Publication: Think China Online
Date: 27 February 2025
Headline: China's tech leapfrog: Time to lead?

China's tech leapfrog: Time to lead?

DeepSeek's rise is diffusing traditional risks associated with high-stakes AI arms races, pointing to an alternative technological trajectory that challenges Silicon Valley to re-examine its approaches, says SMU academic Liang Chen.

In recent years, China has transformed from an ambitious newcomer into a formidable contender, challenging the traditional US stronghold in ways that are both strategic and surprising. Nowhere is this more evident than in the global race for artificial intelligence supremacy. The big question remains: is this rapid ascent truly a leap toward global leadership, potentially dethroning American innovators?

Look at DeepSeek, which sent a shockwave through the global tech community. On 27 January, media attention on its cost-effective, innovative approach coincided with a historic 17% plunge in Nvidia's stock, the worst single-day drop in US history. Just days later, OpenAI dramatically pivoted its strategy by launching a free-access model, admitting that its previous closed approach had been a misstep. Meanwhile, major cloud platforms from Amazon to Microsoft and Google have swiftly integrated DeepSeek's technology. Their message is clear: this is not a niche breakthrough but a tectonic shift in how AI is built and deployed.

How far engineering ingenuity can go

DeepSeek's success offers a compelling counter-narrative to the US "Stargate" initiative — a massive, privately funded AI infrastructure plan often compared to a modern-day "Star Wars" programme. While the US has long been synonymous with breakthrough innovation fuelled by entrepreneurial spirit, DeepSeek proves that world-leading performance can emerge from

Publication: Think China Online
Date: 27 February 2025
Headline: China's tech leapfrog: Time to lead?

clever algorithms and engineering optimisation rather than by simply pouring billions into advanced hardware — a luxury typically reserved for Silicon Valley.

... immediately following DeepSeek's breakthrough, computer scientist Li Fei-Fei's team at Stanford distilled a new model of comparable capability at a cloud computing cost of less than US$50.

At the core of DeepSeek's disruptive power is its unwavering commitment to open source. Unlike competitors that lock users behind restrictive licenses — Meta's Llama, for example — DeepSeek's MIT-licensed model comes with no strings attached, inviting developers worldwide to build on its foundation.

Notably, its alleged ingenious use of "distillation"— transferring knowledge from a large, complex "teacher" model to a smaller, more efficient "student" model — has sparked debates about intellectual property in AI, while also casting doubt on the "Stargate" initiative. This approach, ironically pioneered by Google, drastically reduces the resources needed to replicate high-investment, high-performance models. In fact, immediately following DeepSeek's breakthrough, computer scientist Li Fei-Fei's team at Stanford distilled a new model of comparable capability at a cloud computing cost of less than US$50.

Catalysing broader ecosystem of innovation

Even more remarkable is how DeepSeek is catalysing a broader ecosystem of innovation. By providing an open, modifiable foundation and transparent technical documentation, it empowers both startups and established companies to tailor the technology to meet long-tail, industry-specific needs — compressing large models into smaller, specialised versions that excel in particular verticals.

Publication: Think China Online
Date: 27 February 2025
Headline: China's tech leapfrog: Time to lead?

For example, on 13 February, Baidu announced that its flagship model would be made free and that a next-generation version would soon be open sourced; just days later, WeChat search began beta testing integrations based on DeepSeek's framework — a significant leap forward, especially given that Tencent has long been betting on its own proprietary model.

In each arena, DeepSeek's ability to reduce costs and enhance productivity is accelerating AI adoption on a massive scale, while its open source model eliminates vendor lock-in and offers adopters full control...

The ripple effects of this approach are being felt across multiple sectors in China. In education, major players — from online tutoring platforms to corporate training providers — are rapidly integrating DeepSeek to deliver flexible, accessible AI solutions. In consumer electronics, leading smartphone brands such as Huawei and Oppo are leveraging DeepSeek to bring high-performance inference directly to mobile devices by distilling its models into compact versions that run efficiently on everyday hardware. In finance, at least 20 brokerage firms and banks have deployed localised versions of DeepSeek's models to power intelligent investment research, risk management and market analytics.

In each arena, DeepSeek's ability to reduce costs and enhance productivity is accelerating AI adoption on a massive scale, while its open source model eliminates vendor lock-in and offers adopters full control — an advantage that is of central concern to both tech sectors and state-controlled industries like telecommunications.

US protectionist policies is Chinese startups' gain

This wave of private-sector ingenuity is unfolding against a backdrop of US protectionist policies that have, perhaps unintentionally, fuelled Chinese innovation. Restrictions on the sale of cutting-edge AI chips have forced Chinese engineers to optimise their models for more affordable, compliant hardware. The result is a surge of inventive solutions that not only sidestep these limitations but champion efficiency over sheer resource expenditure — an approach that lies at the heart of DeepSeek's competitive edge. Rather than stifling innovation, these measures have spurred Chinese startups to rethink and reinvent their approach to developing and deploying AI.

Of course, DeepSeek is not the only player pushing the boundaries in China. Chinese startups like Unitree Robotics and DEEP Robotics (providing tunnel inspection solution to SP Group) are redefining autonomous technology and robotics with both affordability and agility on difficult terrains.

Unlike Chinese tech giants that wield influence in broad domains (like e-commerce, search engine, social media etc), today's deep-tech ventures are demonstrating cutting-edge capability in specific verticals. This is because China's vast array of use cases offers a fertile ground for economies of scale to kick in. According to the International Federation of Robotics (IFR), the country accounted for over half of global industrial robot installations in 2023. This impressive uptake will gradually evolve even niche improvements into global-level breakthroughs.

DeepSeek's rise is diffusing traditional risks associated with high-stakes AI arms races, pointing to an alternative technological trajectory that challenges Silicon Valley to re-examine its approaches.

Publication: Think China Online
Date: 27 February 2025
Headline: China's tech leapfrog: Time to lead?

For a long time, China's innovation was viewed primarily through the lens of state-backed, top-down initiatives. Today, however, a burgeoning private sector and a dynamic startup culture — long hallmarks of Silicon Valley — are flourishing in China. Meanwhile, the US continues to boast a vibrant ecosystem of entrepreneurial spirit, cutting-edge scientific research, and strong venture capital support, making it a powerhouse of disruptive innovation.

DeepSeek's rise is diffusing traditional risks associated with high-stakes AI arms races, pointing to an alternative technological trajectory that challenges Silicon Valley to re-examine its approaches.

Catalysing AI research and public-private partnerships

Amid these head-to-head battles, there's a bright side. The hyper-competitive atmosphere — exemplified by the recent Grok 3 release by Elon Musk's xAI and the spirited contest it sparked with DeepSeek — might well catalyse a fresh surge of innovation in the US. The pressure to compete on a global stage could drive American firms to invest more boldly in AI research and deepen public-private partnerships. To this end, China's rapid rise might serve as a wake-up call, igniting a new wave of US ventures to catch up with big techs and carve out a niche in verticals. After all, American innovation has long thrived at the application layer.

Companies such as Atomwise and Insilico Medicine are pioneers in revolutionising drug discovery by drastically shortening development timelines and reducing costs, while AI-driven breakthroughs in medical imaging have improved diagnostic accuracy at world-leading institutions like Mayo Clinic. As the centre of competition gradually shifts from large language models to their applications, it would be unwise to underestimate the creativity of American innovators.

Publication: Think China Online
Date: 27 February 2025
Headline: China's tech leapfrog: Time to lead?

Ultimately, the DeepSeek saga is about more than one company's success. It's a reminder that true innovation is driven not by deep pockets or massive state interventions. The nation that best fosters a culture of open collaboration and nurtures nimble, dynamic startups will be best positioned to shape — and ultimately dominate — this new chapter in the global AI race.