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China and the Global AI Race

A CKGSB White Paper

A Publication by Cheung Kong Graduate School of Business (CKGSB)

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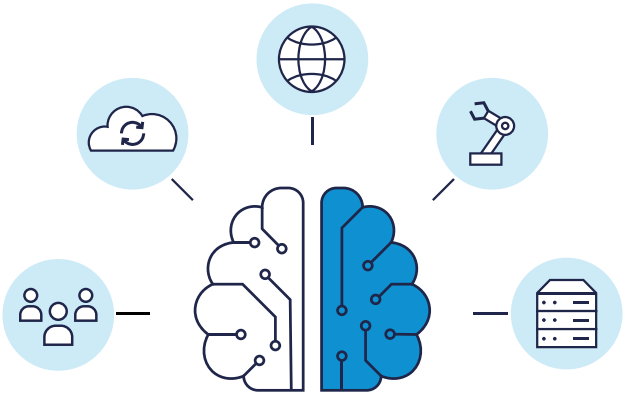

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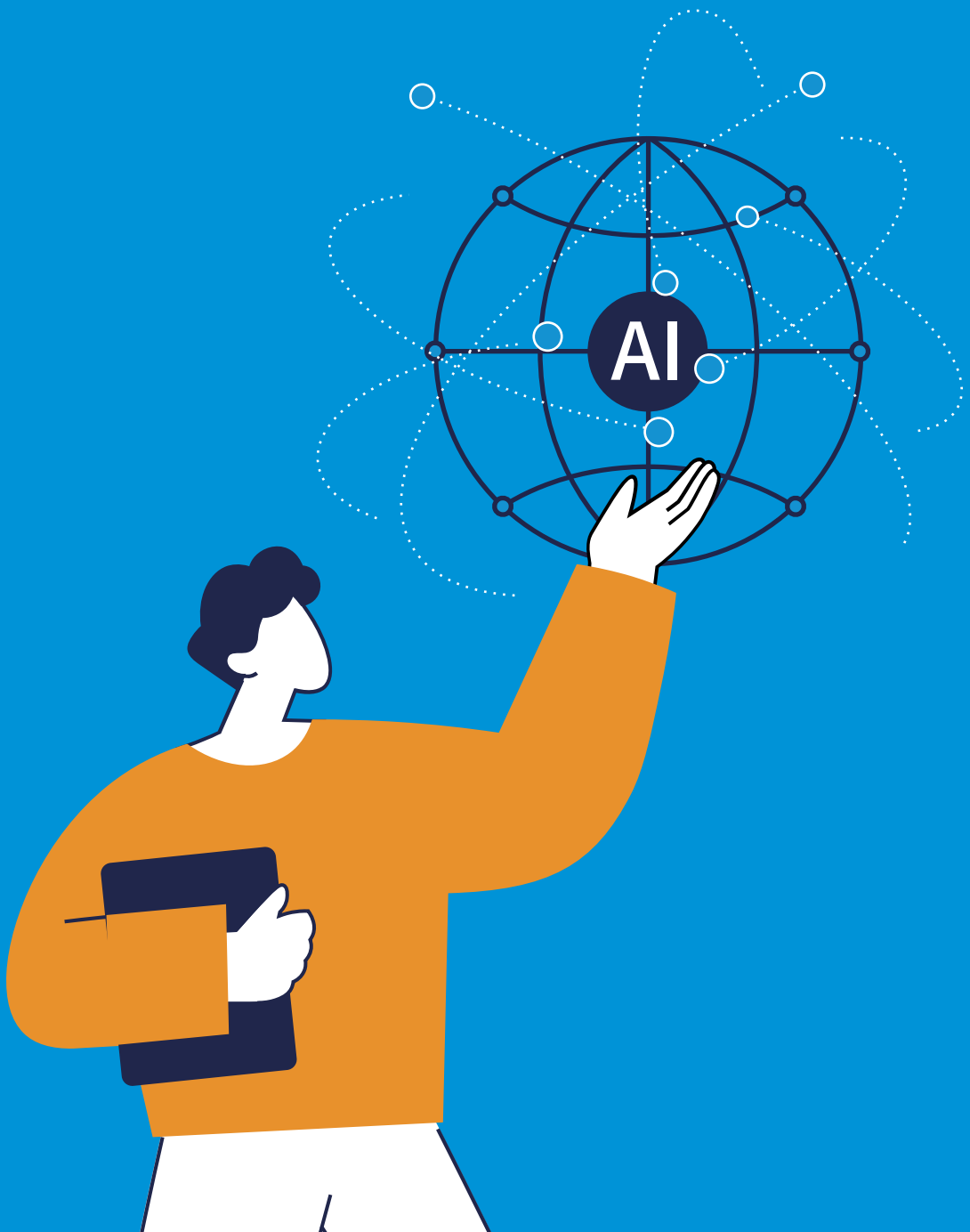
INTRODUCTION

The Rise of AI-Driven Globalization and Collaboration



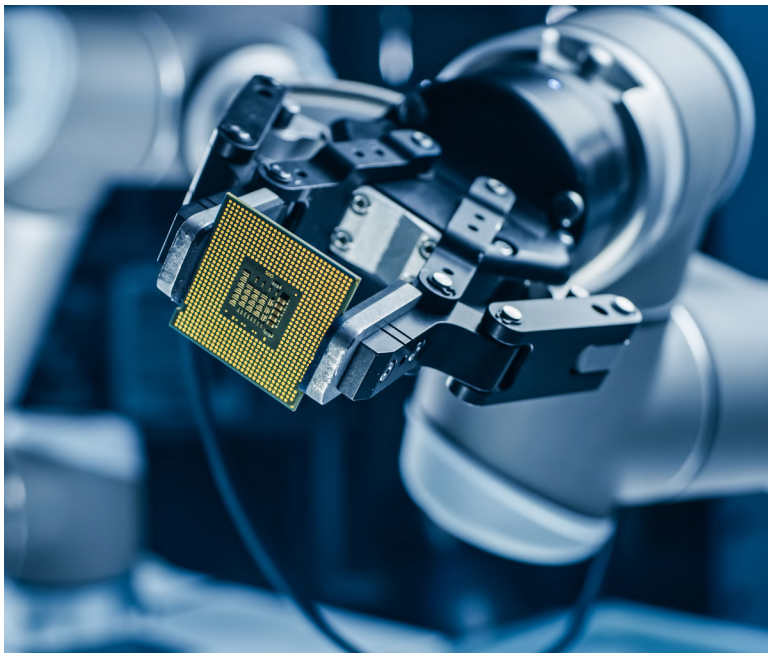
Artificial intelligence (AI) is fundamentally reshaping the global economic landscape. The Fourth Industrial Revolution—powered by AI, robotics, cloud computing and big data analytics—is not merely a wave of technological advancement, but also a transformation of how value is created, distributed and sustained across industries and borders.

Value chains, trade patterns and the requirements for economic leadership are all shifting based on the development of AI. Solid future growth will hinge on the widespread integration of artificial intelligence into business models, public policy and workforce development, while fostering greater international collaboration and innovation.

China has emerged as a key global player in this unfolding AI transformation, harnessing its vast troves of data, manufacturing ecosystem and innovative workforce.

"Globalization in the age of AI is not a choice—it is a necessity," says Li Haitao, Dean and Dean's Distinguished Chair Professor of Finance at Cheung Kong Graduate School of Business (CKGSB). "We are witnessing a new paradigm where China's industrial strength and digital innovation converge with global opportunities and responsibilities."

China is simultaneously upgrading its domestic industries and extending its technological footprint worldwide. This dual approach is accelerating the country's transition toward higher value-added production and services which in turn has resulted in notable breakthroughs such as that of DeepSeek's R1 model.



"DeepSeek marks a new foundation for democratizing AI in China—and for building a globally inclusive innovation ecosystem," says Xiang Bing, Founding Dean and Dean's Distinguished Chair Professor of China Business and Globalization at CKGSB.

This report seeks to understand the latest developments in AI, their global implications, and the role China is playing in this technological transformation.

DeepSeek marks a new foundation for democratizing AI in China—and for building a globally inclusive innovation ecosystem."

Xiang Bing

Founding Dean and Professor of China Business and Globalization, CKGSB

A New Era of Globalization: AI at the Core

The foundations of globalization are undergoing a fundamental restructuring. Beyond trade liberalization and capital flows, intelligent technologies are redefining how nations create, exchange and capture value. And AI in particular is driving a new model of cross-border innovation and competition as it is increasingly embedded in hardware, software and services.

Generative AI is now being used to optimize design, automate logistics and enhance consumer engagement around the world, with multinational technology platforms deploying advanced algorithms to help localize services and adapt to diverse and changing markets.

China is emerging as a strategic force in this transformation, and its role is not just confined to AI adoption, rather it is exporting its AI capabilities globally by embedding them in supply chains, digital infrastructure and commercial ecosystems across regions. "AI is no longer just a sector—it is the architecture of a new global economy," notes Dean Li. "And China's role in this transition is increasingly strategic."

China's AI Globalization: From Exporter to Innovator

China's globalization path has seen the country progress through numerous stages, starting out as a low-cost manufacturer and maturing into a global investor and exporter of technology and ideas. And the country is now entering a new phase: AI-led globalization.

Leading firms—including the country's incumbent tech giants and a new raft of fast-growing startups often referred to as China's "Six Tigers" of AI—are integrating AI tools and technologies into sectors ranging from EVs and smart manufacturing, to e-commerce and fintech. Unlike earlier periods of mostly incoming technology transfer, these firms are now leveraging AI to build globally competitive systems and export them.

Firms such as BYD and CATL are embedding AI into electric vehicles and battery systems, fuelling expansion into Europe, Southeast Asia and Latin America, while Shein and ByteDance's TikTok apply machine learning to tailor global content and manage responsive supply chains. This evolution suggests that China is now crafting its own approach based on scale, data and agility.

AI is no longer just a sector—it is the architecture of a new global economy."

Li Haitao

Dean and Dean's Distinguished Chair Professor of Finance, CKGSB

The Human Impact: Disruption and Realignment

AI's impact on labor markets is multifaceted. Not only does it automate routine, data-heavy tasks in areas such as manufacturing and customer service, but it also now has an influence in professional and creative sectors, reshaping workflows and creating new hybrid roles.

Rather than eliminating entire industries, AI is prompting reconfigurations in job functions and required skill sets. Demand is rising for talent with interdisciplinary capabilities—those who combine AI literacy with cultural fluency and strategic thinking.

Human resource functions, for example, are using AI to optimize recruitment and workforce analytics, while marketing teams are relying on AI for real-time insights, and analysts now process vast volumes of data with machine assistance. AI is increasingly used to augment—not replace—human input and faciliate decision-making. Business leaders cannot but incorporate AI into their organizational strategy as they lead AI-minded teams.

"A company's success in AI globalization will depend on long-term talent development and responsible leadership," says Dean Li. "Companies must invest in training, inclusive hiring and agile HR strategies to meet evolving demands."

This shift presents both risks and opportunities and while some jobs will disappear, many will be redefined. The ability of organizations to manage this transition will shape their competitiveness in the AI era.

Robotics: Operationalizing AI

If AI represents the cognitive infrastructure of the Fourth Industrial Revolution, robotics serves as its physical extension, and embodied AI is already altering industries such as logistics, healthcare and services—from warehouse automation to surgical support and autonomous delivery.

Chinese robotics firms are expanding rapidly. Companies such as UBTech and Pudu Robotics are exporting intelligent machines globally, while DJI's drones have gained widespread application in agriculture and logistics.

Urban areas in Singapore, Dubai and elsewhere are piloting autonomous service robots—many developed by Chinese firms. Also, in aging societies, eldercare and surgical robotics are becoming practical tools to address demographic challenges. These are not distant possibilities; they represent current and ongoing experimentation with AI-driven solutions.

XPeng's CEO He Xiaopeng has predicted that the robotics industry could surpass the automotive sector in global importance—a view reflecting both ambition and shifting industrial trajectories. China's existing manufacturing capacity, combined with rising AI proficiency, provides a comparative advantage in scaling intelligent hardware.

Open-Source AI: From Competition to Common Ground

Despite developing geopolitical rivalries, there is a growing movement in the AI sphere emerging around open-source collaboration. China's DeepSeek has propelled the movement forward with the release of DeepSeek R1—its first fully open-source large language model—and this is mirrored elsewhere in the world by efforts from Alibaba with Qwen, France's Mistral and India's open-source communities.

Open-source models reduce entry barriers, enabling both businesses and nations that may lack the economic or technical resources to use traditional AI, to participate in the cutting edge of AI development. This democratization accelerates innovation and promotes a more distributed technological landscape.

However, openness can bring challenges, and issues around intellectual property, monetization and national security complicate global collaboration.

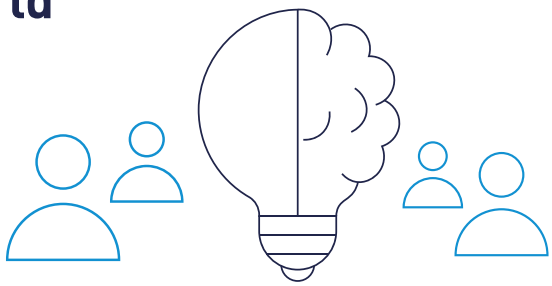
"Open-source AI is no longer a technical question—it's a geopolitical one," says Dean Li. "China's willingness to participate in the global commons signals a shift from tech isolation to collaboration."

Shared Leadership in an AI World

AI is emerging as the central general-purpose technology of our time. Its applications are altering industrial policy, innovation systems, and global competitiveness.

While China and the US remain at the forefront, the proliferation of open models and multi-national participation is diffusing leadership. AI is no longer owned by a single geography or ideology.

"Leadership in this era is not about domination," concludes Dean Li Haitao. "It is about collaboration, agility, and the humility to continuously learn and adapt."



The path ahead demands more than technological capability—it requires ethical governance, inclusive talent strategies, and cross-border cooperation. Whether AI globalization enhances resilience and shared prosperity will depend on how these imperatives are addressed.

Leadership in this era is not about domination. It is about collaboration, agility, and the humility to continuously learn and adapt. "

Li Haitao

Dean and Dean's Distinguished Chair Professor of Finance, CKGSB

CHAPTER ONE

China's New Global Strategy: Leading with AI and Innovation

AI is central to the global economic future and China is taking a leading role in its development.

China has undergone a dramatic transformation over the last few decades, from a low-cost manufacturing hub to a global powerhouse in advanced manufacturing, infrastructure and increasingly, cutting-edge technologies. Now, the country is entering its more ambitious phase yet—represented by artificial intelligence (AI) and technology-driven growth.

This new period marks a fundamental shift in China's engagement with the global economy, with the country aiming to move from acting as the world's factory, to providing the brains behind the machines it once only assembled. And at the heart of this transition is AI.

"In the rapidly evolving landscape of artificial intelligence, China has emerged as a formidable contender, poised to shape the future of technology and innovation," says Shi Weilei (Stone), Professor of Managerial Practice at CKGSB. "Driven by state-led initiatives, a vast domestic market and dynamic tech giants, China's role in the global AI race is multi-faceted and strategic."

AI: A New Strategic Lever for China's Economy

AI has become central to economic competitiveness, national security and geopolitical influence worldwide. In China, both policymakers and business leaders view AI as a key lever to elevate productivity, transform industries and enhance the country's role on the global stage.

As China's economy continues to mature, artificial intelligence is expected to become the backbone of future growth. From healthcare and finance to logistics and manufacturing, AI technologies are being rapidly integrated, and this is happening not only domestically, but also in China's global engagements, through trade, investment and digital infrastructure exports.

"Chinese entrepreneurs are arguably leading intellectually when it comes to thinking about the applications of AI across industries and business," says Edward Tse, Professor of Managerial Practice of Strategy at CKGSB and Founder and CEO of Gao Feng Advisory. "It is a great opportunity for Chinese businesses and business schools to stay at the leading edge of what is going to be a huge disruption in the global economy."

From Hardware to Intelligence

One of the most striking aspects of China's AI-led global strategy is how it builds on the country's existing strengths in manufacturing and global trade. Initially, AI is applied to China's exports of physical product—smart appliances, electric vehicles and industrial equipment, for example—providing these offerings with enhanced functionality and intelligence.

Over time, however, the focus will shift towards the global export of intelligent services, with AI-as-a-service platforms, cloud computing solutions and autonomous systems all to come. China already has an edge in competition, with its homegrown DeepSeek and its R1 large-language model (LLM), a notable breakthrough in cost-efficient, high-performance AI.

"The emergence of DeepSeek seems to point away from the traditional understanding of AI limitations," says Teng Bingsheng, Professor of Strategic Management and Associate Dean for Strategic Research at CKGSB. "One example is that China may not have to fight the chip war to the same extent, given the lower computational power needed by DeepSeek. Although chips will continue to be a major field of competition, companies will be able to use engineering innovations to get around computational capacity, and that is a great opportunity."

> **The emergence of DeepSeek seems to point away from the traditional understanding of AI limitations."**

Teng Bingsheng

Professor of Strategic Management and Associate Dean for Strategic Research, CKGSB

Key AI Players in China: The "Six Tigers" and Tech Giants

China's AI landscape features a dynamic mix of new and established players, with growing numbers of Chinese firms, including DeepSeek, at the forefront of the AI push. Aside from DeepSeek, the two standout groups, for now, are the so-called "Six Tigers" of AI and the country's legacy tech giants.

The Six Tigers—emerging AI-first firms known for their innovation and agility—are currently Zhipu AI, Moonshot AI, MiniMax, Baichuan Intelligence, StepFun and 01.AI, which represent a new generation of agile, innovation-driven firms. These companies specialize in areas ranging from computer vision and voice recognition to autonomous driving technologies.

In parallel, legacy tech giants such as Baidu, Alibaba, Tencent and Huawei are integrating AI into their global offerings in increasingly sophisticated ways. Baidu has made significant strides in autonomous driving and natural language processing. Alibaba is embedding AI into its cloud services and global e-commerce platforms. Tencent continues to explore AI through gaming, healthcare and fintech services, while Huawei has invested heavily in AI chips and 5G-powered smart devices.

These companies are deploying AI not just on their home turf but across global markets, with examples including advanced car manufacturing by Chery in Spain, various investments from

Tencent and Alibaba in e-commerce firms across Southeast Asia and Huawei's AI-enabled telecommunications infrastructure in Latin America. From smart city projects in Southeast Asia to AI-driven logistics networks in Africa, China's AI footprint is expanding fast.

"Chinese companies are not just riding the AI wave—they are reshaping global industrial chains," says Chen Long, Professor of Managerial Practice in Finance and former Chief Strategy Officer of Ant Financial Group, CKGSB. "Just like previously in fields such as e-commerce, logistics and new energy, AI allows companies to leapfrog traditional paths and compete globally with differentiated advantages."

In fields like e-commerce, logistics and new energy, AI allows companies to leapfrog traditional paths and compete globally with differentiated advantages."

Chen Long

Professor of Managerial Practice in Finance and former Chief Strategy Officer of Ant Financial Group, CKGSB

Pushing the Envelope

China has several advantages that make it uniquely suited to play a key role in the AI era, including its massive and highly digitalized domestic market, which provides an abundant supply of data for AI model development. This, combined with a large pool of STEM talent and strong government support from policymakers, means China is a fertile environment for rapid AI experimentation and scaling.

China's extensive manufacturing base and export infrastructure are also in its favor in the AI race. These capabilities allow Chinese firms to integrate AI seamlessly into products at scale and to deliver them quickly and efficiently to markets around the world.

"China's ascent in the global AI race is marked by a strategic blend of state coordination, rapid commercialization and massive data access," says Professor Shi Weilei.

This combination of digital innovation and industrial strength is rare, and it offers China a powerful vantage point to shape global standards and practices in AI.

"In today's volatile global environment, China's

private enterprises are no longer just exploring international markets—they are being pushed abroad by overcapacity, supply chain recalibration and the national 'Dual Circulation' imperative," says Dean Li Haitao. "This marks a decisive shift: for China's rising market leaders like BYD, CATL, TikTok, TEMU and Shein, going global is no longer optional—it's a matter of survival."

The Global Competitive Landscape

While China is making impressive strides, it faces stiff competition from the United States, the European Union and other emerging tech ecosystems. The US remains a leader in foundational AI research and has a deep bench of top talent and venture capital. Europe, meanwhile, is taking a regulatory leadership role and has strong capabilities in AI ethics and industrial applications. Emerging markets such as India and Southeast Asia are also cultivating their own AI sectors, often in partnership with Western and Chinese firms alike.

For China's rising market leaders like BYD, CATL, TikTok, TEMU, and Shein, going global is no longer optional—it's a matter of survival."

Li Haitao

Dean and Dean's Distinguished Chair Professor of Finance, CKGSB

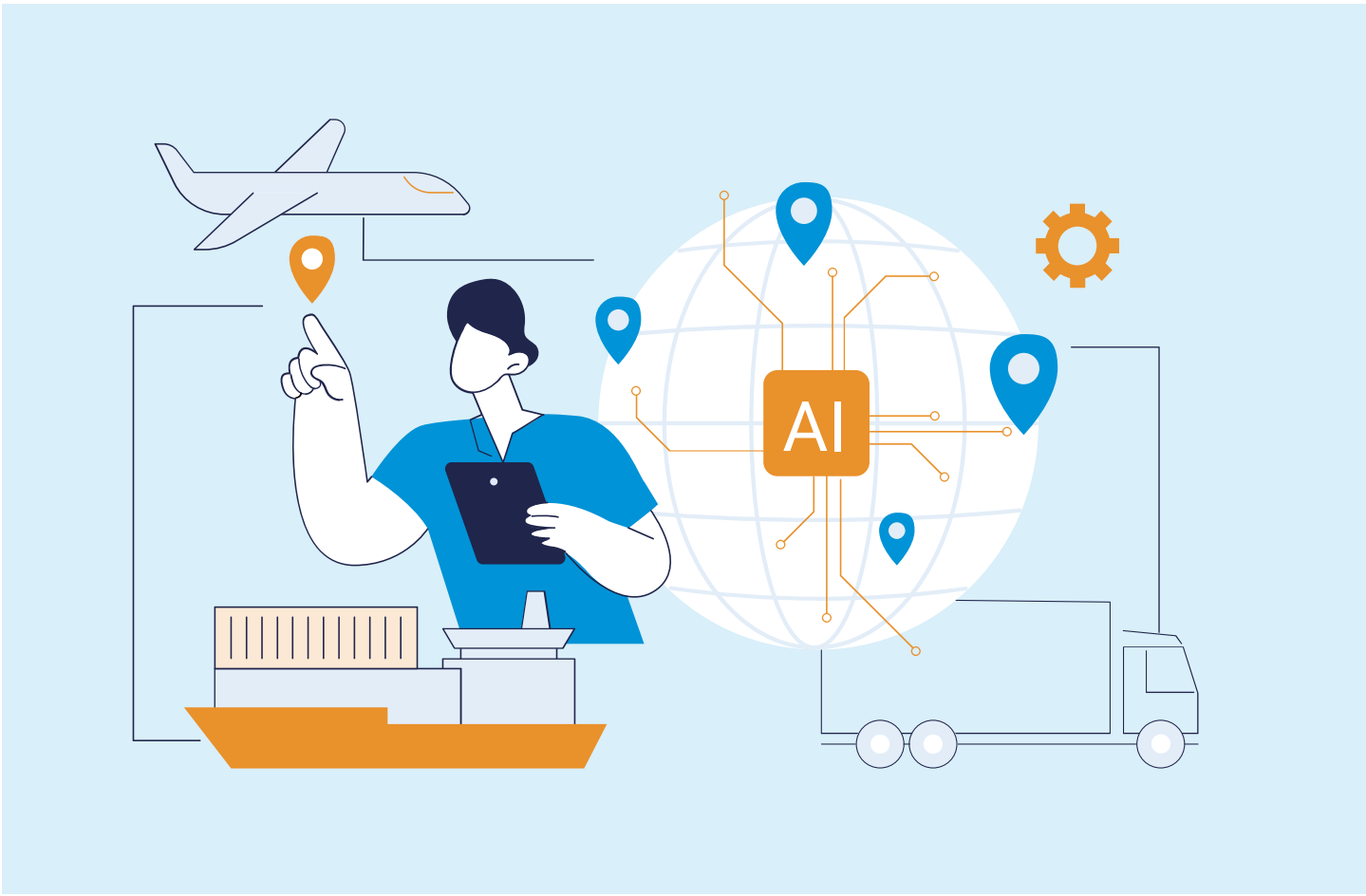
The Road Ahead

China's integration of AI, manufacturing and trade will define the next decade of its global economic strategy, but there are still challenges ahead, with geopolitical tensions, government regulation, US chip bans and concerns over data privacy and ethics posing significant barriers that could impact China's AI development and global expansion.

With that said, the country's existing assets—a solid industrial ecosystem, global logistics channels and a growing pool of AI talent— along with the clear commitment to AI development and implementation, mean that China is in a strong position to play a key role in this new tech-powered era.

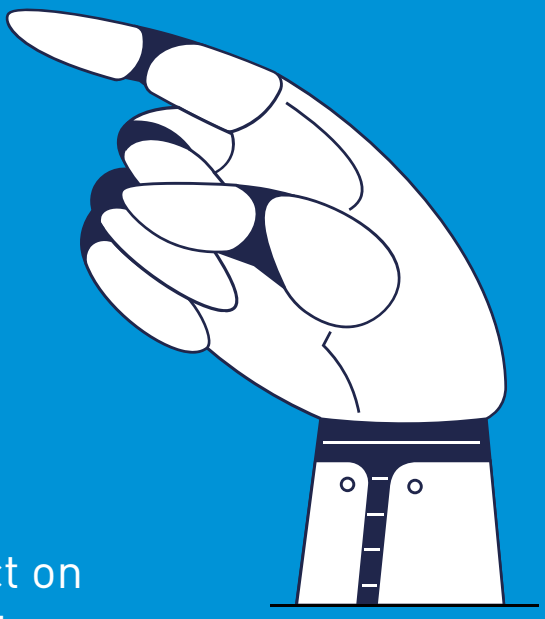
"Domestically, AI integration across sectors like manufacturing, fintech, healthcare and retail underscores China's commitment to leveraging AI for economic growth," says Professor Shi Weilei.

If successful, this transformation will not only boost China's economic development but also reshape global commerce, setting new benchmarks for what a tech-powered export economy can achieve.



CHAPTER TWO

Preparing AI Leaders: The Potential Impact of AI on Employment and Leadership



AI will inevitably have an impact on a wide range of jobs. Leadership will need to change their approach to AI integration as a result.

As AI reshapes the global business landscape, a pivotal question echoes across boardrooms, classrooms and policy circles alike: How will AI redefine the nature of employment and how will that affect the role of leadership?

The discussion surrounding AI and its impact on jobs is filled with differing opinions, ranging from predictions of mass unemployment to utopian visions of increased leisure. The reality is likely to land somewhere in between, but what is certain is that changes are coming and they will require AI-capable leaders to guide businesses through.

"Like in the major technological advances of the past, the AI revolution will replace a lot of jobs," notes Professor Teng Bingsheng. "But at the same time many new jobs will emerge, which are either augmented by AI or new AI-related roles."

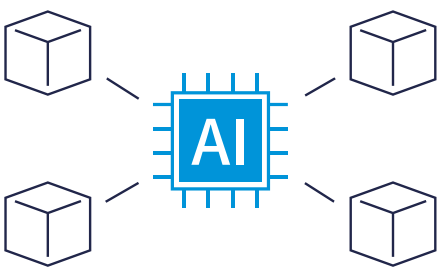
Disruption and Reinvention

A study by the International Monetary Fund (IMF) predicts that nearly 40% of jobs worldwide will be impacted by AI, while a report from Goldman Sachs further estimates that AI could affect work equivalent to 300 million full-time positions, posing a structural challenge to global labor markets.

AI has proven to excel at automation, data analysis and pattern recognition, making it ideal for tasks that are repetitive, predictable or involve processing a large amount of information. Naturally, fields such as manufacturing, customer service, transportation and administration are among the most likely to implement AI first and extensively.

At the same time, AI is not simply a new tool akin to a personal computer or smartphone. It represents a new form of intelligence, expanding its impact beyond labor to services across many sectors including legal services, financial services and even creative services.

"Generative AI is rapidly changing the workplace, becoming a central engine for business transformation," says Zhang Xiaomeng, Associate Professor of Organizational Behavior and Associate



Dean at CKGSB. "Research shows that the widespread adoption of AI is not only significantly boosting productivity but also injecting new momentum into corporate competitiveness.

Yet, this technological revolution is not without its challenges—job displacement risks and mental health pressures are becoming unavoidable realities for today's workforce."

While fears of job displacement are legitimate, there is also a need to discuss the more nuanced effects of AI on corporate needs for talent. Companies are not disappearing—they are evolving. And with that evolution comes a reconfiguration of the workforce, including at the leadership level. Many roles may be rendered obsolete, but new roles will be there to meet emerging demands, and leaders need to understand the resources available to them.

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Zhang Xiaomeng

Associate Professor of Organizational Behavior, Associate Dean for EMBA Program, and Associate Dean for Inclusivity, Diversity and Equity, CKGSB

Changing Leadership Requirements

In this new stage, leadership and innovation will increasingly come from what Professor Sun Tianshu, CKGSB Dean's Distinguished Chair Professor of Information Systems, calls 'AI architects'—a role now falling to CEOs of established industries like manufacturing, retail and healthcare. Unlike AI scientists and AI entrepreneurs who drove the early development stages, these 'AI architects' are uniquely positioned to embed intelligence deeply within their existing business scenarios.

Much like Henry Ford harnessed electricity to revolutionize automobile production, today's leaders have the opportunity to leverage AI to reshape entire sectors. China's broad industrial base, easily the largest in the world, gives it an edge in pioneering this transformation, and all CEOs must now rethink their businesses entirely through the lens of AI.

"The emergence of powerful AI agents means every company effectively has access to the equivalent of thousands of AI PhDs—at almost no cost," says Professor Sun Tianshu. "The challenge is no longer about access to intelligence, but about how to integrate it effectively. The next generation of CEOs must become AI-native leaders who can redesign their business models, workforce structures and industry positions by embedding AI into every layer of decision-making and operations."

CKGSB Shaping AI-Minded Leaders

This is where CKGSB sees a unique opportunity. Dedicated to fostering the next generation of business leaders, the school is ideally positioned to facilitate strategic conversations around the future of work. Through its research centers, executive education programs and alumni network, the school helps leaders look beyond short-term disruption and to design resilient, future-ready workforce strategies.

"In the AI era there is going to be a large amount of disruption in relation to the traditional valuation of higher educational institutions, with those that are ready and willing presented with an opportunity to leapfrog many important legacy schools," says Professor Edward Tse. "Given the AI-related intellectual leadership and desire for change shown by China's entrepreneurs, schools like CKGSB, which facilitate discussion and knowledge sharing, can shape future thinking."

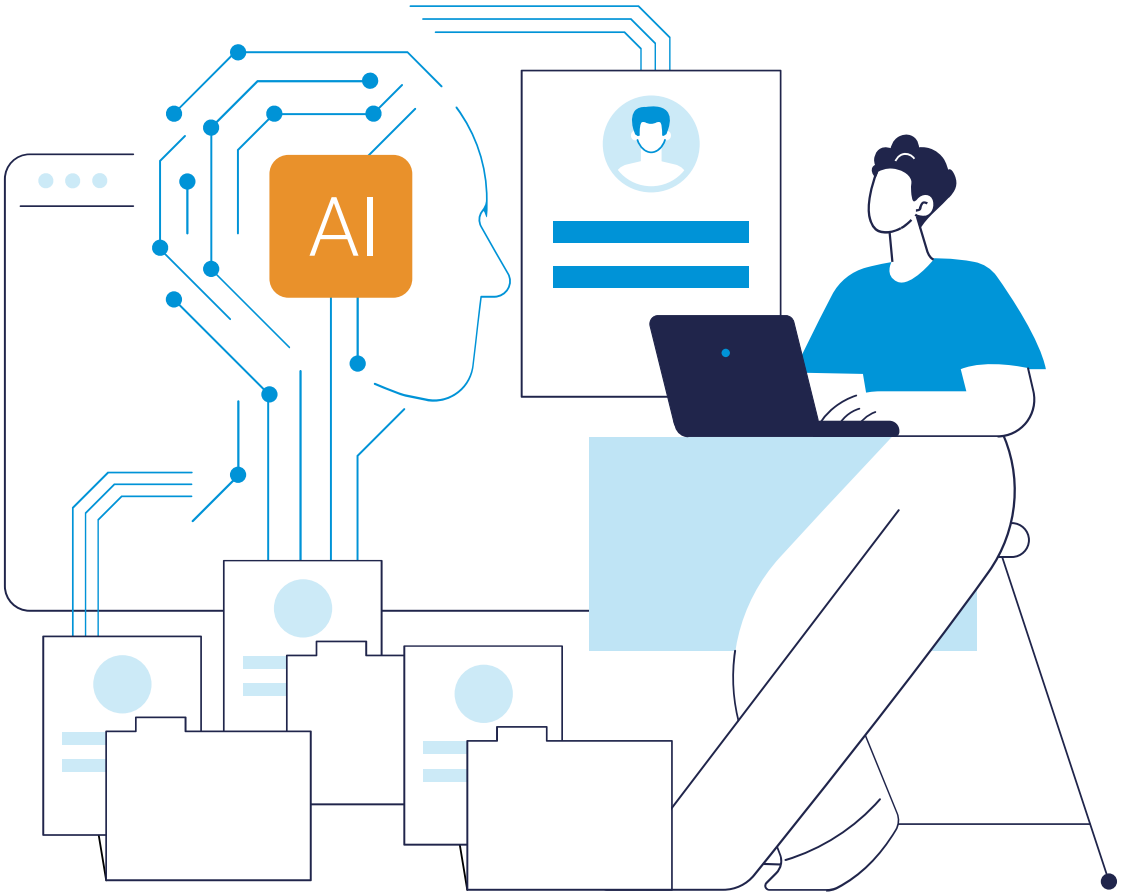
Taking the Lead

The question is no longer whether AI will eliminate certain jobs—it will—but as with countless other technological breakthroughs of the past, although the shift will have pain points, it will also pave the way for entirely new industries, job categories and economic models. For business leaders, the imperative is clear: stay ahead of the curve.

"To fully harness the positive potential of AI, companies must take action on three fronts: optimize career development systems, deepen AI skills training and provide targeted mental health support," says Professor Zhang Xiaomeng. "These efforts will not only enhance employees' adaptability and resilience, but also help build a more innovative and sustainable workplace ecosystem—laying a strong foundation for long-term prosperity."

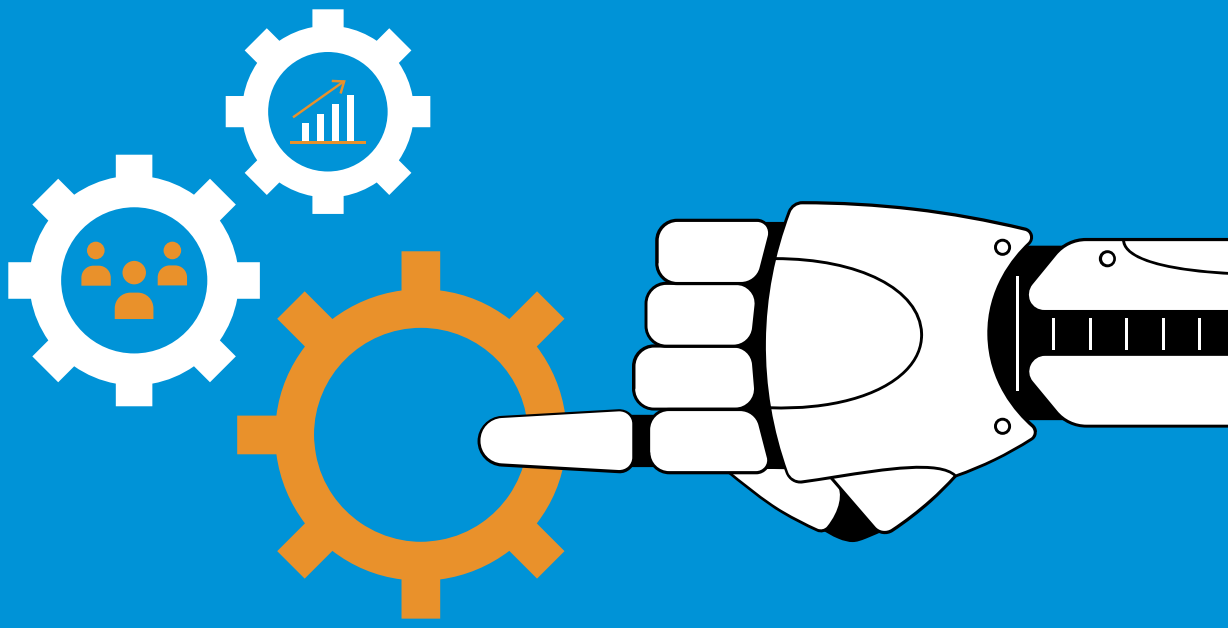
That means recognizing where AI can augment operations, identifying which skillsets will become more valuable, and investing in the human capital needed to leverage the full potential of intelligent systems.

"The best way forward for companies is to fully leverage the power of AI agents and help their employees become 'AI architects' to leverage the vast power of these agents," says Professor Sun Tianshu. "In the future, every organization and every individual will have to be AI native, and AI agent native, to really leverage the power to be the architects of the next generation."



CHAPTER THREE

Moving AI into the Physical World



China's manufacturing strengths are powering the rise of embodied AI and intelligent machines.

"I think it is probably going to be the biggest future industry, bigger than automotive in some ways because of the vast numbers and also the utility scenarios that can be deployed," says He Xiaopeng, CEO of EV maker XPeng, in early 2025. What industry was he talking about? Robotics.

His remarks reflect a growing consensus among technology leaders in China and the world: the next wave of disruptive innovation will be the inclusion of AI not only in screens and software, but also embodied in physical machines. Intelligent machinery, including robotics, is moving rapidly into everyday environments.

"The physical world will become the space of highest potential for AI development in the next few years, compared to online or across different industry sectors," says Professor Sun Tianshu. "There is room for implementation across manufacturing, of course, but also in healthcare, education, elder care and the service industry. The opportunities are huge."

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Sun Tianshu

Dean's Distinguished Chair Professor of Information Systems and Director of the Center for Digital Transformation, CKGSB

More Than Software

Unlike other branches of AI that depend solely on computation and data, intelligent machinery also necessitates a robust physical supply chain, precision engineering and mass production capability. Robots and other machines must be built, tested, refined and distributed at scale, and the convergence of digital intelligence and physical manufacturing capabilities available in China puts the country in a favorable position.

"China, with its comprehensive manufacturing ecosystem and the masses of human capital—from labor to engineers—and knowhow, is in a very good position to help integrate AI into the physical world," says Professor Sun. "We've already seen huge developments in new energy and NEVs, as well as some humanoid robots and other scenarios, and we are set to see more smart hardware across various other scenarios."

China already produces the majority of the world's industrial robots and supports a deep ecosystem of component suppliers, from sensors and actuators to circuit boards and servos. Major robotics hubs in Shenzhen, Dongguan and Suzhou are rapidly expanding, backed by generous government subsidies and a rising wave of entrepreneurial energy.

"Another benefit that China already has is the advanced nature of its smart vehicle industry, which includes the scaled mass production of core components for robotics," says Li Mingyang, CKGSB EMBA alumnus and Chairman and General Manager of Jaka Robotics, which specializes in collaborative robots used in industrial automation. "The production of items such as LiDAR sensors and high-calculation chips will be crucial for robotics development and the embodiment of AI," says Li.

Transforming Core Industries

The impact of robotics and embodied AI is expected to cascade across multiple sectors, transforming how businesses operate and how services are delivered.

Manufacturing: The most immediate gains are being seen in China's manufacturing sector. Advanced robotics systems are already performing tasks such as precision welding, parts assembly and real-time quality control. This is improving efficiency, reducing labor costs and enabling greater customization. In time, more Chinese factories will adopt collaborative robots that work alongside human workers, boosting productivity without fully automating away jobs.

Service industries: Retail, hospitality and logistics are also embracing robotics. In large cities like Beijing and Shanghai, delivery robots are becoming a common sight, robotic waiters, security bots and smart kiosks are appearing in malls, airports and hotels. These tools are helping businesses manage rising labor costs and address shortages in frontline staff.

Healthcare: Perhaps the most transformative effects will be seen in healthcare. Chinese companies are developing robotic systems for elder care, rehabilitation, surgery and diagnostics. In a rapidly aging society, assistive robots could play a vital role in maintaining quality of life. Surgical robotics, meanwhile, are enabling more precise and less invasive procedures, improving patient outcomes.

"Surgical robots have abilities that go far beyond the human physiological limits, as well as breaking through diagnostic boundaries and treatment precision levels," says Li.

Market Leaders

The global robotics market is currently dominated by a mix of established players and rising challengers. On the industrial side, Japanese and German companies such as Fanuc, Yaskawa and KUKA have long held the lead. But Chinese firms are catching up quickly, and SIASUN, Efort, Estun and DJI are now competing across industrial, service and consumer robotics domains.

Geographically, most manufacturing still takes place in Asia, particularly in China, Japan and South Korea. But as robotics becomes more mainstream, production is expected to further consolidate in regions that can offer both scale and efficiency.

"Algorithms can be developed anywhere, but the hardware and smart manufacturing required to embody AI in the physical world cannot easily be migrated elsewhere other than in China," says Professor Sun. "The economy of scale in China, as well as the manufacturing ecosystems coordination mean that while China is in a great position to empower countries to embrace AI, production will largely remain here."

Overcoming Technical Hurdles

Despite the enthusiasm, robotics still faces significant hurdles. One key issue is interoperability: the extent to which different robotic systems, often built by different manufacturers and programmed in different languages, can communicate and operate in harmony. In complex environments like hospitals, warehouses or smart cities, multiple systems need to interact seamlessly, and solving this will require industry-wide standards, open protocols and perhaps a new generation of AI trained on system integration.

"Controlling different machines can be difficult depending on levels of interoperability," says Chen Yongli, CEO of IoT middleware developer Edgenesis. "But, by taking open-source AI models and fine tuning them, it is possible to create applications or middleware that can both translate between the machine languages at a faster rate than humans or non-AI programs, and also continue to learn and improve as it works. Thus, providing the ability for industrial IoT devices to interface efficiently, and thereby shrinking the interoperability issue."

China, with its top-down policy initiatives and vertically integrated companies, may have an edge in this area. National-level projects could drive standardization and foster collaborative innovation among hardware and software vendors.

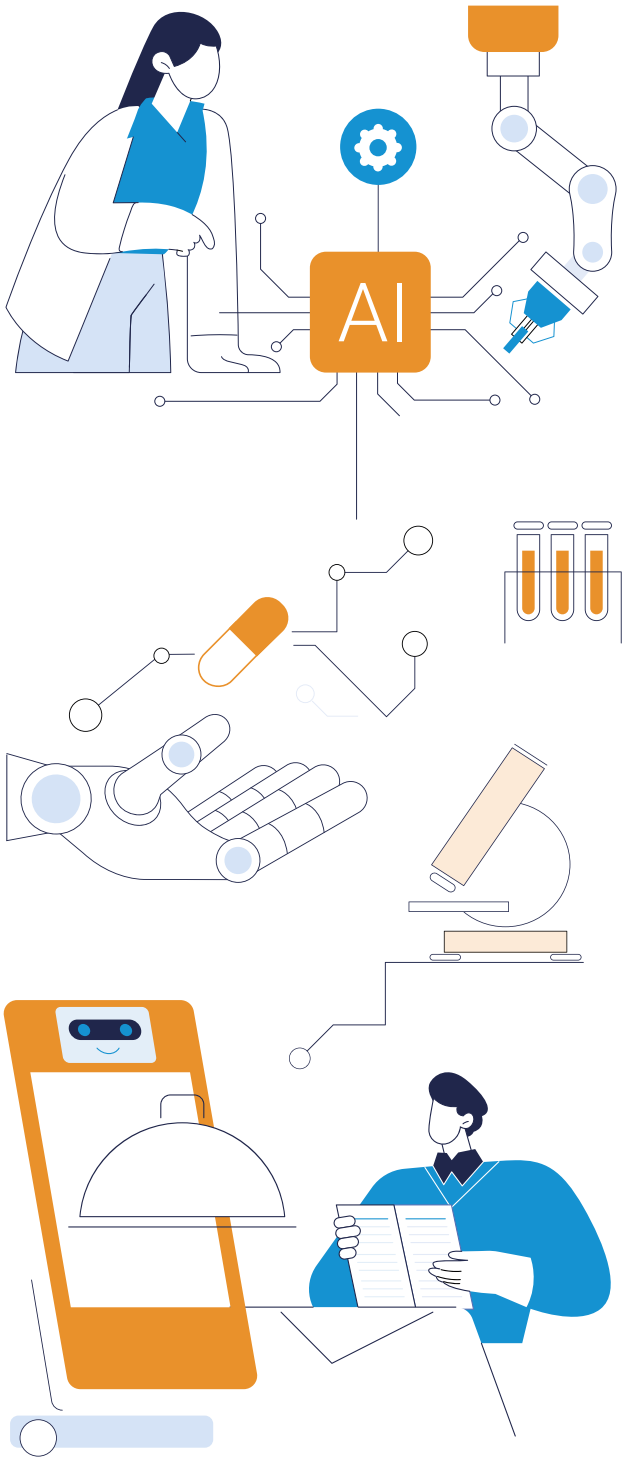
Algorithms can be developed anywhere, but the hardware and smart manufacturing required to embody AI in the physical world cannot easily be migrated elsewhere other than in China."

Sun Tianshu

Dean's Distinguished Chair Professor of Information Systems and Director of the Center for Digital Transformation, CKGSB

Additionally, with cutting-edge semiconductor chips at the heart of most recent AI and robotics advancements, there has also been concern over how China can cope with dwindling access to said chips thanks to the ongoing sanctions put in place by the US. The release of DeepSeek's R1 model, however, may have provided something of an answer to this issue.

"DeepSeek raised an intriguing possibility with its R1 model: AI companies might no longer need to stockpile expensive chips to maintain high computational power," says Li Wei, Professor of Economics, Associate Dean for Asia and Oceania, and Director of Case Center and Director of Big Data Economic Research Center at CKGSB. "This Chinese startup basically upended the logic behind the ongoing AI chip arms race."



China, Well-Positioned

In many ways, robotics represents a fusion of China's greatest strengths: large-scale manufacturing, rapid prototyping and a growing leadership in applied AI. The government long-ago declared robotics a strategic industry and included it in key national development plans, and massive investment, both public and private, is fueling R&D and industrial capacity building.

Crucially, China also offers a huge domestic market to pilot and consume new robotic applications. From mega-factories and distribution centers to smart hospitals and eldercare facilities, there is a ready-made landscape for experimentation and refinement. Lessons learned at home can then be exported to global markets.

"China has a talent advantage, an already developed market share for intelligent robots and the benefits of an already established smart vehicle supply chain that can be transferred across industries," says Li Mingyang. "There are many opportunities for China, and its companies, to lead the global push for greater adoption of AI in the physical world."

CHAPTER FOUR

Free For All: The Open-Source AI Revolution

Recent releases of open-source models are encouraging greater global collaboration in AI development.

The January 2025 release of DeepSeek's R1 model marked a turning point in the global trajectory of artificial intelligence (AI). Unlike most of the leading models already released, R1 is fully open-source—meaning that anyone can download and modify it for their own personal or commercial uses.

Although not the first open-source AI model, R1 stands out for its low development costs, modest hardware requirements and impressive speed and benchmark ratings, which have served to bring it to the forefront of the global AI industry. And, by virtue of it being competitive with other major models while at the same time being fully open-source, it has pushed competitors to consider providing cheaper products or making theirs open as well.

"DeepSeek and other Chinese AI players like Qwen are breaking the mold," says Professor Chen Long. "By clarifying technological paths, lowering development and deployment costs, and embracing open-source and collaborative models, they are rewriting the rules of the AI economy."

AI Reform and Opening Up

Open-source software refers to code that is made freely available for anyone to view, use, modify and distribute, represented by R1 making its code available for download from website repositories such as GitHub and Hugging Face. This approach diverges from the more common practice of closed, proprietary development which was initially pursued by major players like OpenAI and Anthropic.

Open-sourcing allows for developers and companies around the world, from startups to universities and public-sector labs, to utilize and further develop these tools without the prohibitive cost of building models from scratch. This freedom of access can help accelerate innovation globally and encourage more transparent AI practices.

As seen with the software revolutions of the past—from Linux in operating systems to TensorFlow in machine learning—the open-source model often leads to faster adoption, stronger community support and greater customization for specific use cases.

"If there are more open-source projects, and as a result a decrease in the deployment of proprietary AI inside companies, AI adoption and development will speed up," says Chen Yongli, CEO of IoT middleware developer Edgenesis. "There is no reason to think that we won't see massive changes over the next five years, and we are approaching a point where whoever wants to build an integrated AI system will be able to do so, and it will be relatively cheap."

Following DeepSeek's release, which created a ripple effect, pushing previously closed models to become more transparent and affordable, Alibaba's Qwen and Mistral in France, among others, have taken steps to open their models to public use. OpenAI has also slashed its pricing and improved documentation in response to intensifying competition.

Open Source in China

For China, the open-source movement offers a unique strategic advantage. While the first phase of the AI boom—dominated by massive investments and cutting-edge research—favored American companies with deep capital pools and research talent, the second phase is shifting towards 'AI architects'.

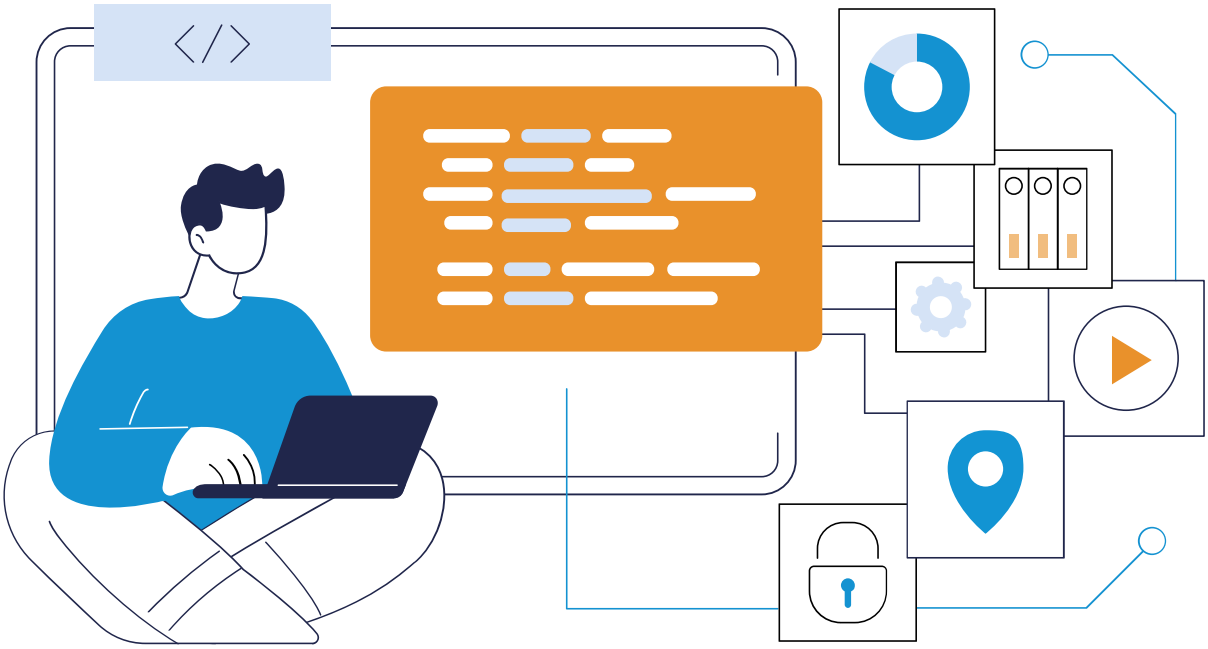
"In the first half of AI development, things were led by scientists at top tech firms," says Professor Sun Tianshu. "But in the second half, it will be led by 'AI architects'—business leaders who integrate AI into real-world industries. Open source is crucial to enabling that transformation."

This industry-led paradigm places more emphasis on practical deployment across verticals like manufacturing, logistics, education and healthcare—sectors where China currently boasts global leadership.

With its vast manufacturing scale, diverse datasets and strong infrastructure, China is especially well positioned to lead in this new open-source-driven ecosystem. The ability to adapt open models to specific industrial scenarios will empower a wide range of companies—especially small and medium enterprises—to participate in the AI revolution.

Moreover, open-source AI development provides a crucial avenue for international collaboration, even amid a tense geopolitical backdrop, and China can become something of a role model.

"We are approaching a more multipolar world, and many developing countries are at a stage of 'what's next?," says Professor Edward Tse. "Chinese models, particularly the open-source ones, have been doing well so far and are credible alternatives to the Western models. People are going to look to China more and there will be more people choosing to go with the China way."



Business Model Challenges

Despite its advantages, the open-source approach is not without hurdles, including for companies, such as DeepSeek and OpenAI, which are developing the base models themselves, holding on to talent and figuring out how to properly monetize their work.

Training and hosting large-scale models costs millions of dollars, and while companies such as Alibaba and Meta can absorb those costs as part of broader strategic goals, startups and smaller players must wrestle with finding viable revenue streams. And, once a model is open, competitors can build upon it without contributing back.

There are also critical legal, ethical and security challenges associated with the open-source approach. Who is responsible if an open-source model is misused? How should credit and IP be managed in a collaborative environment where models evolve rapidly across borders? These are valid concerns, but proponents argue that these are just growing pains of an approach that will ultimately prove more resilient. The Internet itself, after all, is the product of countless open standards and decentralized governance.

The Future is Open-Source

Open-source development is quickly becoming a cornerstone of AI strategy in China. Leading companies like Baichuan, Alibaba (Qwen) and Shanghai AI Laboratory (InternLM) have each released open-source models in the past two years, helping to foster a vibrant ecosystem of developers, fine-tuners and academic collaborators.

The shift to open source reflects a deeper shift in the philosophy of innovation—toward shared infrastructure and community-driven advancement. If the first half of the AI race was to win with computing and capital, the second half will be to win with openness and adaptability.

"The future of AI development is very much open to competition, and different companies and countries will be able to introduce their own types of innovation thanks to the open-source dissemination of AI models," says Professor Teng.

The emergence of DeepSeek has actually led to the competition in LLM development subsiding somewhat. It is now more about application and execution, so different companies will need to best identify where they can position themselves and the related opportunities."

Teng Bingsheng

Professor of Strategic Management and Associate Dean for Strategic Research, CKGSB

CHAPTER FIVE

A New Ecosystem: Building AI Around the Globe

While China and the US lead AI development, open-source approaches worldwide are reshaping where and how progress happens.

As AI continues to redefine industries and reshape economies, the global conversation is no longer just about what is being developed, but increasingly revolving around where, how and by whom. The US and China are seen as being at the forefront of AI development, and rightly so. But even while a handful of AI models dominate the global narrative, the rapid proliferation of open-source models means that AI development is increasingly becoming decentralized.

Around the world, as research labs, startups and policy centers embrace open source as the norm, the AI ecosystem is getting more collaborative and diversified. By making foundational models and code freely accessible, open-source frameworks are offering new possibilities to countries and organizations traditionally excluded from the global AI race.

"The shift towards open-source AI represents a more inclusive form of globalization," says Professor Xiang Bing. "In the age of AI, no single country or company should dominate the narrative. We need a more balanced global ecosystem that reflects shared values and local needs."

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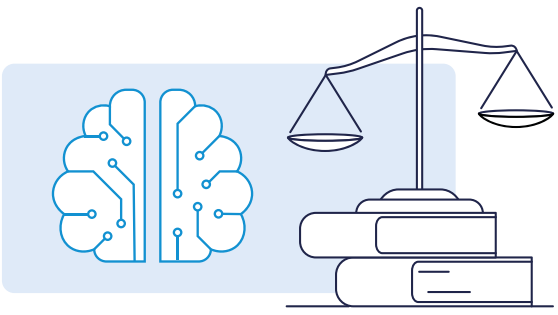
Xiang Bing

Founding Dean and Professor of China Business and Globalization, CKGSB

Europe: Regulating for Responsible Innovation

While China and the United States build comprehensive AI ecosystems with a top-down approach, Europe is carving a different path. The region's landscape is more fragmented, but increasingly active, with government bodies and academic institutions pushing for digital sovereignty through AI research that prioritizes transparency, ethics and interoperability. The European Union's AI Act, enacted in 2024, has further accelerated interest in open models as a means of ensuring compliance and traceability.



Europe, with its strong emphasis on regulation and public-private partnerships, is carving a niche for responsible, human-centric AI.

"The European Union is making strong progress on ethical AI frameworks," says Professor Shi Weilei. "But at the same time it is lagging behind in scaling commercial applications."

India: Open Source for Inclusive Growth

India, home to one of the world's largest developer communities and a dynamic IT sector, has embraced open source as a vehicle for democratizing AI access. National initiatives like Bhashini (aimed at multilingual AI for Indian languages) and the Digital India program underscore a commitment to building AI infrastructure that is both inclusive and scalable.

Indian startups and academic institutions are increasingly turning to open models for tasks ranging from healthcare diagnostics to agricultural optimization. Government support, in the form of open datasets and AI-focused grants, is helping to bridge urban-rural divide in digital innovation.

India's contribution to the global open-source AI movement is particularly vital in terms of linguistic diversity. Its work on multilingual models is setting an example for how AI can be localized to better serve diverse populations.

Southeast Asia: Building Regional Innovation Hubs

Across Southeast Asia, AI development is gaining traction through a combination of national strategies, private investment and regional cooperation. Many countries, including Singapore, Indonesia and Vietnam, are investing in national AI strategies that prioritize open-source collaboration. Singapore has positioned itself as a regional hub for AI ethics and governance, hosting initiatives like the AI Verify Foundation. The city-state also supports open source through government-backed innovation labs and regional partnerships.

In Indonesia and Malaysia, start-ups are leveraging open models for applications in education, logistics and smart city technologies. While the region still faces challenges around infrastructure and talent retention, open source is reducing barriers to entry and fostering cross-border innovation.

"We're going to see a lot more developments across Southeast Asia in the coming years," says Bo Ji, Chief Representative for Europe at CKGSB. "AI-driven personalization of products and services, ecosystem-based platforms such as super apps, green tech development and supply chain innovations are all going to continue across the region, and that is an exciting opportunity for new businesses and entrepreneurs."

The Middle East: Strategic Investments and Bold Visions

The Middle East is rapidly embracing AI as part of a broader push to diversify economies and reduce dependence on oil revenues. Governments across the region, particularly in the Gulf states, have launched ambitious national strategies centered on AI adoption. The United Arab Emirates, for example, appointed the world's first Minister of State for Artificial Intelligence in 2017 and has since developed a comprehensive AI strategy that includes investments in smart cities, autonomous transportation and AI-driven healthcare.

Saudi Arabia, through its Vision 2030 plan, is similarly investing in AI to power mega-projects like NEOM—a futuristic city that aims to integrate cutting-edge technologies into every aspect of urban life. These efforts reflect a strong governmental commitment to positioning AI at the core of future economic growth. In addition to top-down policy initiatives, the region is witnessing a growing AI ecosystem driven by academia, start-ups and international partnerships.

"The Middle East has been very aggressive in adopting leading AI applications," says Professor Teng. "There have been numerous opportunities for Chinese companies to work with Middle Eastern governments in helping them realize their ambitious plans."

Open Source as a Catalyst

What unites the world is the growing belief that AI development should not be confined to a few countries or companies. Open-source AI is the great equalizer, empowering local innovation, encouraging knowledge sharing and creating a more balanced technological landscape.

Yet, for open-source AI to fulfill its potential, it must be supported by collaborative frameworks that transcend borders. Technical interoperability, ethical alignment and responsible governance will require sustained dialogue among developers, regulators and academic institutions worldwide.

"Even amid the tariff war and the increase of global competition, the diffusion of open-source LLMs has been significantly enhanced," says Professor Sun Tianshu. "The US's and China's open-source community is collaborating on a lot of projects, and other economies are also playing a role, including in emerging markets like Southeast Asia and Latin America, and open source is key for these other markets' AI development."

Bridging Global AI Communities

As the momentum behind AI continues to build, the need for institutions to act as conveners and connectors has never been greater, and business schools like CKGSB are uniquely positioned to fulfill this role. With an elite alumni network in Asia, innovative partnerships with top schools in Europe and the Americas, and cutting-edge insights in innovation and business, CKGSB is well-equipped to facilitate meaningful cross-border collaboration in AI.

"The AI revolution is not just technological—it is also social, economic and philosophical," says Dean Xiang. "If AI is to truly benefit humanity, it must be developed with shared responsibility and global inclusion. That's why institutions like CKGSB must play a bigger role in shaping not only how AI is used in business, but also how it serves the public good."

With a commitment to entrepreneurship and global leadership, CKGSB offers a platform for fostering partnerships among developers, companies and policymakers across regions. Through cutting-edge research, executive education and in-person programs, the school is helping to shape the global conversation around responsible AI development and deployment.

"We need global dialogues that transcend nationalism and corporate rivalry," says Dean Xiang.

"This is not the Cold War 2.0—it is a chance for new forms of cross-border cooperation. Business schools must be bridges, not bunkers, in this transformation."

The AI race is no longer just about performance metrics or model size, it is about accessibility, ethics and global impact. As more countries around the world embrace open source, the next phase of AI will likely be defined by cooperation rather than isolation. Whether through shared datasets, joint research initiatives or policy dialogues, the future of AI will be built together.

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About CKGSB

Established in November 2002, Cheung Kong Graduate School of Business (CKGSB) is China's first privately-funded and research-driven business school. The school aims to cultivate transformative business leaders with a global vision, sense of social responsibility, innovative mindset, and ability to lead with empathy and compassion. Today, CKGSB stands apart for its world-class faculty, research excellence, original insights and unparalleled alumni network.

Most of CKGSB's 55 world-class professors held tenured positions at world-leading universities – such as University of Chicago, Columbia University, Darden School of Business, University of Michigan, MIT, Wharton and Yale - prior to joining CKGSB. They are uniquely positioned to understand and interpret digital transformation across the US, China and Asia, and they combine management theory with deep industry experience.

Since its establishment, CKGSB has focused on companies' top decision-makers, such as chairmen and CEOs of the most influential companies and iconic entrepreneurs. As a result, more than half of our 23,000 alumni today are at the CEO or chairman level and, collectively, they lead one fifth of China's most valuable brands. Over 4,000+ global senior executives at multinational companies have also chosen to study at CKGSB, so as to understand and navigate through the global complexities brought by technological disruptions and geopolitical instability.

Innovating beyond the traditional boundaries of business school, CKGSB is the first business school, since 2015, to offer programs specifically designed for unicorn and soon-to-be-unicorn founders. CKGSB aims to build a global ecosystem for the next generation of unicorns with a focus on global responsibility, social purpose and long-term perspective. Through our programs, offered in partnership with companies like Alibaba, Amazon, Baidu, Bytedance, JD.com and Tencent, as well as world-leading schools like Columbia, Stanford and Johns Hopkins, the school has nurtured 1,188 founders of companies with at least Series A funding, including the founders of 151 unicorn companies, 41 of which are listed on CB Insights (2017-2022).

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