The Rise of Robots in China

By Ms. Farheen Iftikhar, PRCCSF Fellow and Participant of FJHS-PRCCSF Fellowship Program 2024-2025

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Introduction

The largest usage of industrial robots worldwide is China. China accounted for over 30 percent of the worldwide market in 2016 with 87,000 industrial robots sold. To put this figure in perspective, the International Federation of Robotics reports that in 2016, 97,300 robots were sold throughout Europe and the Americas. China's operating stock of industrial robots grew at an average annual pace of 38% between 2005 and 2016. China is rapidly incorporating automation and artificial intelligence (AI) into many areas of its business as part of a robotics revolution. China is using robotics to boost productivity, lower labor costs, and preserve its position as the world's largest industrial hub and a pioneer in technical innovation. The country has grown rapidly in robotics, from industrial automation to AI-powered service robots, thanks to corporate investments, government regulations, and a move toward technological self-sufficiency. The main drivers of China's robot boom, their effects on various industries, and the difficulties the nation faces as it maintains its position as a leader in this revolutionary field are all examined in this article.

Government Policies and Strategic Investment

Strong government backing is one of the primary factors supporting China's robotics industry. The Chinese government has started a number of programs to support its robotics sector in recognition of the significance of automation and artificial intelligence. Introduced in 2015, the "Made in China 2025" strategy seeks to position China as a global leader in high-tech sectors such as artificial intelligence, robots, and semiconductors. In order to promote quick growth and innovation, the government has given domestic robotics companies cash, tax breaks, and research grants under this program. The development of robotics and the incorporation of artificial intelligence (AI) into industry are top priorities in the 14th Five-Year Plan (2021–2025), another important endeavor. By providing financial assistance to robotics companies and establishing industrial parks devoted to automation technologies, local governments have also played a significant role. By boosting its indigenous capabilities, these initiatives have assisted China in lowering its reliance on foreign robotic technologies. China's reputation as the "factory of the world" has traditionally been based on mass production and inexpensive labor. However, businesses are increasingly using robots to maintain efficiency and profitability as a result of growing wages and a declining workforce brought on by an aging population. Industrial robots are now frequently employed in Chinese enterprises to carry out hazardous and repetitive operations, increasing speed and accuracy. The International Federation of Robotics (IFR) claims that since 2013, China has dominated the global industrial robot market. China installed more than half of the new industrial

robots worldwide in 2022 alone, surpassing all other countries in this regard. Leading the way in the development of robotic arms, automated assembly lines, and intelligent manufacturing solutions are firms such as Siasun, Estun, and DJI. Leading the way in this change are sectors like electronics, logistics, and automobiles. For instance, robotic arms are used by automakers such as BYD and Geely to weld, paint, and assemble automobiles.

To create smartphones and other consumer goods, businesses like Foxconn have used thousands of robots. Lower operating expenses, fewer errors, and more manufacturing efficiency are the outcomes.

China is a leader in service robotics, with AI-powered robots increasingly used in retail, healthcare, and even security, even though industrial robots still predominate in production. The need for robotic healthcare assistants has grown in China as a result of the country's aging population. Hospitals are using AI-driven robots to help with disinfection, surgery, and patient monitoring. Robots were used in hospitals during the COVID-19 epidemic to minimize human interaction while assisting with medication delivery, temperature checks, and public area sanitization. AI-powered medical robots have been developed by robotics companies such as TMiRob and UBTECH to help physicians and nurses, increasing the efficiency of healthcare facilities. Robotics has also been adopted by the retail and hospitality industries. at China, AI-powered customer

service robots are increasingly widely seen at restaurants, hotels, and shopping centers. For example, businesses such as Meituan and Pudu Robotics have created self-governing food delivery robots that maneuver around eateries and lodging facilities to effectively serve patrons. Furthermore, China has made significant investments in automated cashierless businesses, where robots driven by AI handle payments, keep track of goods, and help clients. This has changed the way people shop by speeding up transactions and lowering the need for human employees.

The deployment of robots for public safety and urban management is part of China's ambition for smart cities. In order to monitor crowds, identify suspicious activity, and improve public safety, cities are implementing AI-powered surveillance robots with facial recognition and autonomous patrol capabilities. By integrating with China's vast monitoring network, these robots bolster law enforcement initiatives even more. Another important component of China's technical development is the combination of robotics and artificial intelligence. Robots powered by AI are able to evaluate enormous volumes of data, pick up knowledge from encounters, and gradually get better at what they do.

Autonomous Vehicles: Chinese technology giants Baidu and Huawei are developing AI-powered mobility solutions in key cities by investing in robotic taxis and self-driving cars. Agriculture: Farmers are becoming more productive with the use of AI-driven robots for crop monitoring, automated harvesting, and precision farming. Logistics and Warehousing: To handle inventory, package products, and run completely automated fulfillment centers, e-commerce giants such as JD.com and Alibaba have constructed

robotic warehouses that employ AI-powered technologies. Despite being the leader in robotic deployment, China still depends on expensive foreign-made parts like precision motors, sensors, and electronics. China has accelerated its domestic production of these vital technology as a result of the U.S.-China trade dispute and export restrictions. Concerns about job losses have been raised by the rise of automation, especially in low-skilled labor sectors. The government is concentrating on reskilling initiatives to assist workers in assuming new positions in AI development and robotics management. Although Chinese businesses are expanding quickly, they are up against fierce competition from robotics companies in Japan (Fanuc, Yaskawa), Europe (ABB, KUKA), and the United States (Boston Dynamics, Tesla). China needs to keep funding foreign cooperation and innovation if it wants to stay ahead.

Conclusion

China's rapid rise in robotics is reshaping industries and setting the stage for a more automated future. With strong government support, strategic investments, and cutting-edge AI integration, China is on track to become the world's leading robotics powerhouse. From smart factories and AI-driven healthcare robots to autonomous vehicles and smart cities, China is leveraging robotics to boost productivity and enhance its global competitiveness.