

ARTIFICIAL INTELLIGENCE IN MILITARY APPLICATIONS

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The introduction of artificial intelligence into our lives, aside from leading to fundamental changes in many areas of daily life such as health, education, commerce, and finance, is also witnessing an unprecedented revolution in military fields that will have major impacts on international peace and security, including defense and offense. This situation indicates that military power can be achieved not just through the size of the army or the abundance of weapons but also by having superiority in artificial intelligence algorithms among states or being closely associated with companies that have advanced in this technology. It also shows that those who possess this technology will control the power balances of the 21st century.

A study conducted by the Research and Markets research company estimates that the military market with artificial intelligence will experience a growth of 23.68 billion dollars during the 2022-2027 period and that the average annual growth rate will be 30.67%.¹ The study mentions the main reasons for the growth in the military market of artificial intelligence as; the increasing integration of artificial intelligence into space-based systems, rising government expenditures due to conflicts, increasing private investments in artificial intelligence-based military technology, the development of autonomous systems, and the increasing demand for military security services. The biggest reason for these demands is the potential of artificial intelligence applications for “dirty and dangerous” jobs that risk human lives, save from hefty military training and logistics costs, and inflict maximum damage with minimal effort.

Especially after the Russia-Ukraine war, despite the increase in military and defense expenditures by the European Union against the Russian risk, it can be observed that people tend to not volunteer for the military and that there is a serious prejudice against the military in public opinion. The point reached by the West’s support to Ukraine has created an environment where investments in artificial intelligence can be practically observed. Indeed, in the context of Israel’s war against Palestine, it is possible to observe that autonomous artificial intelligence systems. They determine their

targets almost on their own, produced targets at a much higher speed than in previous attacks. So much so that Andrew Borne, a senior counter-terrorism official in the former Office of the National Intelligence Director of the USA stated “These events in Ukraine, as well as Gaza, are like laboratories that are sadly doing some of the tragic, kinetic work needed to help us develop better AI policy and ethical considerations on a global level.”² In this context, analyzing the military use of artificial intelligence, examining its advantages and disadvantages, and making future projections and recommendations

¹ [https://www.researchandmarkets.com/reports/5892883/global-artificial-intelligence-ai-in-military?utm_source=GNE&utm_medium=PressRelease&utm_code=x459vc&utm_campaign=1913494+-Global+Artificial+Intelligence+\(AI\)+in+Military%2c+2023-2027+Market+Research+Report&utm_exec=chdo54prd](https://www.researchandmarkets.com/reports/5892883/global-artificial-intelligence-ai-in-military?utm_source=GNE&utm_medium=PressRelease&utm_code=x459vc&utm_campaign=1913494+-Global+Artificial+Intelligence+(AI)+in+Military%2c+2023-2027+Market+Research+Report&utm_exec=chdo54prd)

²Gedeon, J. “Israel under pressure to justify its use of AI in Gaza” POLITICO. Mart 2023. <https://www.politico.com/news/2024/03/03/israel-ai-warfare-gaza-00144491>

in addition to existing legal regulations have become a necessity in today's technological world.

Artificial Intelligence and Armament

Artificial intelligence can provide 'benefit' in many areas in the military field such as war systems, strategic decision-making, data processing and research, war simulation, target recognition, threat monitoring, drone swarms, cybersecurity, transportation, and care and evacuation of the wounded.³ First and foremost, swarm drones create a force capable of responding quickly to changing conditions on the battlefield. These drones, operating in groups, can communicate with others and thus work together in a coordinated manner. This development, as mentioned above, creates a significant revolution by transforming the human role on the battlefield and plays a crucial role in the artificial intelligence investments of many countries, including Türkiye.

Moreover, military forces tend to use artificial intelligence to assist in decision-making processes. This can occur through providing information to humans as the final decision-makers or by completely taking over the decision-making processes (autonomous weapon systems). This change can be particularly important in scenarios where communication is disrupted or actions occur at speeds beyond human cognition. While this

integration of artificial intelligence can increase the capacity of human operators or commanders to directly control military systems, it can also bring challenges such as the complexity of artificial intelligence systems, which can overshadow transparency and hinder the ability to determine whether the system is working as expected or intended.⁴ In this context, using artificial intelligence under close human supervision is crucial for military leaders to improve their strategic decision-making processes.

Following the Russia-Ukraine war, in line with the principle that "war brings change," it can be observed that the relationship between technology companies (especially artificial intelligence companies) and states are becoming increasingly close. Indeed, one of the most important steps in this development has come from NATO. In June 2022, under the leadership of Secretary General Jens Stoltenberg, NATO announced the creation of a 1 billion dollar innovation fund to invest in new ventures and venture capital funds developing technologies such as artificial intelligence, big data processing, and automation. This Innovation Fund will collaborate with NATO's North Atlantic Defense Innovation Accelerator (DIANA) to support the development and adaptation of new technologies for critical security and defense issues.⁵ DIANA will bring together the brightest initiatives of the Allies with defense personnel, scientific researchers,

³ "The Most Useful Military Applications Of Ai In 2024 And Beyond" Sentient Digital Inc. Mart 2023. <https://sdi.ai/blog/the-most-useful-military-applications-of-ai/>

⁴ UN. Office for Disarmament Affairs, Henry L. Stimson Center (Washington, D.C.), Stanley Center for Peace and Security (Muscatine, Iowa), (2019) , "The militarization of artificial intelligence" <https://digitallibrary.un.org/record/3972613?v=pdf>

⁵ NATO. "NATO Launches Innovation Fund." Haziran 2022, www.nato.int/cps/en/natohq/news_197494.htm

and technology companies to work on solving critical defense and security problems. Ventures participating in DIANA's programs will have access to test centers in more than 20 Allied countries. Evaluating these developments in NATO in conjunction with the artificial intelligence law that came from the European Union (EU) in March 2023 would be appropriate. The EU, with this law aimed at regulating artificial intelligence initiatives, may have avoided directly restricting its armies, but the dual-use nature of the technology will undoubtedly affect military innovation in member states. When examining the development of artificial intelligence weapons by NATO members, it can be interpreted that the companies funded by the EU may sell technology directly to NATO without considering their own states' interests, and it can be understood that the USA and the UK would profit the most from this situation. These serious investments from NATO and the developed test centers are expected to have a practical counterpart. In this sense, the Russia-Ukraine war seems to have provided the necessary environment for the integration of developed artificial intelligence tools into the battlefield.

Artificial Intelligence and the West's Support in the Russia-Ukraine War

The war in Ukraine has highlighted how new technologies, particularly artificial intelligence (AI), are shaping the battlefield in real-time, demonstrating the long-term investments military powers worldwide are

making in the research and development of AI and autonomous technologies. Despite being under-resourced compared to Russia, Ukraine hopes to change the balance on the communication front using AI.⁶

In the Ukrainian conflict, AI's most common application is through geospatial intelligence, which enables Ukrainian security units to identify Russian war criminals using AI-powered facial recognition software. Satellite imagery documents war crimes like civilian massacres in Bucha and Mariupol by Russia, debunking Russian officials' repeated denials of these events.⁷ Beyond facial recognition and satellite image analysis, AI is used to determine and analyze the movements and locations of Russian military units using social media content, among other data sources. While such use of AI is considered legitimate for states to protect their people and territories during war, it reinforces the idea that mass surveillance systems will become more common post-war under the guise of 'maintaining security.'

Western military planners, led by the UK and the USA, believe AI technology could give Ukraine an advantage against the Russians using unmanned vehicles. Jens Stoltenberg mentioned that a group of allies aims to deliver 1 million drones to Ukraine, highlighting that NATO allies have provided 99% of all military aid to Ukraine.⁸ The developments in AI within Ukraine, overshadowed by the increased tensions in

⁶ Bendett, S. "Roles and Implications of AI in the Russian-Ukrainian Conflict" Haziran 2023. <https://www.cnas.org/publications/commentary/roles-and-implications-of-ai-in-the-russian-ukrainian-conflict>

⁷Tokariuk, O. "Ukraine's Secret Weapon – Artificial Intelligence" CEPA. Kasim 2023.

<https://cepa.org/article/ukraines-secret-weapon-artificial-intelligence/>

⁸ Ertürk, N.A. "NATO Allies Aim to Deliver 1M Drones to Ukraine, Says Alliance Chief." AA, Subat 2024, www.aa.com.tr/en/russia-ukraine-war/nato-allies-aim-to-deliver-1m-drones-to-ukraine-says-alliance-chief/3138802

the Middle East, particularly the Israel-Palestine conflict, should be interpreted in light of the West's interests. The UK has created significant obstacles to the peace process before the war by pulling Ukraine away from peace negotiations. Considering the US military-industrial complex, there is an effort to maximize gains from the ongoing conflict, making Ukraine a reflection of the great powers' future projections. Allies continue to test new AI technologies and strategies without risking their personnel.

Gospel AI in Israel-Palestine War

In the context of AI armament, the Israel-Palestine conflict serves as a prime example, often referred to as AI's "first war," which has surpassed the death tolls of major conflicts of the 21st century. The Guardian, in collaboration with +972 Magazine, revealed the reality of "Gospel AI," indicating a new dimension in warfare. The IDF stated that Gospel AI provides rapid and automatic intelligence inferences for targeting recommendations, aiming for machine suggestions to match human detections.⁹ While the Israeli army claims AI helped more precisely target militants in its five-month conflict with Hamas, the increase in deaths in Gaza raises questions about the algorithms' effectiveness. Toby Walsh, Chief Scientist at the University of New South Wales Institute for AI,

speculated on whether AI is as effective as claimed or if the IDF does not prioritize minimizing collateral damage.¹⁰ An unnamed Israeli official claimed Gospel AI "inflicts significant damage on the enemy with minimal harm to civilians," yet a former Israeli intelligence officer described Gospel's operation as creating "a mass assassination factory."¹¹

The direct consequence of Israel's use of AI targeting on civilian casualties in Gaza remains unclear. However, the situation underscores concerns about potential errors in AI systems and the loss of transparency. It's crucial to acknowledge that AI reflects the biases, perspectives, and intentions of its creators and developers, raising significant human rights concerns. Especially claims that Israeli officials trained AI to destroy specific targets bring up ethical issues. A report by the Jewish Institute for National Security of America mentioned that while AI targeting has sufficient data, there's a lack of data about individuals analysts do not consider targets, indicating bias in the system's training.¹² This reinforces the fact that AI operates without awareness of human values unless trained, creating a gap in ethical and legal responsibilities. The real culprits are the decision-makers or trainers behind the AI, not the AI itself. Gospel AI illustrates the problems of transparency overshadowing and system malfunctions,

⁹ Davies, H. "The Gospel': how Israel uses AI to select bombing targets in Gaza" The Guardian. Aralık 2023.

<https://www.theguardian.com/world/2023/dec/01/the-gospel-how-israel-uses-ai-to-select-bombing-targets>

¹⁰ "Gaza Civilian Deaths Test Israel's AI Precision Claims." France 24, 3 Mar. 2024, www.france24.com/en/live-news/20240303-gaza-civilian-deaths-test-israel-s-ai-precision-claims

¹¹ Davies, Harry, et al. "The Gospel": How Israel Uses AI to Select Bombing Targets in Gaza." The

Guardian, Aralık 2023, www.theguardian.com/world/2023/dec/01/the-gospel-how-israel-uses-ai-to-select-bombing-targets

¹²JINSA. Gaza Conflict 2021 Assessment: Observations and Lessons JINSA's Gemunder Center Gaza Assessment Policy Project. 2021. <https://jinsa.org/wp-content/uploads/2021/10/Gaza-Assessment.v8-1.pdf>

emphasizing the urgency of ensuring human rights and legal norms compliance in the use of AI technology. Ethical and legal oversight of AI technology is necessary, highlighting the need for significant steps in this area.

International Law and Artificial Intelligence Weapons

The advancement and proliferation of military technologies have always led to significant developments in international law. Just as the use of gunpowder in the Thirty Years' War contributed to the formulation of the 1648 Peace of Westphalia¹³, the impact of artificial intelligence on international law is undeniable. However, the rapid pace of technological change and the absence of universally accepted definitions mean that international law is evolving slowly.

All newly developed weapons must comply with Article 36 of Protocol I to the Geneva Conventions. This article mandates that a state must carefully evaluate whether a new weapon or method of warfare it has developed or intends to develop is in accordance with international law, especially international humanitarian law. This means examining whether any new weapon or method of warfare contravenes principles of humanitarian law, such as the protection of civilians and the prevention of unnecessary suffering.

AI-powered weapons pose several challenges to international law, one of which is the principle of proportionality, a cornerstone of the law of armed conflict. This principle requires that the use of force in war be limited to what is necessary for

self-defense and to repel an attack, without excessive harm. However, the development of AI-powered weapon systems raises new issues regarding the applicability of this principle. In particular, the ability of these systems to distinguish between civilian and military targets and to minimize civilian casualties raises questions about the capacity of AI to fulfill ethical and legal responsibilities within the context of the law of war. Therefore, evaluating whether AI-powered weapons violate the obligation of proportionality required by international law and examining whether such systems can act in accordance with legal principles are both ethically and legally significant.

Moreover, AI weapons create serious accountability challenges. For example, it remains unclear who would be held responsible if a civilian were targeted by an autonomous weapon system. A major concern is that states may refuse to accept responsibility for the actions of autonomous weapons.

International law should prevent military aggression, punish offenders, and guide the conduct of war in accordance with ethical rules. However, the integration of AI into wars blurs these clear lines, as evidenced by the situation in Gaza, showing international law's inadequacy in fulfilling these aims. Strengthening international law in the field of AI and establishing an international organization specifically to regulate the development and deployment of weapons has become a legal and moral priority.

¹³ Dost, S. (2023). Yapay Zekâ ve Uluslararası Hukukun Geleceği. Süleyman Demirel Üniversitesi

Hukuk Fakültesi Dergisi, 13(2), 1271-1313.
<https://doi.org/10.52273/sduhfd..1375673>

Conclusion: Future Projections and Policy Recommendations

The increasing use of AI in military applications is transforming the nature of the modern battlefield and will have profound effects on future military strategies. AI applications developed across a broad spectrum in the defense industry, from intelligence to logistics and battlefield strategies to unmanned vehicles, play a critical role in shaping military capability. This includes the development of various capabilities such as automated target recognition, data analysis, unmanned aerial vehicles, autonomous defense systems, and cyber warfare tools, allowing military operations to surpass human capacity in speed and decision-making processes. However, with the proliferation of AI weapons, issues of control, security, and ethics, such as the risk of autonomous weapons selecting the wrong targets, cybersecurity vulnerabilities, and reduced human oversight, become increasingly important. Overcoming these challenges requires a balanced development of advanced technology and ethical standards.

In this context, comprehensive policy development efforts at national and international levels are crucial to ensure the responsible use of AI and autonomous systems in the military domain. This includes creating international agreements on the use of autonomous weapon systems, establishing standards for AI ethics and safety, strengthening transparency and civilian oversight mechanisms in military AI projects, and respecting human rights during their use.

¹⁴“What Does the Future of Autonomous Warfare Look Like? Four Critical Questions, Answered.” Atlantic Council, 13 May 2022, www.atlanticcouncil.org/content-

Therefore, revising existing agreements like the Geneva Conventions¹⁴, creating new regulations, and strengthening international cooperation are increasingly important as the role of modern technologies expands on the battlefield, keeping international law and ethical standards up to date.

The nature of future conflicts will challenge the limits of current arrangements and necessitate the adoption of new approaches to ensure the responsible use of artificial intelligence and autonomous systems. This is essential not only for sustainably managing technological progress but also for minimizing civilian casualties and respecting human rights. Therefore, the adaptation of the international community to these new realities will be possible through the updating of ethical standards and international law.

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