

ATHARVA ROBOTICS CENTER

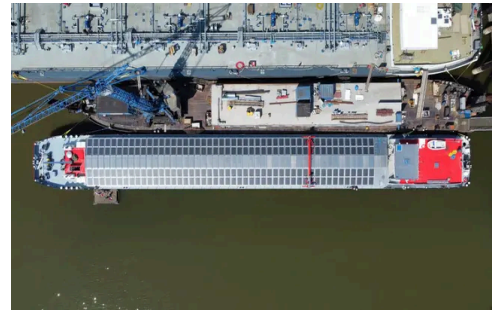
Daily News on Innovation & Technology

09th July, 2025

World's first hybrid solar cargo ship to sail with 192 panels for 37,500 kWh power yearly

By Georgina Jedikovska, July 08, 2025

Dutch solar innovator Wattlab and German inland shipping giant HGK Shipping have teamed up to launch the world's first hybrid solar-powered inland vessel as part of an ambitious initiative to decarbonize inland waterway transport.



Ax-4 Crew Shares Scientific Milestones from Space

By Axiom Space, July 08, 2025

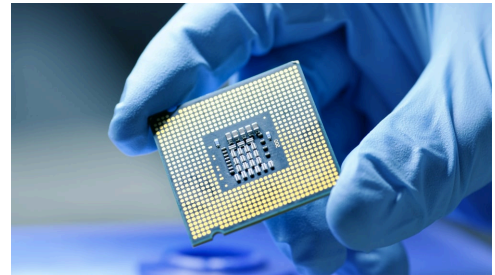
The Axiom Mission 4 (Ax-4) crew recently connected with Axiom Space Chief Scientist Dr. Lucie Low for an on-orbit science briefing, offering a glimpse into the cutting-edge research unfolding aboard the International Space Station.



Tata Electronics Sparks India's Chip Revolution with First-Ever Semiconductor Plant

By CSR Journal, July 08, 2025

Tata Electronics has officially started building India's first semiconductor fabrication unit at Dholera, near Ahmedabad in Gujarat.



100% in just 12 minutes: Radical lithium-sulfur EV battery could crush range anxiety

By Kapil Kajal, July 08, 2025

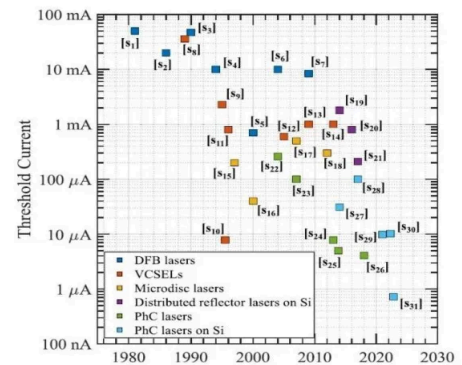
In the global shift towards electric mobility, the time required for battery charging continues to be a significant obstacle for electric vehicles (EVs).



Semiconductor Nanolaser Breakthroughs Could Lead to Ultra-Efficient Optical Technologies

By IEEE Photonics Society, July 09, 2025

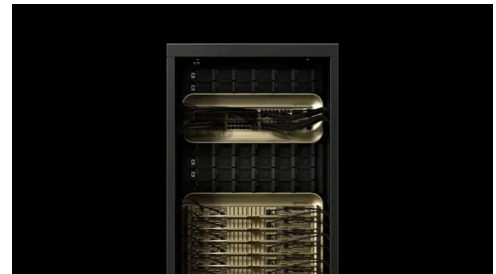
A new wave of innovation is transforming the future of optical technologies, driven by rapid advancements in semiconductor nanolasers. These advances are essential for future applications such as on-chip optical communication and neuromorphic computing, which require compact, energy-efficient light sources.



NVIDIA unveils world's first long-context AI that serves 32x more users live

By Aamir Kholam, July 08, 2025

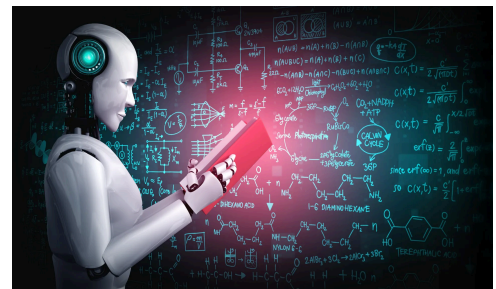
NVIDIA has unveiled a powerful new parallelism technique that could radically improve how AI models operate on massive contexts.



Scientists discover the moment AI truly understands language

By Sissa Medialab, July 08, 2025

The language capabilities of today's artificial intelligence systems are astonishing. We can now engage in natural conversations with systems like ChatGPT, Gemini, and many others, with a fluency nearly comparable to that of a human being.



News Articles

IS AI RESHAPING THE WORLD

AI IS DESIGNING AN ENTIRELY NEW FINANCIAL ERA

AI is not just reshaping the world, it is rewriting finance rules. The future of financial systems will not be dictated by static credit scores but by real-time intelligence. AI models will predict creditworthiness by analysing behavioural patterns, economic shifts, and global trends, making financial access truly inclusive.

Security will also be redefined. AI-powered fraud detection will go beyond recognising anomalies – it will anticipate threats before they emerge, using self-learning systems that evolve faster than cybercriminals. Deepfake-proof identity verification and decentralised AI-driven



security layers will make financial fraud nearly impossible. Financial decision-making will become hyper-personalised. AI-driven assistants will act as real-time financial copilots, adapting to an individual's goals, habits, and risks – automating investments, optimising spending, and even negotiating financial products on behalf of users.

AI is not just making finance smarter; it is designing an entirely new financial era – one where efficiency, security, and financial empowerment are seamlessly integrated into everyday life.

Sanjay Aggarwal | COFOUNDER & CTO, MONEYVIEW

Source: The Times of India Newspaper, 09-07-2025

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Link: <https://drive.google.com/file/d/1m7qRFKHgcUQFE7zaXAwtolnyhnos1g2R/view>

JAVA AT 30 WHY AI STILL NEEDS HUMAN CODERS

Fluency in any language never harms a speaker; it merely broadens the stories she can tell

Akhil George@timesofindia.com

Java's thirtieth birthday arrives amid the clamour surrounding generative AI, a technology already capable of drafting voluminous, enterprise-level code from a single prompt. For newcomers it can seem logical to bypass the hard graft of mastering a programming language and let the machines handle everything beneath the surface. Oracle, steward of the language since 2010, believes that view misunderstands both the role of AI and the purpose of Java itself. "AI is just another use case—albeit a noisy one," says Sharat Chander, senior director of Java SE (standard edition) product management at Oracle. "Java already supplies the performance, stability and security that modern models demand; what AI tools really strip away is the tedious low-level plumbing, freeing developers to focus on the business logic that matters."

Chander insists that the real value of learning Java lies in the architectural judgement it cultivates rather than the keystrokes it saves. To underscore the point he draws a parallel with everyday speech. "A language is a language, whether spoken or programmed," he says. "We do not abandon Spanish or Hindi simply because English is popular, and neither will developers discard a language that has earned their trust."

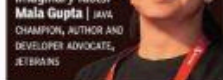
Java's own lane, he argues, is to remain the general-purpose, enterprise-grade option, trusted precisely because it evolves without leaving existing applications behind. That loyalty is reinforced by a global community of user groups—India alone hosts fourteen—whose members "get attached" to the language in much the same way people become attached to their mother tongue.

Compatibility, however, is not conservatism. Oracle now ships two Java releases a year, each incubated in the OpenJDK project where outsiders can probe, complain and contribute before any feature is cast in

“Generative AI is an exciting tool, but it doesn't erase the need for engineers to understand their craft. Java survives because it gives developers the performance, stability and security that modern AI workloads demand, yet evolves transparently so nothing breaks. Like spoken languages, programming tongues endure when communities love and shape them. We're making Java more concise and data-oriented, but the architectural judgement still sits with people and their creativity.”



“Knowing the language you're using to develop applications in 2025, such as Java, is more important than ever in a world where AI increasingly writes our code. Know. Delegate. Verify. I strongly believe developers must understand what they delegate and verify it for correctness before it lands in production. AI tools are non-deterministic. They may not produce the same response for the same prompt and they can hallucinate, that is, generate incorrect or imaginary facts.”



stone. Projects within the Java developer community such as Amber, Panama and the Generational Z Garbage Collector are tuned for a future in which AI inference and training happen inside Java processes. "We're making the language more concise, more data-oriented and more maintainable," says Chander. "So developers can reason about large models instead of wrestling with syntax."

That distinction—between reasoning and typing—defines the debate over whether Java remains worth learning as AI gains fluency. Mala Gupta, a Java champion, author, and developer advocate at JetBrains, reaches for a medical metaphor. "Imagine a surgeon using a robot for delicate work," she says. "If the robot stalls mid-procedure,

“Learning a language (like Java) has always been about understanding how to use the language to express your intent; it's not the syntax but the semantics—thread model, memory model, programming paradigm—that you need to grasp. This is something AI does not understand. It's generating Java code to solve the problem; believe me, it's very good at it. We have AI reviews enabled; however, we still have engineer reviews, not replacing them.”



the surgeon must take over. Now imagine the surgeon never learned the craft at all—that's terrifying."

In Gupta's view, AI assistants enlarge rather than diminish a developer's duty to "know, delegate and verify". Large models hallucinate, misread edge cases and alter their answers from one prompt to the next.

The antidote, Gupta says, is systems thinking—understanding how every construct in the language interacts with memory, concurrency and downstream services. "Ask 'why' five times," she advises, "and you reach the clarity AI cannot provide."

That scepticism is shared by Srikanth Seshadri, director at Confluent India, whose engineers maintain Kafka-based infrastructure for banks and telecoms (a lot of Kafka's core components are written in Java). Confluent enables AI reviews in its pull requests, yet still requires human sign-off after the machines have spoken because generated code has introduced race conditions that only seasoned eyes detect. In Java, a rare condition happens when two or more threads try to read or write the same data simultaneously and the program's out-

come depends on whichever thread happens to act first. This can cause mistakes as the threads "race" to access and update the shared resource.

To avoid problems like race conditions is why Seshadri warns that one cannot use AI blindly in an enterprise setting where the stakes are high. Mastery of the language, the business context and the behaviour of concurrent systems remains non-negotiable. Java's measured pace of adopting new features, he adds, helps developers grasp underlying concepts rather than chase fashions. "AI can generate

“Here's the honest bit, learning Java or any language isn't about memorising syntax or building glorified 'Hello World' apps anymore. It's about wiring your brain to think in structured, scalable, battle-tested ways. Java has been the backbone of enterprise systems for decades, not because it's flashy, but because it forces discipline. Type safety, object-oriented thinking, design patterns; it's a mental gym that toughens your systems mindset.”



tests and implementations, but you still need to debug and maintain them. To trust AI but verify, you must know your craft."

Critical thinking is what matters

For Zoravar Purohit, CAIO & co-founder at M37Labs, Java serves as a mental gymnasium that trains discipline. "Learning Java isn't about memorising syntax," he says. "It's about wiring your brain to think in structured, scalable, battle-tested ways." Strong typing, object-oriented design and defensive coding become habits that AI cannot replicate; good judgement, domain knowledge and the instinct to spot design flaws before they erupt in production. Even if AI delivers 80% of the boiler-plate, "the remaining 20% is where the real game is—debugging complex failures, designing resilient systems, optimising performance and making trade-offs with your eyes open." AI's a power tool, not a replacement for critical thinking, warns Purohit.

Chander closes the circle by arguing that mathematics and statistics remain the bedrock on which every language and every AI model rests. Over that foundation sits an understanding of concurrency, memory management and data-centric programming—areas that Java formalises through its memory model, threading primitives and newer value-based structures. Gupta encourages students to embrace IDEs such as IntelliJ IDEA, whose embedded copilots can already refactor entire projects, yet stresses that those tools amplify competence rather than supply it. Seshadri suggests reading the Java Language Specification, not to memorise grammar but to absorb the mental models that avert data races. Purohit would add a study of distributed-systems failure modes—the corner cases that AI prompts still fail to anticipate.

For young technologists choosing their first language, the message from practitioners of the three-decade-old programming language is that AI is here to stay, but it is a collaborator, not a career ender. Java offers a curriculum in systems reasoning and a guarantee that today's code—hand-written or machine-generated—will still matter when the next hype cycle arrives. Fluency in any language never harmed a speaker; it merely broadened the stories they could tell. In the same vein, fluency in Java will only be enriched rather than eclipsed by AI.

Source: The Times of India Newspaper, 09-07-2025

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Link: <https://drive.google.com/file/d/1m7qRFKHgcUQFE7zaXAwtolnyhnos1g2R/view>

They are core to one of the world's biggest pharma & life sciences firms



MERCK'S GCC LEADERS: From left, Harsha Arora, Anagita Prakashji, and Sangeeta Thakre

topstories@timesofindia.com

Anagita Prakashji is the one in the middle in the picture above. She has reasons to be all up that victory sign. She is the head of the India IT centre for Merck, one of the world's biggest pharma companies, and her team has delivered projects that have costarred the likes of Google in the global CIO's office.

She's most proud of what she'd done with the company's Microsoft lab water purification system. This system is used in laboratories. She'd worked on water-based tools... to ensure expertise, and where very high quality water is required. It's a bit of a complicated and yet, incredibly, she would often be asked to replace the components in these systems in Oman. Anagita's team integrated an IoT-enabled smart system in the equipment that would not only alert the lab that they are running out of liquid, but also put the time between an equipment's cyclical service. All that the lab technician has to do is click a key. The system senses the level of liquid, calculates the time it takes to get the liquid, and issues the reminder. Anagita says.

They also created a virtual aid that provides a step-by-step guide to resolving the issue, so that

CUTTING-EDGE MADE IN INDIA

the lab did not have to walk for a service engineer. It would at least 60-min drive. Customers love it," Anagita says. It's one of Merck's latest product engineering successes.

Another big success was a shoulder that she used across the company's different divisions. Merck is a nearly 100-year-old company, and Anagita's team had to train the IT centers with available data across these centers. What's more, IT is a domain company, not a generalist IT company, with stringent GDPR data privacy rules. "We need to ensure a new pattern of viewpoint. And we did it all within six days of GDPR implementation," Anagita says.

Log up for life science: Anagita has a team of about 1,000 - out of the global data, digital center of 2,000. In India, she has two colleagues - Harsha Arora and Sangeeta Thakre - who lead two other big Merck operations, and account all of them together the other day in their Bangalore campus. The Merck is proud to actually part of the life sciences division that Merck's IT strategy was present in support. The IT strategy helps provide a wide range of products and services for scientific research, manufacturing, and applied solutions. Harsha's team has to look at the strategic environment and already bringing new products in. They then do feasibility studies.

While the actual product development is mostly global, there often is a track in Germany. Harsha has a strategic marketing and innovation (SMI) track here that helps with the product launch. "We have to meet the compliance requirements in every market. We don't produce things over-the-counter. We do the supply chain and planning. We do the content development for the

One of the centers of excellence we have built in India is in scientific communications. Our communication is with medical practitioners. So there's a lot of scientific material that needs to be translated - reports of new studies, company documents. We have a team of experts who create these scientific communications taken by the global medical community for Merck's drugs, and recently had two of my team members presenting at ASCO American Society of Clinical Oncology. They created the information about the oncology portfolio and presented it before all the global oncologists at ASCO.

Sangeeta Thakre: I'm a head of marketing and sales here.

We have spent value here in the India center. We have global sales here, we have leadership here, we have visits in the entire CIO's office. And all of this has been achieved in a very short span, from 2014 to now. The position now is to be broad-based enough for our businesses to get solutions that really are future-oriented, with technologies like genAI, IoT, machine learning, etc. We want to make Merck's manufacturing smarter. Anagita Prakashji | Head of IT Center, Merck India



We have 30-40 people in my team who are PhD and Master's in chemistry and biology, and their one job is to study our complex landscape and see if there is a gap as compared to the competitors. This then is the location for new product development to develop across the lab water systems, filtration products, cell culture media, etc. We do the feasibility study. Once that's done, the product is developed by global teams, the manufacturing and innovation team here will help with the product launch. Harsha Arora | Head of IT Center, Merck India

products. We do the order management, customer query handling, etc. and provide support, and finally, we collect feedback from customers. Harsha says.

Helping drug development: Sangeeta Thakre says that in India, Merck's pharma is focused on oncology and neurology. She has been involved in oncology-related cases and helped Merck's team help with every stage of the drug development process - working with regulatory agencies to identify effective candidates for a treatment, all the way to rolling out data about drugs, checking their safety, preparing documents for regulatory agencies. Sangeeta says her team has helped Merck's team with regulatory submissions for oncology drugs. "We have expert teams in India who have exactly here to do these," she says.

Sangeeta also believes that Merck's commitment to safety of all Merck drugs - those earlier research, as well as those already in the market. "We've been here for more than 100 years, and we've always been there," she says.

All in all, Merck is coming into the workforce of both Harsha and Sangeeta. Working together with Anagita's team is making it much easier for them to work together.

Source: The Times of India Newspaper, 09-07-2025
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Link: <https://drive.google.com/file/d/1m7qRFKHgcUQFE7zaXAwtolnyhnos1g2R/view>

How HR Heads Can Rise To Challenge As AI Rewrites Playbook

By M Muneer

The CHRO is in a dilemma: When automation is justified by the costs saved in terms of jobs replaced, what's the role of HR? The World Economic Forum estimates over two crore job losses by 2050 due to the inexorable march of automation and Gen-AI. Most CEOs embrace AI technology as a path to boosting efficiency and ROI. For HR, it sounds like an existential quandary: How can we keep the conscience and manage the



transition from human capital to algorithmic capital without eviscerating the very soul of the organisation?

Automation promises bottom-line benefits, but if deployed indiscriminately, it can cause cultural erosion, social upheaval, and institutional cynicism. CHROs can't simply look at workforce realignment on a spreadsheet. People are the carriers of context, values, and legacy.

Bots, RPA (robotic process automation) platforms, and AI copilots are eliminating jobs in customer service, back-office operations, logistics, and even entry-level tech support. The WEF report sa-

ys over 83 million jobs will be lost, while only 69 million new jobs will be created. This poses a threat to countries like India.

Contrary to popular belief, HR has a soul. Most CHROs in India have a Sisyphean burden, juggling strategic alignment with business goals, emotional accountability to displaced employees, and social responsibility when job loss causes deep economic and psychological distress.

How may Indian CHROs rise to the challenge? Here are some observed best practices:



Forecast workforce requirements proactively: HR heads must invest in skills adjacencies mapping by identifying at-risk roles and guiding employees to upskill or reskill in areas of rising demand.

2 Redesign with human-in-the-loop: Some CHROs are championing augmented intelligence over AI rather than retrenching employees entirely. This hybrid approach, where machines handle repetitive heavy work while humans focus on empathy, judgment, and creativity, is proving humane and effective, even in HR operations.

3 Communicate with radical candour: In the age of digital leaks and rumour mills, transparency is a moral necessity. The best CHROs no longer hide behind euphemistic "rightsizing"

or "synergistic realignment." They communicate early, clearly, and truthfully to build trust during anxious times.

4 Implement tiered re-employment plans: Instead of adopting blunt-force layoffs, leading companies are instituting tiered transitions. This includes job-sharing models, internal gig assignments, and phased exits with severance packages tied to reskilling outcomes. It's not just ethical; it's reputational insurance. Many Indian IT firms have not yet learnt this.

5 Provide outplacement support: Seeking at scale without psychological scaffolding is institutional cruelty. Pioneering HR teams are offering outplacement counselling, mental health services, career reorientation boot camps, etc., knowing that livelihood loss leads to identity collapse.

India's demographic dividend is only valuable if it remains employable and empowered. Thus, the CHRO's role must evolve from gatekeeper to guardian of equitable transformation. It's time for India Inc to develop a "Conscientious Automation Charter," a va-

lues-based framework that outlines how technology transitions will be managed with fairness, dignity, and foresight.

This is not about sentimental idealism. It's pragmatic risk management. AI may write code, generate designs, and even conduct interviews. But it can't dream, empathise, or suffer. The CHRO's conscience isn't a liability; it's the last firewall between expediency and entropy. Let machines optimise, and humans humanise.

(Author is co-founder of the non-profit Medici Institute for Innovation)

Source: The Times of India Newspaper, 09-07-2025
Times Ascent Page

Link: <https://drive.google.com/file/d/1m7qRFKHgcUQFE7zaXAwtoInyhnos1g2R/view>

CURSOR Opportunities are opening up in all kinds of engineering fields thanks to RE & deftech

More Than Just Comp Geeks



T K Arun

US Bureau of Labor Statistics (BLS) brings out occupational outlook handbooks. After you apply filters for pay, projected growth rate and new jobs, the 2025 Outlook picks 10 occupations. Six of them relate to computer and information sciences, two to finance, one to management, and one to medical and health service management.

Of course, if you are gifted with special talent in music, sport, writing or other creative arts, you would be well-advised to ignore the BLS and nurture your talent all the way to success, or even fame. If you have an aptitude for celebrity, venality, draft-dodging, tax-dodging, felony, real estate development and grievance-mongering, you know where to head.

In India, we do have a National Career Service. But it only offers to direct you to counsellors. But practically all the 7,000-odd engineering colleges have their own lists of preferred engineering courses. Here, too, the first preference is for computer sciences, laced with AI and ML now.

Computer sciences and software development have, indeed, been India's favoured engineering disciplines ever since Indian geeks on H-1B visas gained a foothold and foothold in the land of opportunity for the express purpose of slaying the Y2K dragon.

The highest revenue per employee among India's big tech companies is for HCL, at a little over \$61,000. This is puny compared to the \$1 mn-plus earning per employee for US tech giants. Still, this was enough for the In-



Drone acharyas

dian tech industry to serve as the vehicle through which India's young achieved social mobility.

Actually, whatever branch of engineering you studied, you joined a tech company, learned to code, and you entered the ranks of the middle class, paying EMIs for homes, phones, cars and holidays, and boosting the Indian economy. AI threatens to put paid to a whole lot of routine programming jobs, enabling an efficient coder to increase his productivity 15-20x. In the US, where software developers are engineers, and programmers are anybody who can write code, programming jobs have been joining the bison, the 4-legged cougar, and the American liberal, as they grope their way into the sunset.



Building low Earth-orbiting satellites, and launching them at scale, will create an entire new space industry, calling for engineering talent specific to it

in India will not even get a look-in at such jobs. However, opportunities are opening up in all kinds of engine-

ering fields, thanks to the green energy transition, and compulsion on India to fortify national security in communications and power transmission, and indigenise defence technology and manufacture.

Take the latest scare over Chinese withholding of rare earth magnets to users around the world, including in India. We either have to get more rare earths of our own than is available from IREL (India) Ltd, or develop motors that do not depend on rare earth-doped permanent magnets. Along with battery minerals, this creates demands for power engineers, and mining, mechanical and chemical engineers.

The transition to sustainable energy calls for significant increases in RE generation, whether wind, solar or biodigestion, and battery storage. Battery minerals call for expertise in prospecting, mining and ore refining. Developing batteries with high-storage capacity, fast-charging times, and low weight calls for expertise in power engineering, chemistry, materials, design and miniaturisation.

Developing magnetic reluctance motors that dispense with rare earth-doped permanent magnets calls for expertise in power engineering, and in microelectronics to control the speed of these motors.

Drones are the high-flying hope in

new deftech, especially after Ukraine's Operation Spider against Russia, in which drones packed into crates inside trucks were smuggled into Russia, parked near air force bases, and remotely released from their cages to attack parked planes and inflict heavy damage on strategic bombers.

Designing and building drones that are lightweight and long-range, are capable of acting as loitering munitions or early warning systems, that can be controlled without radio guidance, and all sorts of other kinds, calls for combinations of different kinds of engineering and design. How to kill enemy drones is another challenge. Bursts of laser or microwave radiation could kill their electronics. How to miniaturise power sources for such bursts and make them mobile all along the border is another challenge.

Preventing our power grid, drones or computer systems from being hacked and disabled calls for another combination of engineering skills.



AI threatens to put paid to a whole lot of routine programming jobs, enabling an efficient coder to increase his productivity 15-20x

Low Earth-orbiting (LEO) satellites are increasingly vital in communications and national security. Building LEOs, and launching them at scale, will create an entire new space industry, calling for engineering talent specific to it.

Bliss it is, in this dawn of new opportunity to be an engineer. But to be a young engineer, in any discipline, is very heaven. Let us stop obsessing over computer sciences alone.

Source: The Economic Times Newspaper, 09-07-2025
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