ATHARVA ROBOTICS CENTER

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Big tech rush to build cloud and AI infrastructure in India

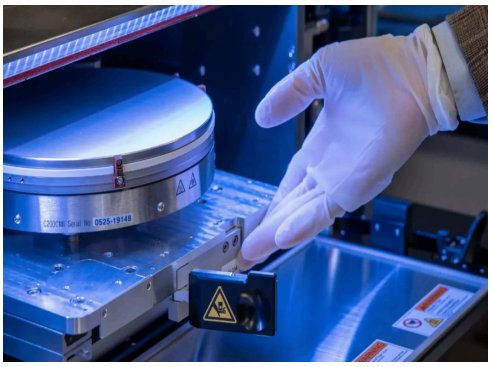
By Gurbir Singh, December 14, 2025

There is a sudden downpour of Big Tech investment in India. Amazon has just announced it will invest $35 billion by 2030 for advancing AI-driven digitization. Earlier, on Tuesday, Microsoft said it will pump in $17.5 billion through to 2029 to strengthen the country's AI ecosystem. That's pledges for $52.5 billion in one week.

US engineers develop 3D chip that offers order-of-magnitude speed gains, accelerates AI

By Prabhat Ranjan Mishra, December 13, 2025

Engineers in the United States have developed a novel multilayer computer chip with a unique architecture that could help usher in a new era of AI hardware and domestic semiconductor innovation.The team highlighted that in hardware tests and simulations, the new 3D chip outperforms 2D chips by roughly an order of magnitude.



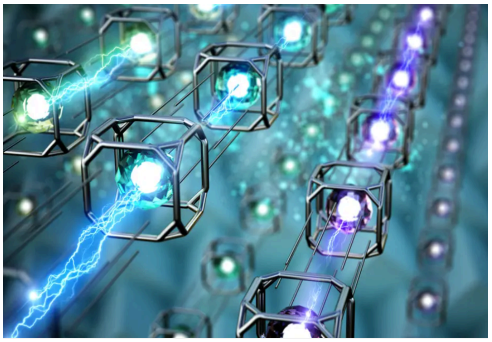
NASA is sending a robotic arm into orbit to help construct vital infrastructure in space

By Claire Reid, December 14, 2025

NASA is sending a robotic arm into orbit to help construct habitats and vital infrastructure in space, and Space X is lending a hand. It's been more than five decades since American astronauts have been on the Moon.

Qubits break long-held quantum limit by evolving in superposed time paths

By Rupendra Brahambhatt, December 13, 2025



For decades, physicists believed that even the strangest quantum objects had a hard limit on how strongly their behaviour could be linked across time. No matter how quantum a system was, there was thought to be a ceiling to how much its present could be correlated with its past and future.

Blue Origin to send 6 tourists to space this day

By Akash Pandey, December 14, 2025

Jeff Bezos's Blue Origin is gearing up for its 37th New Shepard mission, scheduled to launch from the West Texas desert on Monday, December 18.The NS-37 mission will take six passengers on a suborbital flight across the Karman line, the internationally recognized boundary of space.

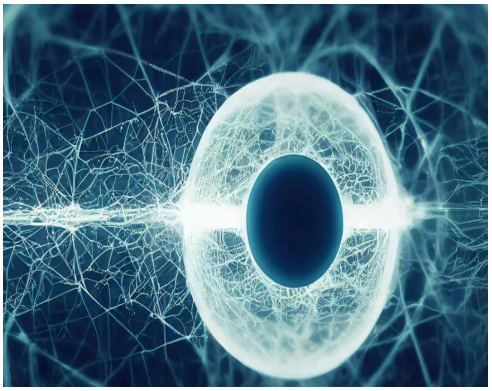
'Invisible' processes of quantum standard volt visualized in a first with ultracold atoms

By Rupendra Brahambhatt, December 13, 2025

Some of the most important quantum effects powering today's technology happen on scales that are almost impossible to see. One such phenomenon, called the Josephson effect, lies at the heart of quantum computers, ultra-precise voltage standards, and sensitive medical tools used to measure brain activity.

Scientists build atomic light switches to control single photons on demand

By Rupendra Brahambhatt, December 14, 2025



Imagine a light switch so small it is made from just a few atoms, and so precise it releases light one particle at a time. These tiny switches, called quantum emitters, are considered one of the core components for future technologies such as quantum computers, ultra-secure communication networks, and extremely sensitive sensors.

China's Unitree teases platform allowing users to control robots through smartphones

By Danielle Popov, December 14, 2025

Humanoid robot maker Unitree Robotics has teased what it calls the world's first humanoid robot "app store", a developer platform designed to bring embodied intelligence into everyday life by allowing users to access and control robots directly through their smartphones.

News Articles

Google, Meta, and the race for your face

ANUJ BHATIA

GOOGLE WILL DEBUT AI smart glasses in 2026, amid stiff competition from Meta. The Alphabet-owned company's first wave of these face wearables will be developed in collaboration with Samsung, Gentle Monster, and Warby Parker. Google is approaching the market with a long-term strategy, which is why it has outlined two different product paths. The first pair of glasses will be an audio-only, lightweight, screen-free device with built-in speakers, microphones, and cameras, similar to baseline Meta's

Ray-Ban AI glasses. These glasses will allow users to access Gemini, Google's AI assistant, to ask questions and receive instant responses.

Google is also developing a second pair of smart glasses equipped with a built-in heads-up display that can show navigation directions and language translations. The first of these display-enabled glasses will arrive next year, though the company did not specify the details.

The AI smart glasses market has begun to gain popularity, boosted by the surprise success of Meta's Ray-Ban glasses. Although still far from the fully augmented reality devices tech companies ultimately envision, these smart glasses perform useful everyday tasks, acting as practical digital assistants. Meta's Ray-Ban smart glasses, built in collaboration with eyewear giant EssilorLuxottica, have become the benchmark, and other companies are following in their footsteps.

Experts believe the next big trend in technology will be smart glasses that can be worn on the face and operated simply by speaking to them or looking through them, potentially replacing smartphones altogether. There is already a race in Silicon Valley to create smart glasses that are sleek, lightweight, and fashionable enough to wear all day, everywhere you go.

Source:Financial Express Newspaper, 15-12-2025
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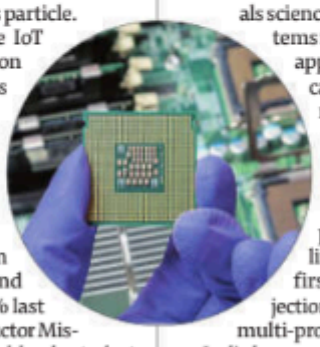
Making chips intelligent

V RAMGOPAL RAO

A 3-NANOMETRE TRANSISTOR is no longer science fiction; it is inside the phone in your pocket. Yet classical silicon is gasping. The next leap will come from nanoelectronics: new materials, new device physics, and integration at atomic precision. This includes today's scaled CMOS (complementary metal oxide semiconductor) powering everything from AI chips to edge devices.

This is not just about making chips smaller. It is about making them smarter, cheaper, and greener. The global nanoelectronics market, encompassing scaled CMOS semiconductors, sensors, and IoT edge devices, is heading toward $1 trillion by 2030. Nanosensors already detect a single virus particle. Ultra-low-power chips enable IoT networks that run for ten years on a coin cell. Flexible electronics printed on plastic will turn any surface into a display or a health monitor. From electric-vehicle powertrains to satellite constellations, every high-growth sector rides this wave.



India spends over $25 billion every year importing chips and sensors. That number rose 18% last year alone. The India Semiconductor Mission is building fabs and assembly plants, but fabs alone will not stop the outflow. Real sovereignty lies in owning the frontier: compound semiconductors, MEMS sensors, integrated photonics, and IoT edge intelligence. Redirect at least one-tenth of the mission's budget to nanoelectronics R&D and we can create a few billion dollars in high-value exports by 2035.

Science funding is the bottleneck. India's gross expenditure on R&D remains stuck below 0.7% of GDP, lowest among even the BRICS countries. Our universities and institutes run nano labs on shoestring budgets. The Anusandhan National Research Foundation (ANRF) was created to change that, but it needs to move faster and bolder when it comes to semiconductor R&D investments. A dedicated funding window for nanoelectronics and sensor missions, split between large consortia and high-risk academic projects, would ignite hundreds of translational efforts overnight.

Talent must follow money. We produce 1.5 million engineers annually, yet most have never seen a clean room. Curricula must fuse materials science, device physics, and data systems from the second year. Industry apprenticeships, faculty sabbaticals in fabs, and mandatory six-month internships should become non-negotiable.

Ideas must reach market. Nanoelectronics is capital-intensive. We need pre-competitive consortia, university-linked seed funds that write the first crore without revenue projections, and government-sponsored multi-project wafer runs for startups.

India has a narrow window to lead in sensors and IoT edge intelligence, two segments where software strength meets hardware opportunity. We have the mission, the minds, and the market. All that is missing is the courage to fund science at scale. The devices are shrinking. Our ambition must not.

The writer is vice-chancellor, BITS Pilani Group of Institutions

Source:Financial Express Newspaper, 15-12-2025
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TECH BYTES

Preparing firms for quantum era

KYNDRYL HAS INTRODUCED a new service to enable enterprise readiness for the quantum era. The quantum safe assessment service helps identify cryptographic vulnerabilities and build scalable post-quantum strategies. It offers a comprehensive evaluation of a firm's digital environment to advise, prepare, design and implement quantum-safe solutions. This supports long-term data protection and regulatory requirements.

Drones to serve as rapid responders

IDEAFORGE HAS SIGNED MoU with the Centre for Development of Advanced Computing (C-DAC) to strengthen drone-led emergency response and advance research in UAV, semiconductor and data-driven technologies. The tie-up brings together ideaForge's FLYGHT platform with C-DAC's emergency response support system, which enables anyone to access services through a single emergency number.

Voice bot helps manage inventory

UNICOMMERCE HAS LAUNCHED UniBot, a GenAI-powered conversational assistant to simplify e-commerce operations for sellers and warehouse teams. It allows users to execute tasks, retrieve insights, and manage day-to-day operations through simple voice commands.

Medra to expedite drug discovery with AI robots

AGNEE GHOSH

MEDRA, WHICH PROGRAMS robots with AI to conduct and improve biological experiments, has raised $52 million to build what it says will be one of the largest autonomous labs in the US. The company recently signed an agreement to work on early drug discovery with Genentech, a subsidiary of pharmaceutical giant Roche Holding.

"There's been industrial automation in life sciences for decades," Medra CEO Michella Lee said, referring to robots that repeat preprogrammed motions. Her bet is that "physical AI" — robots with sensors and cameras tied to software that allows them to process what they're doing, log precise data and adapt — will accelerate scientific progress.

Medra is growing out of a warehouse space in San Francisco's Mission district, where a series of steel tables house robotic arms that pinch, spin, drip and mix to manipulate cells and lab chemicals. The company doesn't make the hardware, sensors or cameras; Medra has developed software that is intended to allow a scientist to direct the robot using natural language, the way they would with a chatbot, and brainstorm ways to solve problems and adjust lab work.

The robots are programmed to operate independently once there's a task, with detailed notes of its actions. The software tracks every detail of an experiment: the angle of a pipette, how deep it dips into a well, the time between adding reagents, the speed of mixing. That data is fed into vision-language-lab-action model, which lets the system reason about what happened in an experiment and propose changes.

MEDRA'S CORE THESIS IS THAT AI FOR SCIENCE IS STARVED OF RIGHT DATA

Medra currently focuses on early-stage discovery work, before a drug candidate moves into clinical trials. It can handle gene editing, protein engineering, immunology and antibody workflows on the same core hardware by swapping in different instruments and programming. The robots can run experiments overnight and on weekends, alerting customers if a sensor flags a problem.

A core part of the company's thesis is that AI for science is starved of the right kind of data. Lee points to Google DeepMind's AlphaFold2, the protein-structure model that won a Nobel Prize and was trained on a few terabytes of experimental data collected over many years. By contrast, OpenAI's O1 reasoning model may have been trained on data measured in petabytes, she said.

For now, Medra is focusing on the kind of early work that happens before a clinical trial is even developed or proposed—meaning its systems face no direct FDA oversight, though the data they produce could eventually be submitted in regulatory filings.

—BLOOMBERG

Medra programs robots with AI to improve biological experiments

Source:Financial Express Newspaper, 15-12-2025
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Fully Committed to India's Semiconductor Ecosystem: Japan

Dipanjan Roy Chaudhury

New Delhi: Japan has said it is committed to bolstering India's semiconductor ecosystem. Japanese Ambassador to India, Ono Keiichi, said Japanese firms are seeking participation in India's manufacturing initiatives and are offering cooperation in diverse forms, including ecosystem development and human resource training.

Keiichi was speaking at a meeting organised by the ORF on India-Japan economic security partnership last week.

Japan's offer of support is significant in the backdrop of the US not including India in its recently announced initiative on critical minerals and critical technology.

Keiichi said the Japanese Chamber of Commerce and Industries in India has established a dedicated Semiconductor Committee that facilitates exchange of information and collaboratively work between some 160 companies for building a robust semiconductor ecosystem. "I, too, alongside representatives from many Japanese companies, have visited Tata Electronics' semiconductor facilities at Dholera in Gujarat and Jagiroad in Assam. We have consistently conveyed the requirements of Japanese companies to both central and state governments, and we will continue this close collaboration moving forward," Keiichi said, claiming that without the expertise and engagement of Japanese companies, semiconductor manufacturing in India could be challenging.

Japanese companies are actively seeking to participate in manufacturing ambitions of India, says envoy

FILE PHOTO

"Concurrently, without the resolute commitment of Indian enterprises and governments, Japanese companies cannot fully commit to the monumental task of forging a new semiconductor supply chain," the Japanese envoy said. "It is imperative that both Japan and India advance together, recognising ourselves as a community of shared destiny." India and Japan are deepening semiconductor cooperation through a strategic partnership signed in 2023, focusing on building resilient supply chains, fostering R&D and developing talent to reduce global reliance on single sources like China.

Source:The Economic Times Newspaper, 15-12-2025
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Link:https://drive.google.com/file/d/1sXnQ9J6vYYSWBa0fj3DHWQTb5kzhxzrb/view

AI will Empower India's Investment Professionals: CFA Institute CEO

Says AI is breaking market silos, helping investment managers analyse data and spot opportunities

Banikinkar Pattanayak

New Delhi: India stands "a really good chance to augment" the efficiency of investment professionals with artificial intelligence (AI), given the country's vast pool of tech talent, said Margaret Franklin, president and chief executive of the Virginia-headquartered CFA Institute.

The AI use is causing silos across markets to collapse, giving global investment managers an easier peek into large datasets to form a more holistic view and spot opportunities better, Franklin told **ET** in an interview.

With the increasing deployment of AI in the investment and audit space, policymakers and regulators worldwide are striving to keep up to speed to ensure these tools are used responsibly, she said.

"But there isn't a playbook for this that we can pull off the shelf and just say, 'Here you go, this is what you have got to do.' I mean, this is art and science at the same time," she added.

India, Franklin underscored, is CFA Institute's "number one market for new candidates."

"And that is a result of two things—India being an investable market and the domestic market really growing. And a key feature of a strong market is having a very qualified talent pool," she said.

The institute offers globally-recognised certifications for chartered financial analysts (CFA) and experts in investment performance analysis. It also provides certifications on areas including private markets, private equity, sustainable investing and investment foundations.

CFA Institute, Franklin said, is working with authorities, practitioners, and academicians around the world to better comprehend the disruptive potential of AI and how it can be judiciously deployed.

There is no doubt that AI is enabling investment professionals to broaden their skillsets and improve efficiency, preparing them for the future, she said.

Some amount of labour may face displacement in the process, particularly in back and middle offices. But inevitably new jobs will emerge, too, she added.

Franklin says CFA Institute is working globally to understand AI's impact and ensure its responsible use

"It's encouraging to see some of the leading academicians, economists, practitioners are thinking about this, because any displacement of labour has real downstream consequences for economies, broadly speaking," Franklin said.

AI's ability to process lots of data and identify patterns will help authorities better detect corporate frauds or violations of rules. This is having a knock-on impact on companies' behaviour, as they seek to raise their compliance, knowing that the AI can detect infractions, she said.

Given the growing importance of AI, the institute has been building various use cases and other key features of such tools into its CFA programme. "Where AI becomes really important is in two areas. One is in our practical skills modules and skill-based learning. So, inevitably, that will be incorporated with the most up-to-date applications. And then secondly, in ethical decision-making," she said.

ESG IN INVESTMENT POLICY

Franklin said global investors are increasingly looking at risk-adjusted returns, and not just high returns, on capital. Climate and sustainability matters are directly important from a fiduciary perspective because they are financially material. "So irrespective of the political climate, climate is an important consideration for fiduciaries," she said.

So, those seeking patient capital from investors, such as pension funds and sovereign wealth funds, should be more mindful of their ESG initiatives, she suggested.

India is CFA Institute's number one market for new candidates. And that's a result of two things—India being an investable market and the domestic market really growing

But there isn't a playbook for this (AI) that we can pull off the shelf and just say, 'Here you go, this is what you have got to do.' I mean, this is art and science at the same time

MARGARET FRANKLIN,
President and CEO, CFA Institute

Source:The Economic Times Newspaper, 15-12-2025
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