Windows ecosystem.

WHY IT MATTERS:

NPUs enable private, low-latency, energy-efficient AI, allowing offline, always-on experiences while cutting cloud and battery costs. The focus now is building the hardware base and developer tools to support large-scale adoption.



PLATFORM SIGNALS:

- Copilot+ PCs require ~40+ TOPS NPUs and set baseline specs for local AI.
- Windows ML (Build 2025) enables cross-accelerator development (CPU/GPU/NPU) with ONNX Runtime, AI Hub, and Store distribution.
- Aging PCs and Windows 10 end-of-support are pushing enterprise upgrades through 2025–2026.

DEVELOPER MOMENTUM

Windows ML standardizes ONNX Runtime with execution providers across CPU/GPU/NPU, plus Olive for model optimization and AOT compilation, reducing per-silicon forks and accelerating app delivery on Copilot+ PCs. Qualcomm's QNN EP and AI Hub, and Intel's OpenVINO EP for Windows ML, demonstrate cross-vendor enablement for low-power, high-throughput on-device inference with consistent APIs. DirectML's expanded NPU support rounds out a "write once, run accelerated" path for Windows developers targeting heterogeneous accelerators.

MAZIN DESHMUKH - TE CO

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ARTICLES

RESPONSIBLE AND PERSONIFIED AI FOR CUSTOMER EXPERIENCE

THE RISE OF THE AI PERSONA

Customer interactions are evolving from basic chatbots to personified AI—agents that reflect a brand’s voice and manage complex relationships. In 2025, enterprises are moving from LLM experimentation to building governance, safety, and monitoring frameworks, treating AI personas as strategic assets.

BALANCING OPPORTUNITY AND RISK

While personified AI can boost customer loyalty, poor implementation can harm brand reputation. This raises Responsible AI to a key risk management priority. Formal governance is essential to control hallucinations, enforce brand voice, block harmful content, and ensure accuracy.

MARKET AND REGULATORY DRIVERS

External pressures like the EU AI Act require companies to document and audit AI risks. At the same time, consumer trust is now a major competitive factor. In response, cloud and SaaS providers are embedding Trust and Safety layers into generative AI tools.



THE RESPONSIBLE AI TOOLKIT

Developers are leveraging a maturing LLM-Ops stack to build these systems responsibly. They are widely adopting techniques like Retrieval-Augmented Generation (RAG) to ground AI responses in verified company data and using frameworks like Guardrails AI to programmatically enforce behavioral rules. This ensures the AI is not just smart, but also safe and on-brand.

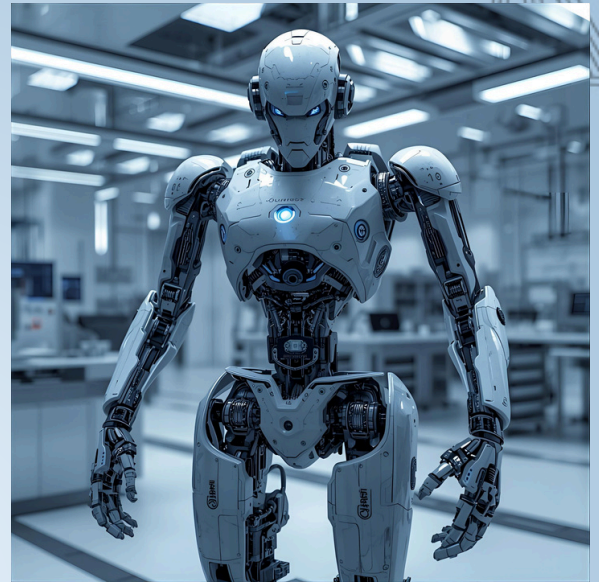
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ARTICLES

ROBOTICS POWERED BY FOUNDATION MODELS

A NEW ERA FOR ROBOTICS

Foundation models are transforming robotics, enabling machines to move beyond the factory floor and operate in real-world, unstructured environments. By integrating LLMs and VLMs, robots gain reasoning and perception, allowing them to handle complex tasks dynamically.

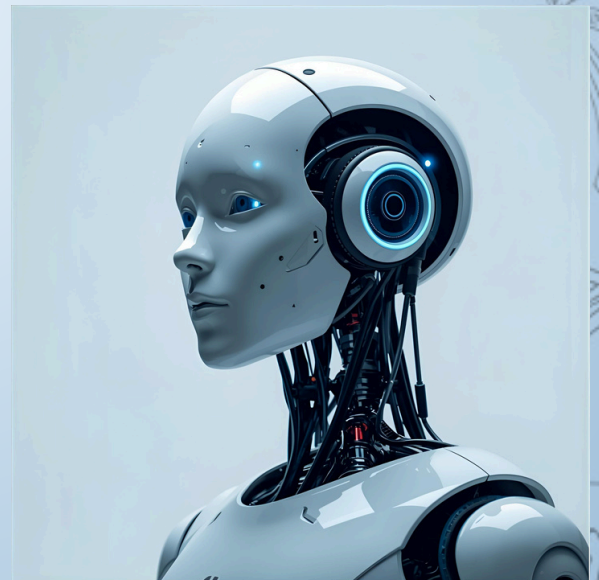


SOLVING THE BRITTLINESS PROBLEM

This fusion addresses robotics' long-standing brittleness—the inability to generalize. With foundation models, robots can follow natural language commands and adapt learned skills to new tasks, expanding automation into areas like warehouses, retail, and healthcare.

ECOSYSTEM AND HARDWARE MOMENTUM

Industry leaders like Google (RT-2) and NVIDIA (Project GROOT) are investing heavily in general-purpose robotic AI. Meanwhile, companies like Figure AI and Agility Robotics are delivering advanced, affordable mobile and humanoid platforms, aligning hardware and software innovation.



THE DEVELOPER'S PLAYBOOK

Developers are integrating foundation models with ROS, using emerging Vision-Language-Action (VLA) architectures to convert multimodal inputs into actions. Simulation platforms play a key role in safely training and validating these embodied AI systems before deployment.

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ARTICLES

AI INFRASTRUCTURE BOTTLENECKS: POWER, SCALE, EDGE

GENERATIVE AI DEMANDS

Generative AI is straining digital infrastructure with its massive compute and power requirements, far exceeding traditional workloads. Scaling isn't just about more servers

it's about redesigning data centers, now limited by power, cooling, and hardware supply chains.

POWER AND SUPPLY CHAIN CONSTRAINTS

The main bottleneck is now power, not silicon. Key data center regions face grid capacity issues and long waits for high-voltage access. Meanwhile, shortages of GPUs, AI accelerators, and InfiniBand are slowing deployment of new AI capacity.

SHIFT TO THE EDGE

To bypass centralized limits, AI inference is moving to the edge—on laptops, smartphones, and IoT devices. This reduces latency, enhances privacy, and cuts cloud costs, making decentralized AI a critical strategy.

TWO-PRONGED INFRASTRUCTURE FUTURE

AI will follow two tracks:

1. Next-gen data centers with high energy efficiency, liquid cooling, and proximity to power sources.
2. Optimized edge hardware (e.g., NPUs) enabling mainstream on-device AI.
3. Together, this hybrid infrastructure will support both large-scale training and real-time inference at the edge.

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ARTICLES

SMALLER MULTIMODAL MODELS AND TASK-SPECIFIC AGENTS

BEYOND GIANT LANGUAGE MODELS

The “bigger is better” phase of generative AI is shifting to a pragmatic approach. Giant models are powerful but often slow, costly, and lack specialized context. In 2025, AI strategies favor a diversified portfolio, using the right model for each task to optimize cost, speed, and accuracy.



RISE OF EFFICIENT, SPECIALIZED MODELS

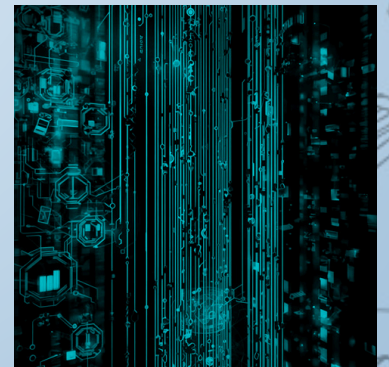
Two key technologies lead this shift: Small Language Models (SLMs), trained on domain-specific data for expert-level performance at lower cost and size, and multimodal models that handle text, images, audio, and more, providing richer context and understanding.

FROM MODELS TO AUTONOMOUS AGENTS

Task-specific agents combine efficient models to achieve complex goals by coordinating AI models, APIs, and databases. For example, a procurement agent may interpret requests, check inventory, and generate orders, enabling far more robust automation than single models.

THE CO-EVOLUTION OF SOFTWARE AND HARDWARE

This software trend is happening in lockstep with an AI-driven “hardware renaissance.” The rise of efficient models is both a cause and effect of the proliferation of specialized silicon, from the NPUs in consumer laptops to custom AI accelerators in the cloud.



Software strategies are now deeply intertwined with hardware capabilities, as developers increasingly optimize smaller models to run on specific edge devices. This powerful feedback loop, where efficient software and specialized hardware co-evolve, is dramatically lowering the cost and latency of AI, pushing intelligent capabilities into a new wave of products and services.

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ARTICLES

3D FORMULA OF SUCCESS: DETERMINATION + DEDICATION = DESTINATION

In the world of engineering, success is not a matter of chance—it is the outcome of persistence, focus, and resilience. Just as every complex design relies on the right formula, every aspiring engineer needs a guiding principle to reach their goals. The 3D Formula of Success – Determination + Dedication = Right Destination – encapsulates this journey.

DETERMINATION: THE FIRST DIMENSION

Engineering is filled with challenges, from long hours of study to solving real-world problems. Determination acts as the inner fuel that keeps us moving forward even when obstacles arise. It is the clarity of purpose that ensures we don't give up midway, whether it's debugging a stubborn code, handling failed experiments, or facing academic setbacks.

2. DEDICATION: THE SECOND DIMENSION

Determination shows us the path, but dedication keeps us walking it consistently. Dedication is the daily discipline of learning, improving, and staying committed to excellence. It transforms ambition into action and ensures that short-term failures don't overshadow long-term goals. In engineering, dedication reflects in endless practice, late-night brainstorming, and teamwork that pushes projects toward success.

3. RIGHT DESTINATION: THE FINAL DIMENSION

With determination to begin and dedication to persist, success naturally aligns itself. The right destination may not always be the easiest, but it is the most rewarding. For an engineer, it means creating impactful solutions, driving innovation, and contributing to society with knowledge and skills.

Just like in 3D modeling where every axis adds depth, the 3D Formula of Success adds dimension to our personal and professional growth. It reminds us that success isn't merely about reaching a milestone—it's about building the right mindset to continue moving forward.

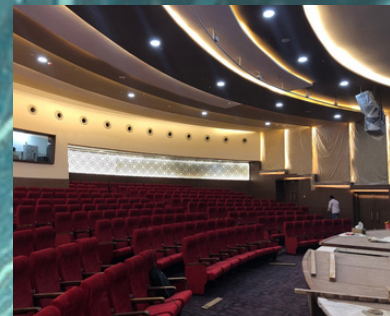
In essence, engineering success is not a one-step formula but a multidimensional process. With determination as the blueprint, dedication as the building material, and the right destination as the final structure, every engineer can design a future worth striving for.

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