The US Factor in Chinese Perceptions of Militarized AI

"Artificial intelligence (AI) … is recognized as the disruptive technology that is most likely to change the future world … the emergence of AI weapons will fundamentally change the way of warfare…The world's military powers represented by the United States (US) … have laid out a series of research plans in advance, and released the 'Third Offset Strategy' in order to widen the gap with potential opponents... China urgently needs to catch up and vigorously develop military application research of AI technology."[1]

- Wang Li from China Electronics Technology Group Corporation Limited, excerpt from one of 140 Chinese articles studied by this study

Abstract

Leading armies around the world have expressed enormous interest in AI due to its military potential. This article examines Chinese perceptions of the military use of AI by studying Chinese language materials. A key finding is that while the Chinese strategic community has explored the military use of AI across various countries, the US plays a central and unique role in shaping Chinese perceptions of militarized AI. The US serves as a global near-competitor, providing a benchmark for China to measure its own development and competitiveness. Moreover, the US acts as a role model for the Chinese military to emulate American ideas, policies, and practices. Consequently, American success in AI has become a primary source of anxiety among the Chinese strategic community, prompting self-reflection and accelerating the development of ambitious Chinese AI plans. Contrary to the popular narrative in Washington that China has already surpassed the US in the global AI race, Chinese discussions reveal considerable admiration for American AI leadership, with a focus on catching up rather than overtaking the US. This article suggests that both the US and China need to play their parts in mitigating the risks of a global AI race.

Introduction

The rise of AI has considerable potential to transform every aspect of our society, including future forms of warfare. The first and second military revolutions were led by the rise of gunpower and nuclear weapons, respectively, and many consider AI to possess the capacity to launch the third revolution.[2] Main military forces, especially the US, Russia and China, have been competing to leverage the development of AI for military advantages. Not surprisingly, the growing geopolitical tension between China and the US has accelerated their AI arms race.

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[1] Wang, L. (2017) '人工智能在军事领域的渗透与应用思考 (Penetration and Application of Artificial Intelligence in the Military Field)', 科技导报 *(Science & Technology Review),* 35(15), pp. 15-19.

[2] Lee, K.-F. (2021) 'The Third Revolution in Warfare', *The Atlantic.*
This view is shared by some Chinese articles studied. For example see Li, W. and Long, K. (2021) '人工智能给军事安全带来的机遇与挑战 (Opportunities and Challenges Brought by Artificial Intelligence to Military Security)', 信息安全与通信保密 *(Information Security and Communications Privacy),* 5, pp. 18-26. However, there are cautious views suggesting that this will not happen anytime soon, at least. Please see, Stefanick, T. (2020) 'Why the AI revolution hasn't swept the military', *The Brookings Institution* available at https://www.brookings.edu/articles/why-the-ai-revolution-hasnt-swept-the-military/#:~:text=AI%20algorithms%E2%80%94in%20particular%20deep,we%20get%20the%20wrong%20data. accessed on 18 April 2024.

Nowadays, one of the most popular concerns, if not the most, in American political narratives and media headlines is that China has won the AI race against America.[3] China's unique political system is argued to possess a "distinct" advantage in this AI race,[4] as its AI strategy is often oversimplified by the relevant analyses as a top-down geopolitical masterplan under a national-concerted Chinese effort.[5] Many thus call for the US to adopt a similar "unified/integrated" "whole-of-nation/government/society" approach to boost American AI innovation.[6] When it comes to military innovation more specifically, China is considered to be most "purposefully" integrating AI to advance its military,[7] posing considerable challenges to American military supremacy. Indeed, those narratives have already motivated the Biden administration to sanction and embargo some of the most advanced chips and hoping to slow down China's AI innovation.[8] In other words, these American narratives have already accelerated the US-China AI race by triggering real world actions.

This paper aims to revert the angle of US-China AI race to investigate the Chinese perceptions. It empirically examines how China perceives AI in the military domain by exploring two set of questions: first, in the context of AI's rapid development across the world, how does China perceive the military use of AI? second, what roles does the US play in shaping this Chinese perception? How does China assess US-China AI competition and reflect on its own AI progress? To answer these questions, this study uses content analysis to study 140 academic Chinese articles on the topic of AI in the military domain.

This study finds that the Chinese strategic community highly regards AI's value in promoting military transformation. According to some Chinese scholars, despite safety and reliability concerns, advancing the military use of AI will be a "necessary" option for armies worldwide and thus AI will reshape the future global military landscape.[9] At the same time, the Chinese strategic community acknowledges AI's rapid development in Chinese society but notes slow progress in military innovation. It is argued that the Chinese pace of developing AI

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[3] For those who believe that China has already won, please see Long, H. (2019) 'In Davos, U.S. executives warn that China is winning the AI race', *The Washington Post*, Faulconbridge, G. (2021) 'China has won AI battle with U.S., Pentagon's ex-software chief says', *Reuters*, Kempe, F. (2019) *The US is falling behind China in crucial race for AI dominance*, available at https://www.cnbc.com/2019/01/25/chinas-upper-hand-in-ai-race-could-be-a-devastating-blow-to-the-west.html accessed on 28 Feburary 2020: CNBC; For those who believe China might win, please see Allison, G. (2019) 'Is China Beating America to AI Supremacy?', *The National Interest,* available at https://nationalinterest.org/feature/china-beating-america-ai-supremacy-106861 accessed on 28 Feburary 2020, Allen, G. (2019) *Understanding China's AI Strategy*, available at https://www.cnas.org/publications/reports/understanding-chinas-ai-strategy accessed on 28 Feburary 2020: Center for a New American Security, Williams, G. (2018) 'Why China will win the global race for complete AI dominance?', *Wired*, Allison, G. and Schmidt, E. (2021) 'China Will Soon Lead the U.S. in Tech', *The Wall Street Journal*. Others, however, have suggested a different viewpoint. Please see Cooper, J. and Kompella, K. (2022) 'No, China is not winning the AI race', *The Hill*.
[4] Sayler, K. (2019) *Artificial Intelligence and National Security*: Congressional Research Service Report.
[5] Zeng, J. (2021a) 'China's Artificial Intelligence Innovation: A Top-Down National Command Approach?', *Global Policy,* 12(3).
[6] Ding, J. (2018) *Deciphering China's AI Dream*, available at https://www.fhi.ox.ac.uk/deciphering-chinas-ai-dream/ accessed on 28 Feburary 2020: Future of Humanity Institute, University of Oxford, Kania, E. (2017) 'China's Artificial Intelligence Revolution: A new AI development plan calls for China to become the world leader in the field by 2030', *The Diplomat*, Sayler, K. (2019) *Artificial Intelligence and National Security*: Congressional Research Service Report.
[7] Nelson, A. and Rubenstein, D. (2022) *The PLA's Strategic Support Force and AI Innovation*, available at https://www.brookings.edu/articles/the-plas-strategic-support-force-and-ai-innovation-china-military-tech/ accessed on 21 July 2023: Brookings.
[8] Alper, A., Freifeld, K. and Nellis, S. (2023) 'Biden cuts China off from more Nvidia chips, expands curbs to other countries', *Reuters*.
[9] Liu, J. and Wang, W. (2020) '人工智能军事应用发展扫描 (The development of AI's military application)', *军事文摘 (Military Digest),* 9, pp. 11-15.

in the military domain is "relatively lagging behind," and the development of AI in Chinese military training is "relatively weak."[10] The Chinese literature has closely examined the military use of AI in major countries, including the US, Russia, Israel, Japan, Korea, and the UK, studying its implications for China.

Most importantly, this study finds that the US plays a central and unique role in China's strategic discussion. This article analyses the extent and how the US factor entered Chinese strategic discussions on the military use of AI. American AI innovation and strategy have influenced the Chinese approach to developing AI in the military domain by promoting Chinese self-reflection and emulation. The US acts as a global near-competitor if not geopolitical rival for the Chinese strategic community to benchmark its own progress and prospects. This self-reflection has often raised strategic anxiety about the widening US-China military gap led by AI's rise, pointing to the urgency of additional state intervention and support. Precisely because of this strategic anxiety and recognition of American success in developing AI in the military domain, the Chinese military has closely observed and emulated American ideas, policies and practices, further advancing American influence in China's strategic discussion and stimulating Chinese countermeasures. In this regard, from the Chinese perspective, American AI innovation and plans are a source of strategic instability that has widened the bilateral military capability gap and thus requires Chinese intervention to restore the strategic balance.

Given AI's potential, the risks brought by the global AI race are very high. The "race to the bottom" game in AI, for example, may lead to rapid and uncontrolled AI development, inviting considerable danger to human society.[11] A robust global governance system to promote robustness, reliability and safety in military AI has thus become increasingly important nowadays. The nascent global AI governance is yet to prove its worth in mitigating the risks of the US-China AI race. The finding of the study, however, suggests that a window of opportunity lies in how to make advantage of American influence in Chinese perceptions and thus shaping the latter to buy in safe norms and practices in the military domain of AI.

Method and Data
In order to study Chinese perceptions, this study employs content analysis of Chinese language materials. Data is sourced from the China National Knowledge Infrastructure (CNKI), China's largest academic database. All articles in CNKI containing both "intelligent" (智能) and "military" (军事) in the title were selected during data collection, resulting in 140 Chinese articles published between 1988 and 2022 as the primary focus of this study. This period of interest captures China's early exploration of military AI and the first wave of major AI strategy development.

Each of the 140 articles, totaling over 800,000 Chinese characters, was reviewed. Weiciyun, a Chinese-language text analysis software, was used to quantitatively count word frequencies and visualize the results (see Figure 2) and to analyze sentence sequences in the text (see Figure 3).[12] Discussions on the military use of AI span interdisciplinary conversations involving a wide range of academic subjects. The authors of these 140 articles mainly include Chinese military officers, defense industry engineers, policy analysts, and academics, most of whom are affiliated with Chinese military institutes, universities, and companies.

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[10] Zhuang, C., Liu, S. and Wang, X. (2021) '人工智能赋能军事训练 (AI-enabled military training)', *国防科技 (National Defense Technology),* 42(4), pp. 129-132.

[11] Milmo, D. and Helmore, E. (2023) 'Humanity at risk from AI 'race to the bottom', says tech expert', *The Guardian*.

[12] The software is available on https://www.weiciyun.com/

Generally, the 140 scholarly articles studied reflect a Chinese strategic discussion on the military use of AI, involving participants from both academic and military backgrounds. Since all articles are openly accessible resources, information pertaining to secretive military intelligence or internal documents was not examined in this study. Consequently, the discussions analyzed do not represent the Chinese military's official stance but provide insights into it.

US Factor in China's Strategic Discussion

The Chinese strategic discussion highly values the military utility of AI, with a consensus emerging that AI will profoundly impact future warfare.[14] Similar to the "killer robot" narrative, some Chinese scholars even suggest that this will fundamentally alter the nature of warfare, shifting from wars among human to scenarios where "machines automatically kill human."[15] Such perspectives are hardly surprising given the data sample. The strategic discussion on AI in the military domain typically involve proponents of AI's potential. However, a few express cautions regarding AI's military applications. For example, Li Hao and Du Yanbo criticize views that overestimate AI's impact, cautioning against a hasty adoption of AI in the PLA. According to Li and Du,

> "(if we) develop military theories and promote reform practices based on a vague understanding of AI prospects and maximized imagination, it will not only be useless but even detrimental to the transformation and development of military modernization."

Li and Du conclude that the introduction of AI may bring "inefficiency, confusion, and disorder," and thus proving "counterproductive" to China's military transformation.[16] Nonetheless, this caution is rarely reflected in the 140 analyzed articles, which overwhelmingly advocate urgent actions for China to embrace the age of AI.

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[14] Li, X. and Luo, T. (2021) '人工智能军事应用及其国际法问题 (Military Application of Artificial Intelligence and its International Law Issues)', *信息安全与通信保密 (Information Security and Communications Privacy),* 1, pp. 99-108.

[15] Wang, L. (2017) '人工智能在军事领域的渗透与应用思考（Penetration and Application of Artificial Intelligence in the Military Field）', *科技导报 (Science & Technology Review),* 35(15), pp. 15-19, Zhang, Z., Shi, F., Wan, Y., Xu, Y., Zhang, F. and Ning, H. (2020) '人工智能在军事对抗中的应用进展 (Application progress of artificial intelligence in military confrontation)', *工程科学学报 (Chinese Journal of Engineering),* 42(9), pp. 1106-1118.

[16] Li, H. and Du, Y. (2022) '厘清人工智能在智能化军事变革中的边界 (Clarify the boundaries of artificial intelligence in the transformation of intelligent military)', *军事文摘 (Military Digest)*, pp. 7-11.

Figure 1: the annual number of Chinese articles on militarized AI published (1988-2022)
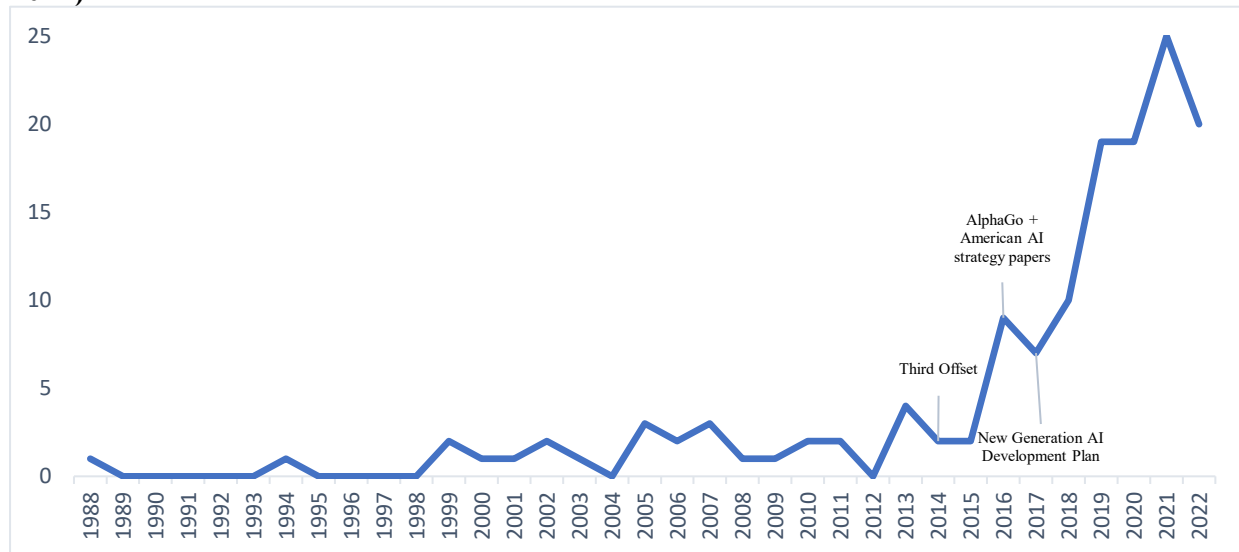
When examining the Chinese discussion, this study finds that the US factor plays a pivotal role from the outset. Figure 1 illustrates the number of publications on the topic, revealing that the first Chinese writing on AI development in the military domain dates back to 1988. The initial article focused on AI Management Decision Support System (AIMDSS) with some discussions on its application in the US.[17] In light of the rapid development of AIMDSS in the US, author Qian Xiaojiang suggested that China should "have some sense of urgency" and begin studying AIMDSS. Subsequently, the Chinese defense community maintained minimal interest in this topic until 2015.

The years 2015-2016 marked the onset of China's rapidly growing interest on this topic, coinciding with a series of AI-related events and success in the US.[18] The introduction of the "Third Offset" strategy by the then-US Secretary of Defense Chuck Hagel at the Reagan Defense Forum in late 2014 garnered close attention from China's defence community. Many Chinese strategists viewed the strategy as leveraging AI to accelerate combat capacity, thereby enhancing US conventional deference[19] or to maintaining its military advantage over China and Russia.[20] The consensus was that China needed to reflect its own military strategy amid the transformation spurred by emerging technology like AI.[21] As one Chinese article pointed out,

[17] Qian, X. (1988) '关于人工智能军事决策支持系统的若干技术问题探讨（Discussion on Some Technical Issues of Artificial Intelligence Military Decision Support System）', 军事通信技术 *(Journal of Military Communications Technology）,* 27(3), pp. 37-42.

[18] Nonetheless, China's various AI initiatives can be traced back to years before 2016. Please see Roberts, H., Cowls, J., Morley, J. et al. (2021), The Chinese approach to artificial intelligence: an analysis of policy, ethics, and regulation. *AI & Society* 36, 59–77. Zeng, J. (2021a) 'China's Artificial Intelligence Innovation: A Top-Down National Command Approach?', *Global Policy,* 12(3).

[19] Wang, L. (2017) '人工智能在军事领域的渗透与应用思考（Penetration and Application of Artificial Intelligence in the Military Field）', 科技导报 *(Science & Technology Review),* 35(15), pp. 15-19, Ji, Z. and Zhang, W. (2020) '世界军事强国的人工智能军事应用 (Military applications of artificial intelligence in the world's military powers)', 军事文摘 *(Military Digest)*, pp. 7-10.

[20] Cai, H. and Wei, Z. (2017) '人工智能在各军事强国的发展 (Development of artificial intelligence in major military forces)', 国防科技 *(National Defense Science & Technology),* 38(5), pp. 7-11.

[21] Wood, P. (2016) 'Chinese Perceptions of the "Third Offset Strategy"', *China Brief,* 16(15), pp. 1-3.

> "The world's military powers, represented by the US, foresee the broad application prospects of AI technology in the military field. They believe that the future arms race is an intelligent race and have laid out a series of research plans in advance, releasing the 'Third Offset' strategy and striving to widen the gap with potential opponents in terms of intelligence. Being backward means being under the control of others. To avoid the huge generation gap caused by the loss of development opportunities, China urgently needs to catch up and vigorously develop military application research of AI technology."[22]

In early 2016, the success of Google DeepMind's AlphaGo in defeating top-ranked human player, including Ke Jie of China and Lee Se-dol of South Korea, in the ancient Chinese board game Go further shocked not only China's defense community but also the general public. AI became a widely discussed public topic across China. Some international analysts considered it as a "Sputnik moment" for China that spurred funding and stimulated China's AI ambition.[23]

Despite being developed in a civilian context, China's defense community clearly recognized AlphaGo's military potential. Among the 140 articles studied, the most cited and downloaded article is "Principle Analysis on AlphaGo and Perspective in Military Application of AI", focusing on the technical principles of AlphaGo and its military potential.[24] This article, supported by the Shared Army Major Research Plan Joint Fund and National Natural Science Foundation of China, concluded that AlphaGo's success had the potential to revolutionize AI-enabled military decision-making. The author of this most cited and downloaded article, Hu Xiaofeng from the PLA National Defence University, concluded in another article that

> "The development of 'Deep Green' and the breakthrough of AlphaGo have given us a lot of inspiration. We can't be eager for quick success, but we can't sit still ... Some people say that in the past, 'mechanization has not caught up, informatization is desperately catching up, and intelligentization can no longer lag behind.' The author believes that mechanization is easier to catch up through equipment update. Informatization requires time accumulation and scale effects, but it can also gradually catch up. Intelligentization, however, is not the same. There are essential differences among them. Once we can't catch up, we may never catch up, because war may not give you time to catch up."[25]

In these regards, both the "Third Offset" strategy and AlphaGo's success engendered an inherent sense of insecurity within China, compelling it to react.

In the same year as AlphaGo's success, the White House released the Report on "Preparing for the Future of AI" and its companion, "National AI Research and Development Strategic Plan." These two reports were viewed by many Chinese strategists as signals of America's intention to elevate its AI plans to a national strategy.[26] Consequently, China swiftly emulated this American approach. In July 2017, the Chinese State Council introduced China's

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[22] Wang, L. (2017) '人工智能在军事领域的渗透与应用思考 (Penetration and Application of Artificial Intelligence in the Military Field)', 科技导报 (Science & Technology Review), 35(15), pp. 15-19.

[23] Mozur, P. (2017) 'Beijing Wants A.I. to Be Made in China by 2030', The New York Times.

[24] Tao, J., Wu, L. and Hu, X. (2016) 'AlphaGo 技术原理分析及人工智能军事应用展望 (Principle Analysis on AlphaGo and Perspective in Milltary Application of Artificial Intelligence)', 指挥与控制学报 (Journal of Command and Control), 2(2), pp. 114-120.

[25] Hu, X. (2016) '军事指挥信息系统中的机器智能：现状与趋势 (Machine Intelligence in Military Command Information System: Current Situation and Trend)', 学术前沿 (Frontiers), 8, pp. 22-34.

[26] Cai, H. and Wei, Z. (2017) '人工智能在各军事强国的发展 (Development of artificial intelligence in major military forces)', 国防科技 (National Defense Science & Technology), 38(5), pp. 7-11, Wang, L. (2017) '人工智能在军事领域的渗透与应用思考 (Penetration and Application of Artificial Intelligence in the Military Fi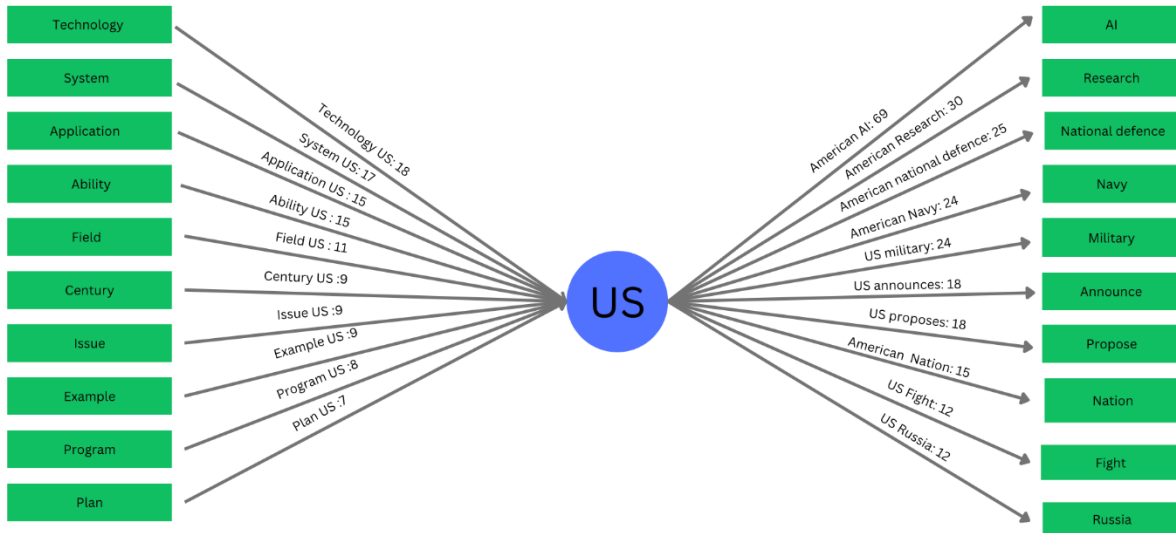eld)', 科技导报 (Science & Technology Review), 35(15), pp. 15-19, Cai, Y. (2018) '人工智能在军事领域中的应用及其发展 (Application of Artificial Intelligence in the Military Field and Its Development)', 智能物联技术 (Technology of IoT & AI), 1(3), pp. 41-48.

national AI strategy, the "New Generation AI Development Plan." Some international analysts note considerable similarities between this Chinese strategy document and its American counterpart, from top-level strategic objectives to policy details and recommendations.[27] It is argued that "China is embracing and implementing America's (AI) strategy."

Envisioning China's ambition to become an AI superpower by 2030, the Chinese State Council anticipates the expansive integration of AI into national defense construction.[28] The "New Generation AI Development Plan" considers "the deep integration of AI with the economy, society and national defense as a primary objective".[29] Specifically, the Plan aims to leverage AI to support "military command and decision-making, military deduction, defense equipment, and other applications." The military-civilian integration concerning AI is also identified as one of the Plan's six key tasks.

Figure 2 Top 100 most frequently mentioned word among 140 Chinese articles studied[30]

The growing volume of Chinese writings on the military use of AI coincided with China's national AI strategy and concerns about the widening gap in military capability enabled by AI. From 2016 onward, many articles focused on AI's military use in other countries, particularly the US. Among the 140 articles studied, 64.2%, or 90 articles, mentioned the US. Analysis of the full text of the 140 Chinese articles using Weiciyun revealed that the US was one of the most frequently mentioned words in the Chinese strategic discussion. Figure 2 shows the top 100 most frequently mentioned words among the 140 articles studied. The word "USA" (highlighted in black in Figure 2) is among the top 20 most frequently mentioned words, suggesting that the US is a frequent reference point in this Chinese strategic discussion.

Figure 3: Most frequently mentioned words before and after the word "USA" among 140 Chinese articles studied

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[27] Allen, G. and Kania, E. (2017) 'China Is Using America's Own Plan to Dominate the Future of Artificial Intelligence', *Foreign Policy,* available at https://foreignpolicy.com/2017/09/08/china-is-using-americas-own-plan-to-dominate-the-future-of-artificial-intelligence/ accessed on 28 January 2021.

[28] China (2017) 国务院关于印发新一代人工智能发展规划的通知 *(New Generation Artificial Intelligence Development Plan)*, available at http://www.gov.cn/zhengce/content/2017-07/20/content_5211996.htm accessed on 28 Feburary 2020: The State Council of China.

[29] Ibid.

[30] Three words, including "AI", "intelligent," and "military," are excluded from the list because they are commonly mentioned in every article selected for data analysis

More specifically, American practices, ideas, and even terminology were closely observed and discussed. Figure 3 shows the most frequent words before and after the word "USA" is mentioned. The most frequent mentioned phrases include "American AI", "American research", "American national defense", "American navy", "US military", "the US publishes", "the US proposes", "American nation", "American combat," and "the US and Russia." A typical line is, for example, "in 2016, the U.S. military proposed the third 'Offset Strategy' with AI as the key supporting technology, released the 'National AI Research and Development Strategic Plan' and 'FY2009–2034 Unmanned Systems Integrated Roadmap', and proposed a series of new operational concepts such as 'distributed operations' and 'bee swarms' to promote the deployment of related AI military application projects such as 'intelligent missiles' and 'unmanned autonomous aerial refueling'."[31] All of these point to the critical role of the US factor in not only producing Chinese strategic anxiety but also serving as a role model for China to emulate.

Figure 4 Word frequency of countries mentioned in 140 Chinese articles studied
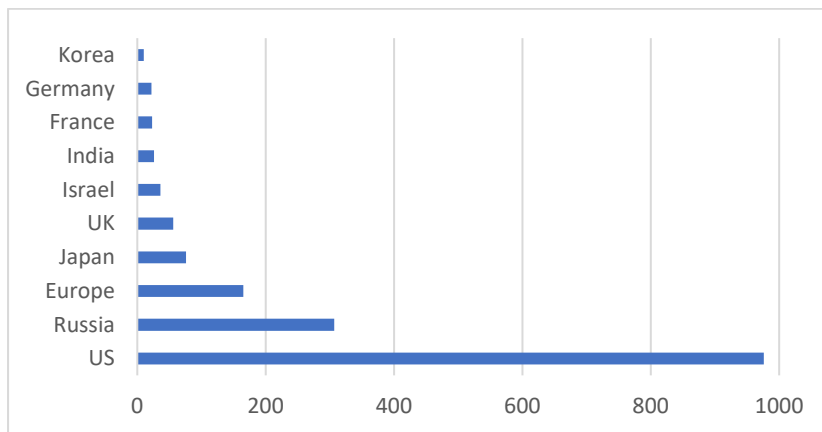
To provide a context for comparison, the frequency of countries mentioned in the Chinese strategic discussion is illustrated in Figure 4. It indicates that the Chinese strategic community have examined AI military practices in a wide range of countries. The most frequently

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[31] Ji, Z. and Zhang, W. (2020) '世界军事强国的人工智能军事应用 (Military applications of artificial intelligence in the world's military powers)', *军事文摘 (Military Digest)*, pp. 7-10.

mentioned countries include the US, Russia, Europe, Japan, the UK, Israel, India, France, Germany, and Korea. Some Chinese scholars even argue that China is not only lagging behind the US but also Israel and Russia when it comes to practical application of AI. [32] Subsequently, the focus of the discussion is on what China can learn from practices in those countries. This finding aligns with the wider picture of Chinese military evaluations, indicating that future warfare has been evolving from "informatised" to "intelligentised." [33] As such, Chinese strategists have widely acknowledged AI's importance and carefully studied its development in other countries. As a Chinese article points out,

> "The speed and effect of advancing the military application of AI will profoundly affect the outcome of future wars, and it will also affect a country's international status. In this context, our country should continue to track the latest developments in the field of AI by foreign militaries and learn from the experience and lessons of other countries in promoting the military application of AI." [34]

Nonetheless, in comparison, the US received the predominant attention, with its word frequency exceeding that of all other countries combined, suggesting a US-centric discussion.

Conclusion

This article examines how American AI strategy and progress have stirred anxiety and self-reflection among Chinese strategic community until 2022. From the "Third Offset" strategy to the White House's Report on "Preparing for the Future of AI" and the "National AI Research and Development Strategic Plan", the American AI strategy has been carefully observed and emulated by the Chinese strategic community, resulting in the development of China's own AI strategy.

As China's AI near-peer competitor and geopolitical rival, American military AI practices serve as a benchmark for evaluating China's progress among the Chinese strategic community. With growing US-China tensions, the rapid development of AI-enabled military practices has fuelled considerable anxiety in China. From the technological breakthrough of Google DeepMind's AlphaGo to the birth of ChatGPT, [35] American civil and miliary AI progress has repeatedly shocked China's strategic community, leading to reflections on its perceived "backwardness." Therefore, Beijing's strategic anxiety in the context of AI race is no less significant than that in Washington. While both sides consider the other as a source of strategic instability and call for increased intervention, the difference lies in the fact that the aforementioned US narratives are primarily concerned with losing the race, while Chinese literature focuses on, at least for now, narrowing the technological gap between the US and China in the military arena. Strategic anxieties and a sense of insecurity stemming from these AI race narratives have motivated both countries to intensify investments in building their respective AI military capacity. In this regard, this security dilemma may escalate the global AI race, potentially leading to AI-enabled security conflicts between two nuclear states, becoming a self-fulfilling prophecy.

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[32] Cai, H. and Wei, Z. (2017) '人工智能在各军事强国的发展 (Development of artificial intelligence in major military forces)', *国防科技 (National Defense Science & Technology),* 38(5), pp. 7-11.

[33] Kania, E. (2021) 'Artificial intelligence in China's revolution in military affairs', *Journal of Strategic Studies,* 44(4), pp. 515-542.

[34] Zhao, X. (2020) '美俄人工智能军事应用对比研究 (A comparative study of military applications of artificial intelligence in the United States and Russia)', *国防科技工业 (Defense Science and Technology Industry),* 1, pp. 55-58.

[35] Though covered by the interested period of this study

As a group of top AI experts and scientists rightly point out, similar to nuclear weapons, AI represents an existential threat to humankind.[36] When AI intersects with nuclear weapons, this "extinction" risk is a step closer given AI's impact on strategic stability and nuclear risks.[37] Indeed, AI has been a part of the nuclear weapon infrastructure for decades. The future development of machine learning in providing better nuclear intelligence, enhancing nuclear command and control architecture, and even making independent nuclear strike decisions has the potential to alter nuclear strategy and deterrence, thus affecting the strategic balance of nuclear power. While delegating AI independent nuclear command and control authority seems unlikely at the moment, AI has already been integrated in nuclear weapon systems in many aspects. Responsible management of nuclear weapon systems in the age of AI is crucial to human survival.

In this context, transnational cooperation is key to mitigating the risk of military AI. Nuclear states need to develop a set of international regulations to manage the use of AI in nuclear infrastructure and command, and regulations of Lethal Autonomous Weapons Systems (LAWS) need effective global treaties to address legal and ethical concerns. All of these require transnational cooperation to form global consensus and take global actions. Unfortunately, in the shadow of global AI race, narratives focused on competition and rivalry have hindered the urgency of transnational cooperation but also infiltrated nascent global AI governance.

As Roberts et al. point out, global AI governance faces both first- and second-order cooperation problems. The first stems from interstate geopolitical competition within an anarchic global order, while the second arises from institutional dysfunction, complicating efforts to establish effective global AI governance mechanisms.[38] Arguably, the US-China AI race has not only problematized first but also second-order cooperation challenges. The increasingly intensified US-China geopolitical competition over AI has not restricted to direct interstate competition with actions such as American semi-conduct ban on China or the Chinese state efforts to securitize AI.[39]

The US-China race has indeed brought in considerable second-order cooperation challenges by developing and supporting new global AI governance mechanisms for geopolitical gains. For example, Global Partnership on AI (GPAI) – an international initiative to advocate responsible AI use based on democratic principles – was also viewed by many in the US as a helpful geopolitical tool against China.[40] The impact of geopolitical rivalry is most obvious when it comes to security and military-focused AI governance initiatives. The AI Partnership for Defense was initiated by the US defense department in 2020 to shape responsible military use of AI using democratic value-based governance in defense.[41] As the then Defense Secretary Mark Esper, it aims to work with American allies to counter China's AI-enabled "21st-century surveillance state" and Russia's "AI-and-autonomy-enabled command-and-control schemes".[42] As such, these initiatives are designed as geopolitical tools

[36] Barrabi, T. (2023) 'Top AI experts warn of tech's 'risk of extinction' — similar to nuclear weapons, pandemics', *New York Post*.
[37] Boulanin, V. (ed.) (2019) *The Impact of Artificial Intelligence on Strategic Stability and Nuclear Risk, Volume I, Euro-Atlantic perspectives*: SIPRI.
[38] Huw Roberts, Emmie Hine, Mariarosaria Taddeo, Luciano Floridi, Global AI governance: barriers and pathways forward, International Affairs, Volume 100, Issue 3, May 2024, 1275–1286
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to defeat China, rather than solutions to transnational cooperation. All of these factors have contributed to the "weak regime complex" in the current global AI governance landscape, which features a 'polycentric' structure with some institutional linkages, but where work remains largely siloed.[43]

Without effective global governance, AI arms race poses considerable risks not only to the loser but also the winner. The pressure of winning the race relies on a breakneck speed in building up AI capacity in the military arena, which is likely to be made at the expense of essential research on AI safety.[44] For example, in order to gain a first-mover advantage, states may choose to shorten the testing phase of AI-enable weapons and deploy them before fully understanding their impact.[45] In other words, the AI race may end up deploying powerful but unsafe AI-enabled military technology, posing risks to all stakeholders. If this risk-taking approach is perceived as successful, the competitive security pressure will motivate more states to join this kind of cross-national emulation. This will not only enhance the overall risk for all but also reduce the first-mover advantage and thus end up in no one's favor.

In this context, both the US and China need to downplay zero-sum thinking and realize their overlapped interest in promoting robustness, reliability and safety in military AI systems and reducing strategic risks. As findings of this study show, China is not only interested in understanding American technical progress but also American ideas and policies to advance its AI. After all, the US-China AI race is not only an arms race but also a leadership contest. The competition lies not only in technical advancements but also in ideas and policies to govern the use of AI. From its repeated calls for regulating the military and general use of AI to its desire to lead and shape future AI norms and standards[46], the Chinese government has signalled its diplomatic and rhetoric commitment[47] - regardless of its inconsistency and own national interest consideration - to the international community. This is clearly a progressive move, and the question lies in to what extent China's actions can match its words.

At the same time, the US needs to be more confident about its AI leadership and act as a leader for collective goods instead of being misled by the unnecessary strategic anxiety. Whatever the US does in terms of its AI strategy, policies, and regulations has been closely observed and often emulated by other states, especially China. This is where American AI leadership can and should exert its influence. American norms and principles on issues from keeping "human in the loop" of nuclear infrastructure and command, supporting global AI governance initiatives, to regulating LAWS have affected China's position for better or worse. How the US builds a robust, reliable, and effective military AI set an example for China and many others. As such, Chinese admiration of American AI leadership can be turn into a force for good if American pioneering norms and practices are worthy of following and admiring in the long term.

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