

ATHARVA ROBOTICS CENTER

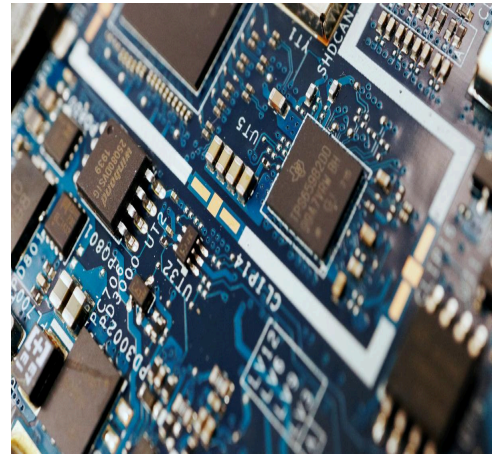
Daily News on Innovation & Technology

18th August, 2025

PM Modi I-Day speech: Made-in-India semiconductor chip to come in market by this year end, says Modi

By The Hindu, August 15, 2025

Addressing the nation on the 79th Independence Day, PM Modi said that six semiconductor units are already on the ground and four new units have been given green signal. The first made-in-India semiconductor chip will be launched in the market by the end of this year, Prime Minister Narendra Modi said on Friday (August 15, 2025).



First Isro-Nasa collaboration satellite NISAR's antenna reflector deployed in space

By Anjali Marar, August 17, 2025

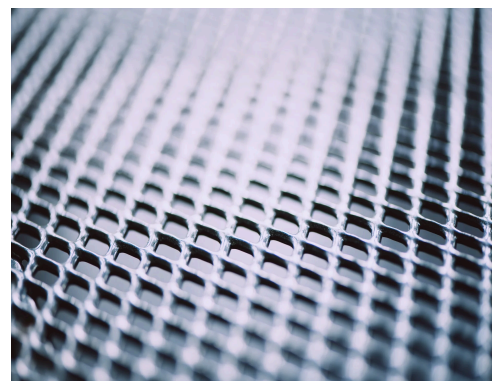
The gigantic antenna reflector on earth observation satellite NISAR, a joint Isro-Nasa mission, has successfully "bloomed" in space, marking a significant milestone in the satellite's deployment phase. Confirming the successful antenna deployment, Nasa said in a statement that the step-wise unfurling of the antenna reflector with a diameter of 39 feet was completed Friday.



Terra Quantum Brings Quantum Gravity to Quantum Computing: Advance Reduces Errors Without Added Complexity

By Matt Swayne, August 16, 2025

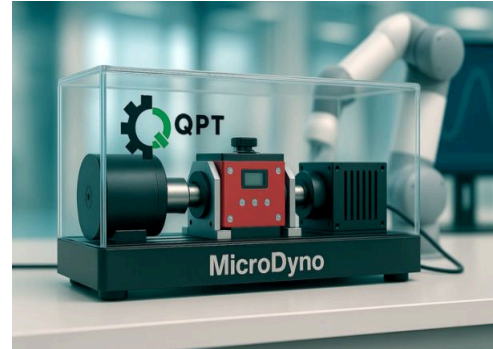
Terra Quantum has introduced QMM-Enhanced Error Correction, a hardware-validated, measurement-free method that suppresses quantum errors and improves fidelity on existing processors without architectural changes.



[QPT launches World's First AI-Ready Motor Drive for Collaborative Robots](#)

By TimesTech, August 18, 2025

QPT has unveiled MicroDyno, a breakthrough low-voltage motor drive test platform which demonstrates the key benefits of ultra-high frequency GaN-based motor drives. The solution enables greater control and efficiency with lower system complexity and cost, providing significant benefits in the fast-growing cobot market.



[Weekly Cybersecurity News Recap : Microsoft, Cisco, Fortinet Security Updates and Cyber Attacks](#)

By Guru Baran, August 17, 2025

In the week of August 11-17, 2025, the cybersecurity landscape was marked by critical updates from major vendors and a surge in sophisticated threats, underscoring the ongoing battle against digital vulnerabilities. Microsoft rolled out its Patch Tuesday updates on August 12, addressing over 90 vulnerabilities, including several zero-day exploits in Windows and Office suites that could enable remote code execution.



[China's new 'scissor wing' project could revive a hypersonic drone concept](#)

By Christopher McFadden, August 17, 2025

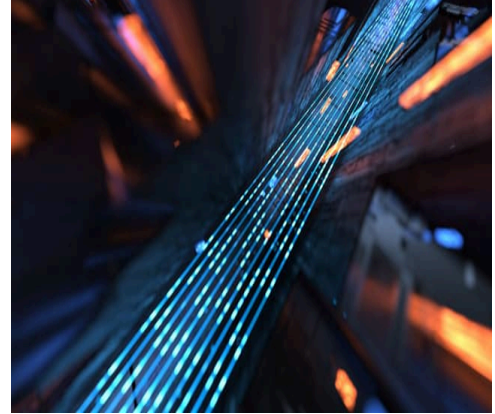
Chinese engineers are reportedly working on their own version of the oblique wing concept. Developed as early as the 1940s, this design consists of a single wing that can swivel around the fuselage, much like a scissor blade. With such aircraft, at slow speeds, the wing sticks out normally (perpendicular) to enable it to take off, land, and fly as normal. At high speeds, the wing rotates until it basically blends into the fuselage, turning the whole plane into a hypersonic dart.



[Quantum guitar: Scientists decode 90-year-old mystery of damped harmonic oscillator](#)

By Rupendra Brahmabhatt, August 16, 2025

New quantum model shows how atoms lose energy like fading strings, revealing the hidden role of uncertainty in damping at tiny scales. Imagine plucking a guitar string. It vibrates, the sound lingers, and then fades away as the energy drains into the air. Now bring this scene down to the scale of an atom. Can an atom vibrate in the same way, gradually losing energy to its surroundings



[China tests its most powerful rocket yet, produces 990-ton thrust for moon mission](#)

By Christopher McFadden, August 16, 2025

China has completed a critical test on its planned moon-destined Long March-10 rocket. This test brings the nation another step closer to fulfilling its ambitions to land Chinese astronauts on the lunar surface by 2030. The recent test saw the rocket's first stage fired on the ground at Hainan Island (China's coastal spaceport). This stage, equipped with seven YF-100K engines, was ignited for 30 seconds, producing about 900 tonnes of thrust



[US AI hits 70% accuracy in predicting nuclear fusion, beating supercomputers](#)

By Abhishek Bhardwaj, August 15, 2025

Scientists in the United States have used artificial intelligence (AI) to predict the outcome of a nuclear fusion experiment with over 70 percent accuracy. Scientists at the Lawrence Livermore National Laboratory (LLNL) utilized a deep learning model to predict the outcome of an inertial confinement fusion experiment conducted at the National Ignition Facility. The AI predicted a 74 percent probability for a positive outcome in the fusion experiment, which was correct.



News Articles

AI-designed drugs give scientists foothold in mission to thwart antibiotic-resistant bacteria

Binayak Dasgupta
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NEW DELHI: Scientists at the Massachusetts Institute of Technology have achieved a breakthrough in the fight against antibiotic-resistant bacteria, using artificial intelligence (AI) to design completely new antibiotics from scratch—molecules that have never before existed in nature or laboratories.

The AI-designed drugs successfully treated some infections in laboratory animals, including strains of bacteria that resist all current antibiotics, according to research published on Wednesday in the journal *Cell*. The work represents the first time that artificial intelligence has been used to create entirely novel antibiotic compounds rather than modify existing ones.

Antibiotic resistance has emerged as one of the most pressing global health threats. A major study published in *The Lancet* in September 2024 estimated more than a million deaths from antibiotic-resistant infections globally each year since 1990, with such fatalities projected to increase by nearly 70 per cent by 2050. The analysis warns that more than 39 million people could die from drug-resistant infections over the next 25 years without decisive action.

"We're excited about the new possibilities that this project opens up for antibiotic development," said James Collins, the

Termeer professor of Medical Engineering and Science in MIT's Institute for Medical Engineering and Science, who led the research. "Our work shows the power of AI from a drug design standpoint, and enables us to exploit much larger chemical spaces that were previously inaccessible," a statement by the university quoted Collins as saying.

The MIT researchers found success with two pathogens: methicillin-resistant *Staphylococcus aureus* (MRSA) and drug resistant strains of gonorrhoea.

The Lancet estimate found that deaths from MRSA more than doubled between 1990 and 2021, from 57,200 to 130,000 deaths annually, and certain that strains of gonorrhoea have become virtually untreatable with existing medications.

How it works and how they did it

The AI system analysed more than 45 million molecular fragments, using machine learning algorithms to predict which combinations might kill bacteria while remaining safe for human cells.

The system operates on principles similar to modern generative AI, such as ChatGPT or Dall-E, but instead of creating text or images, it generates molecular structures. At its core are Graph Neural Networks, which are specialised neural networks that understand molecules as interconnected graphs—

New tool in hunt for antibiotics

Roughly 39mn deaths are projected from drug-resistant infections by 2050. Researchers now report first-ever AI-designed antibiotics candidates, that work in animal trials

How AI systems help in drug discovery

ANALYSE: Scan millions of molecular fragments
PREDICT: Identify which might kill bacteria safely
GENERATE: Create new molecular structures
FILTER: Remove toxic or unsynthesisable compounds

Pathogens successfully targeted:

Gonorrhoea: Drug-resistant strains killed by compound NG1
MRSA: Hospital superbug halted by compound EN1



where atoms are nodes and chemical bonds are edges—much like how transformer models in ChatGPT understand relationships between words in sentences.

These networks were trained on vast databases of known antibacterial compounds, learning to recognise patterns that distinguish effective antibiotics from inactive molecules, similar to how language models learn patterns in text to predict what comes next. The entire system includes multiple layers of AI-powered filtering and scoring.

From this vast computational search, the researchers selected 24 promising compounds for laboratory synthesis and testing. Seven of the 24 compounds—a 29% success rate—showed selective antibacterial activity. By contrast, traditional drug discovery methods typically yield far lower success rates.

Novel mechanisms of action

The most promising compound, designated NGL, proved effective against *Neisseria gonorrhoeae*, the bacterium that causes gonorrhoea. In laboratory tests, NGL killed antibiotic-resistant strains of the bacterium and showed efficacy in mouse infection models.

Crucially, the compound works through a previously unexploited mechanism, targeting a protein called LptA that helps bacteria build their outer protective membrane. This approach means existing resistance mechanisms are unlikely to protect bacteria from the new drug.

"The compound displayed unique modes of action against *N. gonorrhoeae*," the researchers reported in their study. Resistance studies revealed that bacteria struggled to develop defences against NGL, with spontaneous

resistance emerging at a frequency of less than one in a billion—exceptionally low for bacterial pathogens.

The research team also developed compounds effective against *Staphylococcus aureus*, including MRSA that cause life-threatening infections in hospitals. One compound, EN1, demonstrated activity against both drug-sensitive and drug-resistant strains while showing minimal toxicity to human cells.

Computational drug design

The AI approach represents a fundamental shift from traditional antibiotic discovery, which typically involves screening natural compounds produced by soil bacteria and fungi. Instead, the MIT team used two complementary computational strategies.

The first, called fragment-based design, starts with small molecular building blocks that show antibacterial activity, then uses AI to expand and modify these fragments into full drug molecules. The second approach, termed *de novo* design, generates completely novel molecular structures without any starting template.

"Genetic algorithms and variational auto-encoders enable fragment-based and *de novo* design," the researchers wrote, describing their computational toolkit. The AI systems learned to recognise patterns associated with antibacterial activity by training on databases of known antimicrobial compounds.

The algorithms also incorporated filters to eliminate compounds likely to be toxic to human cells or difficult to synthesise in pharmaceutical laboratories. This computational screening dramatically reduced the number of compounds requiring expensive and time-consuming laboratory testing.

What next?

While the results represent a significant scientific advance, considerable work remains before AI-designed antibiotics not just to reach patients but prove their safety and efficacy in humans.

The most promising compounds must undergo extensive safety testing, followed by clinical trials to establish their effectiveness and safety in humans—a process that typically requires 10 to 15 years and costs hundreds of millions of pounds.

Estimates suggest 90% of conventionally discovered drug candidates fail to make the cut.

The researchers are now working to optimise their lead compounds, improving their potency and drug-like properties while maintaining their novel mechanisms of action. They are also expanding their computational platform to target additional bacterial pathogens, including those that cause tuberculosis and other major infectious diseases.

For the pharmaceutical industry, antibiotic development has been a rocky road due to scientific challenges and poor financial returns compared to drugs for chronic diseases.

Source: The Hindustan Times Newspaper, 14-08-2025

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Link: https://drive.google.com/file/d/1_J-ybTSGVz7rldUS5jUZhxj3cdwpXmsP/view

Tech giants, startups eye governance mkt using AI

IN INDIA, FIRMS like cybersecurity advisory Inspira has launched a platform, designed to act as a control centre for enterprise AI. It lets companies see which AI models are in use, assess potential risks, and apply safeguards before harm is done.

Inspira is positioning itself to capture early market share with a subscription-based service that combines advisory, monitoring, and managed governance. "This includes preventing flawed decision-making, stopping sensitive information leaks, and ensuring compliance with emerging AI regulations and privacy laws," Chetan Jain, founding executive director and MD of Inspira said.

Priced starting at \$30,000 a month, the solution has found takers in West Asia where Inspira has a strong presence. It will follow a tiered pricing

model basis the quantum of data that needs to be fed into the platform. The platform can automatically discover all AI models running within a company's cloud and on-premise systems—including unapproved "shadow" AI tools. It evaluates each model's risk profile by considering data sensitivity, user access, and exposure to threats such as prompt injection or inaccurate outputs.

Initial targets include banks, insurers & healthcare providers in India, the US, and West Asia, where AI adoption is rapid and data sensitivity high. By bringing AI oversight into the enterprise workflow, Inspira aims to give firms the confidence to innovate without losing control of their powerful new tools.

Recognising the potential to scale up, the firm will look to other markets in the future. In

an effort towards casting a global net, the platform also aligns model use with regulatory frameworks like ISO 42001 (the international standard for Artificial Intelligence Management Systems) and the EU AI Act, while offering real-time controls to block or log risky activities.

The firm has already gone to market with the platform, and is working with internal audit teams at various enterprises as part of the pilot. "The audit teams are not equipped to deal with AI in enterprises currently, and AI Governance platform is helping address this shortfall," Jain explained. The scale, however, will come with maturity as more companies adopt not only AI, but compliance measures to ensure ethical and secure use of the technology in their operations.

Source: The Financial Express Newspaper, 14-08-2025

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Link: <https://epaper.financialexpress.com/4046222/Mumbai/AUGUST-18-2025#page/10/2>

AI algorithms & models are shaping discourses

DATA CONTROL IS CRUCIAL FOR SELF-RELIANCE



■ UMA GANESH

IF 19TH CENTURY witnessed armies invading nations across the continents colonising lands and people with the help of guns and ammunition, in current times, we are experiencing colonisation of another kind—through digital

means, trying to enforce dominance in the virtual domain. Virtual domination is attained through large scale deployment of cloud infrastructure, proliferation of social media platforms, easy to download apps and search engines that have the capability of influencing the habits of information access.

Today AI algorithms and AI models are shaping national discourses through cultural and political interventions via elections and social media posts, influencing thoughts and voices of citizens. Continued digital domination would lead to profits reaped from local activities being amassed abroad.

Further, generative AI models are trained primarily using the western data and therefore they are not designed to relate to Indian lan-

guages and cultural nuances. As a result, biases crop up and representation of the diverse people of India is not reflected in these models.

Some ASEAN and African countries use AI tools that store sensitive patient data outside the country,



leading to compromise of patient privacy and the inability to build health systems addressing the localised diseases. Several universities in Latin America use foreign AI education platforms and content provided along with them, thus creating intellectual dependency.

Concerns for protecting the nation's sovereignty have prompted several countries to promulgate laws to create protection to personal data and also initiate steps to promote local digital infrastructure and digital solutions. Open source LLMs, SLAs and open AI models are being considered as alternatives to US led models by several countries. Examples include Mistral initiative of France, the UAE government initiative Falcon LLM and the Indonesian initiative Nusantara AI Project.

In India, steps initiated for fostering AI sovereignty include the framing of Data Protection Act and developing India stack fuelled by Aadhar identification, ONDC, DigiLocker and also the Sarvam AI initiative, to name a few. Bhashini and Bharat GPT programs are good foundations for supporting the multilingual requirements.

India would have complete AI sovereignty when its digital architecture would enable it to build its AI models and all computations are carried out on its own infrastructure. Sovereignty does not mean isolation. Careful balancing of independence and conscious collaboration should be the cornerstone of Indian strategy.

The writer is chairperson, GTT Foundation

Source: The Financial Express Newspaper, 14-08-2025

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Link: <https://epaper.financialexpress.com/4046222/Mumbai/AUGUST-18-2025#page/10/2>



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