

## Who Is Winning the AI Arms Race?

*Will state-driven strategy or corporate and VC free-for-all unlock AI's potential?*

By Drew Bernstein

For all the controversies surrounding artificial intelligence, there is a consensus that AI will likely be the most disruptive technology of the 21st century. Whether it renders human intelligence and work redundant or empowers humans to address intractable problems remains to be seen. However, the nation that controls the future of AI is likely to amass unrivaled economic and military power—at least until the day that some future AI slips the leash and seizes control.

Given these stakes, it is unsurprising that both the United States and China aspire to lead in developing AI algorithms and their deployment in scientific, economic, and military applications. This competition has been framed as an “AI arms race,” with parallels to the nuclear arms race between the U.S. and USSR during the last Cold War. Given how rapidly AI technologies have been evolving, the outcome of this rivalry is far harder to predict than one measured in megatonnage of nuclear warheads.

The different paths that the two nations take to promote AI may serve as the ultimate test of which system of governance dominates the balance of the 21st century.

### **America’s Capital Markets-Driven Approach to AI**

The U.S. has established an early lead in developing large language models (LLMs), which produced recent breakthroughs in human-like chatbots and image generation. Some believe such LLMs provide a pathway to artificial general intelligence (AGI).

The American approach to AI development relies on venture capital to bet on many teams of technologists pursuing different paths. If they gain traction, these AI labs (Small Tech) will be gobbled up by a handful of giants (Big Tech) when they require massive capital infusions to scale and monetize their technologies.

For example, the non-profit [Open AI](#) morphed into a for-profit and became an R&D affiliate of Microsoft (NASDAQ: MSFT). Deepmind was [swallowed up](#) by Alphabet (NASDAQ: GOOG). Amazon (NASDAQ: AMZN) invested \$4 billion in Anthropic. And Apple (NASDAQ: AAPL) has purchased more [than 20 AI startups](#) since 2017.

Given the appetite for these technologies, venture capitalists and corporate investors poured about \$100 billion into AI private companies in both 2022 and 2023. While the pace has since cooled in 2024, this flood of funding has helped to attract elite AI talent from around the world and pay for the raw computing power required to develop and run the LLM-based AI models.

The other competitive advantage the U.S. possesses is that the semiconductors used to power LLMs are primarily supplied by one company, NVIDIA (NASDAQ: NVDA), which happens to be based in America.

The U.S. government has aggressively used export restrictions to ensure that the [GPUs shipped to China](#) are a generation behind in processing speed, placing Chinese AI developers at a competitive disadvantage. Using its diplomatic and commercial influence, the U.S. continues to [expand export controls](#) on cutting-edge semiconductor equipment that foreign manufacturers can sell to Chinese semiconductor fabs.

However, the U.S. government has largely ceded the field to the private sector when shaping the future of underlying AI technology.

The Biden Administration has issued two executive orders, [most recently on July 26th](#), dealing with issues such as controlling dual-use technologies, protecting critical infrastructure and government networks from AI attacks, and using synthetic image AI in pornographic deep fakes. Several bills are circulating in Congress to attempt to regulate AI safety, some of which [have the backing of OpenAI](#).

However, legislators and regulators lack the capacity to keep up with the speed with which technology is evolving. By the time a congressional committee can hold hearings and draft legislation, AI will likely be several generations ahead.

### **AI with Chinese Characteristics**

By contrast, China's AI strategy is distinctly state-driven, emphasizing extensive collaboration between the government and private sectors. [The New Generation Artificial Intelligence Development Plan](#), initiated in 2017, underscores China's ambitious vision to become a global leader in AI by 2030.

This strategy entails a deep collaboration between the government and the private sector, focusing on leveraging AI for enhanced surveillance, internal security, and societal management. Recent strategic shifts, such as transitioning from the "Internet Plus" to the ["AI Plus" initiative](#) adopted at the National People's Congress in March 2024, make it clear that China views AI as a matter of both national security and economic competitiveness.

Given the government's focus on hard metrics, China leads the world in several key areas:

- [40% of all AI journal publications](#) come from Chinese researchers, four times the rate of the U.S., according to Stanford's Artificial Intelligence Index Report.
- China generated 60% of global AI patents in 2022, three times as many as the U.S.
- China has over [200 different LLMs](#), with more than 20 having been approved for public use.

- As of 2022, Chinese universities produced [47% of the world's top AI researchers](#), compared to just 18% for the U.S.

The Chinese government is taking a muscular approach to the AI arms race, including subsidizing access to computing power, backing semiconductor companies in developing alternatives to NVIDIA's dominance and providing priority for IPOs and private investment by government funds into areas deemed strategic.

However, this support comes with a host of restrictions that hobble progress in generative AI. According to the [Wall Street Journal](#), to obtain approval for new LLMs, companies must test the system with tens of thousands of questions to ensure that it will only provide ideologically correct responses and not answer questions on thousands of "sensitive" issues. In addition, Chinese LLMs generally cannot scrape data, which is prohibited by China's "Great Firewall," including most social media platforms and many open-source repositories.

Despite these obstacles, China's generative AI models have begun [gaining commercial traction](#) with Baidu's (NASDAQ: BIDU) ERNIE LLM for mobile devices being adopted by Samsung, Lenovo, and Honor, and Alibaba (NYSE: BABA) claiming that 90,000 enterprises have deployed its Qwen model. Alibaba has invested aggressively in China's AI startups, with stakes in all four "AI tigers," including [Moonshot AI](#), [Minimax](#), [Zhipu AI](#), and [Baichuan](#). This will enable it to presumably integrate the winners into its Alibaba Cloud offering.

### **Handicapping the AI Horserace**

So, given these contrasting approaches, who is likely to win the race to build the world's dominant AI technology? The U.S. or China?

While making firm predictions in such a rapidly morphing field is hazardous, the answer is most likely to be... both and neither.

America has an undeniable head start in LLM-based models, and for now, the combination of free-wheeling Silicon Valley VC culture and Big Tech sponsors seems likely to secure its hold on frontier AI technologies.

Ultimately, advances in AI are driven by competition for top global talent, providing researchers with an environment where they can do cutting-edge work, be free of onerous restrictions, and have a shot at becoming wealthy. Right now, America is winning the talent war. As of 2022, 42% of the world's top AI researchers are working in the U.S., many of them of Chinese origin. The surest path to undermine America's AI competitiveness would be adopting highly restrictive immigration policies.

China's companies will likely excel in applying AI to advanced industrial processes, including robotics, healthcare delivery, and agriculture. China is seeking to harness AI to advance the pace of [scientific research](#) in fields including advanced materials, drug development, battery

technology, and semiconductors. With a much larger manufacturing base and diverse scientific and engineering talent, China has an edge in harnessing AI to drive productivity and industrial innovation.

Rather than viewing AI as a zero-sum game, the U.S. and China would be well advised to collaborate on a framework for global AI safety.

This ensures that these technologies do not trigger accidental military conflicts or result in a doomsday scenario in which an AI decides that mankind is an impediment to its goals.

In short, the AI “arms race” can be one in which both sides win, or everyone loses. For now, the choice is still up to us.