

Forum: Special Conference 2 (SPC2)

Issue: Addressing the rise of AI in military applications or technologies

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Introduction

Militaries have been experimenting with Artificial Intelligence as early as the Cold War (Lincoln Laboratory), yet it wasn't until the 2010s that AI started becoming mainstream in military applications. Following the exponential growth and democratization of AI systems (Cowan), AI has become the pinnacle of dual-use technologies. Today, AI has embedded itself deeply into military technologies and research, whether it be the use of large language models (LLMs), decision support systems (DSS), Autonomous Weapon Systems (AWS), or simply the exploitation of sheer computational power (CFG).

The future of warfare and security lies in AI, as seen in the conflict between Russia and Ukraine. The capabilities are extensive: AI could lower the barrier for the development of biological weapons or develop sophisticated cyberattack technology beyond current comprehension. Yet in the status quo, AI lacks conventional, developmental, or even ethical regulations within the military sphere, raising concerns about further development of AI in military applications. The establishment of frameworks is needed to mitigate potential risks involving AI.

Definition of Key Terms

Artificial Intelligence (AI)

An AI system is a machine-based system that, for explicit or implicit objectives, infers, from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments. Different AI systems vary in their levels of autonomy and adaptiveness after deployment. (OECD)

Autonomous Weapon Systems (AWS)

Weapons that can select and apply force to targets without human intervention. (ICRC)

UAV (Drones)

A powered, aerial vehicle that does not carry a human operator, uses aerodynamic forces to provide vehicle lift, can fly autonomously or be piloted remotely, can be expendable or recoverable, and can carry a lethal or nonlethal payload (Cornell)

Loitering Munitions

Aerial weapons equipped with some form of built-in warhead. These weapons are designed to loiter around a target area until a target is located, then attack the target by crashing into it. Also referred to as 'suicide drones' (IDGA).

Dual-use Technology

Items, including software and technology, that can be used for both civilian and military purposes. (CFG)

International Humanitarian Law (IHL)

A set of rules that seek, for humanitarian reasons, to limit the effects of armed conflict. (ICRC)

Background Information

Artificial Intelligence has been in circulation since the 1950s, when Alan Turing published "Computer Machinery and Intelligence", laying out an experiment called the Imitation Game, now known as the Turing Test (Tableau). During this era, certain forms of early AI in military use emerged, such as the U.S. SAGE (Semi-Automatic Ground Environment) system that utilized computers to identify Soviet bombers and recommend interception (Lincoln Laboratory). Militaries continued to experiment with AI for the next few decades, with some key milestones including the Israeli 'Harpy', the first loitering munition and early UAV autonomy; however, there were no major breakthroughs.

Yet in the recent decade, the world witnessed an unprecedented rise in the development of AI, the exponential growth of its machine learning capabilities enthralling corporations, investors, software engineers, and state authorities (Giattino, Our World In Data). This spurred the interest of international competitors across the globe, with Vladimir Putin claiming that "Whoever becomes the leader in the field of AI will become the ruler of the world." In 2017, the U.S. launched Project Maven, the first large-scale military adoption of AI that analyzed drone footage, an early version of a DSS. States around the world integrated AI into data analysis systems, whether as a Large Language Model or as computing support (Adisa Oluyemi). The landscape of cyberwarfare has molded into AI-enhanced attacks and scams being defended by AI-enhanced security measures (Fortinet). The entirety of the Ukraine-Russian war is fought on the basis of AI, rendering the tactics of conventional warfare as obsolete, with the conflict acting as a forefront of autonomous weapon development, such as Ukraine's tactical Operation Spiderweb and Russia's V2U model (Boffey, The Guardian). In fact, an estimated 70% of casualties in the Ukraine war are generated from drones (Ferguson, Euromaidan Press). Needless to say, AI defines the military capabilities of a state's armed forces.

The UNU states that "The swift evolution of AI technology is one of the most significant obstacles to standardization." In a short 10 years, AI has permanently altered how

security, surveillance, and combat are carried out, and regulations simply cannot keep up (Marwala, UNU). Thus, many voice concerns regarding AI in military applications, and call for standardization. How can society make sure AI does not inherit existing biases from the data sets it receives? How can society be sure DSS systems will always recommend the right choice? How can society truly understand the intricacies of the “black box” AI operates in? How can society ensure the security of the mass data sets AI is trained on? Can AI truly identify targets and personnel more reliably than a veteran, and instigate the ending of a life without a human-in-the-loop? Will AWS remove humanity from wars, making them bloodier? How can society regulate the evolution of AI, a dual-use technology, without disrupting global economies? Who takes accountability if an AWS misidentifies its target?

Previous attempts to address the issue

- *UN Convention on Certain Conventional Weapons (CCW)*
 - Since 2014, it has held Group of Governmental Experts (GGE) meetings on Lethal Autonomous Weapon Systems (LAWS) to clarify how the IHL would apply to AI-driven weapons.
 - No binding outcome, pushed for compliance with IHL, many military powers blocked bans and regulations.
- *UN General Assembly*
 - Held multiple debates on AWS, LAWS, and relevant technology.
 - Some member states (e.g. Brazil, Chile, Austria) pushed for a ban treaty, whereas other states (e.g. UK, Russia, US, Israel) argued that the IHL was sufficient
- *NATO AI Strategy, 2021*
 - Laid out “Principles for Responsible Use” for AI in defense and security, calling for accountability, transparency, and lawfulness.
 - First military alliance to implement.
 - Not legally binding, but sets an ethical framework for NATO member states
- *OECD AI Principles, 2019*
 - Intergovernmental standards, adopted by 46+ countries
 - Pushed for priority of human rights, transparency, and accountability

Organisations & Major Countries Involved

The United States of America

Heavy investor in AI in military tech, strong advocate for further development in AI for armed forces, had Project Maven, JADC2, etc., backed by multiple private sector parties such as Google, Palantir, Microsoft, and Lockheed Martin that invests, partners, and shares technology with the U.S. military.

China

To supplement military modernization, China has encouraged the PLA, state-owned military conglomerates, and other tech companies (e.g., Huawei, Tencent, Baidu) to collaborate to follow their policy of “Military-Civil Fusion”, a strategy to balance civilian and AI research to surpass global competitors. Invested heavily in AI surveillance and decision support, as well as autonomous weapons. Aim to surpass the U.S. in AI technology by 2030 (McFaul, CSET).

Ukraine/Russia

The Ukraine-Russian war acts as a front for innovating autonomous weapons, since a “new drone will be useful for only 2-6 months” due to the invention of countermeasures (Ferguson, Euromaidan Press). Thus, the two states are constantly enhancing the software of numerous loitering munitions, automated ground vehicles, and AI-assisted targeting.

Viable Solutions & Approaches

There are multiple layers of problems concerning the use of AI in military applications, ranging from practical deployment and ethical dilemmas. Simple solutions could involve multilateral agreements on limiting the scope and use of AI in armed forces, such as restraining research into AWS, and perhaps modifying the IHL to encompass this new form of conventional warfare. Organisations could pressure the private sector to establish further frameworks on sharing AI technology, such as encouraging Google to reinstate its policies on AI in military use. Finally, a push for the standardisation of what states identify as ethical or unethical could be key to defining the future of AI in military technology.

There are other methods of approaches towards addressing AI in the military, depending on the intended approach. If individuals identify AI as harmful, disarmament and non-proliferation standards may be set. In contrast, a hands-off approach could also be feasible so long as appropriate regulations are established prior.

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