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Technological Aspect of an Emerging Market

AI in Warfare: Data-Driven Defense Tech

About the Articles

Main question: How is AI changing modern warfare? Argument: AI boosts targeting, intelligence, and autonomy in combat. Conclusion: Militaries must pair AI with oversight and regulation

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Perspective on Writing

From a technological perspective, the increasing use of AI in a military context aligns with the growing importance of data processing. At their heart, defence tech companies that leverage AI are, in essence, data processing companies, and the heart of their product is the data that drives their algorithms.

1. Introduction

Warfare has undergone a profound transformation over the past decade, seeing an influx of technology-driven approaches coming into use. Both state and non-state actors now leverage advanced technologies, particularly artificial intelligence (AI), to gain strategic advantages on and off the battlefield. This shift has far-reaching implications for how wars are fought, how technology is developed, and how both military personnel and civilians are affected. At the same time, the traditional military-industrial complex is evolving. A new wave of players, including tech companies and startups, is entering the defense space, challenging legacy systems and introducing innovative solutions. In this article, we examine the rise of AI, its practical applications in a military context, the emerging products and technological developments because of this, and the companies driving this transformation. Ultimately, we seek to explore a central question: does the proliferation of AI in the military context, and the actors driving it, resemble the traditional defense prime model, or is it instead fundamentally rooted in data, making these emerging defense tech companies essentially data companies at their core, merely weaponizing that data?

2. AI Context Within Warfare

Artificial Intelligence (AI) has seen increased use in recent years in warfare, with a more active role in combat operations being assumed as the years progress. Some of the first known cases of AI use for military application came in the 2010s, with Israel's Iron Dome reportedly incorporating some advanced algorithms of early AI to assist the system in rocket trajectory prediction, providing recommendations for intercept decisions based upon which projectile had a higher probability of impacting populated areas (NPR, 2021). This is followed in 2017 with the launch of Project Maven by the US military, that

seeks to train AI algorithms to analyze surveillance video and pictures and automatically identify what is in the frame on the battlefield (Bloomberg, 2024). From 2020 and onwards, AI started to see uses in active warfare. This was seen during the 2020 war between Armenia and Azerbaijan over the region of Nagorno-Karabakh. Azerbaijan, armed with Bayraktar TB-2 drones and Israeli loitering munitions, leveraged AI targeting software in these platforms to assist in target identification kill chain decision. The use of this technology, particularly the drone weapon platforms, were pivotal in the Azerbaijani success in the conflict. The first acknowledged use of an autonomous AI battlefield kill is attributed to have taken place in 2020 during the Libyan Civil War, with a Turkish-made STM Kargu 2 loitering munition drone attributed as having hit retreating forces of the General Haftar's Libyan National Army (LNA) while being flown on automated targeting modality, meaning that this would be the first acknowledged case of AI identifying a target, and autonomously making the "kill" decision (NPR, 2021). In the years from 2021 to present, the use of AI in warfare has proliferated, with it used widely in the Ukraine conflict for targeting assistance by loitering munitions and drones by both sides. The IDF, in the conflicts against Hamas in Gaza has heavily utilized AI for intelligence purposes, to generate target lists and help with identification of them on the battlefield. "Operation Spiderweb", conducted in June of 2025 by Ukrainian forces to strike deep within Russia at the Strategic Bomber bases, was one of the best examples of AI application in warfare to date. Kamikaze drones that were remotely deployed from trucks were reportedly able to fly along "pre-planned routes" with the assistance of AI, and once they reached their target zone the drones identified and engaged targets. All conducted within a location that was subject to target jamming and limited connectivity (Financial Times, 2025).

Military Uses of AI Milestones

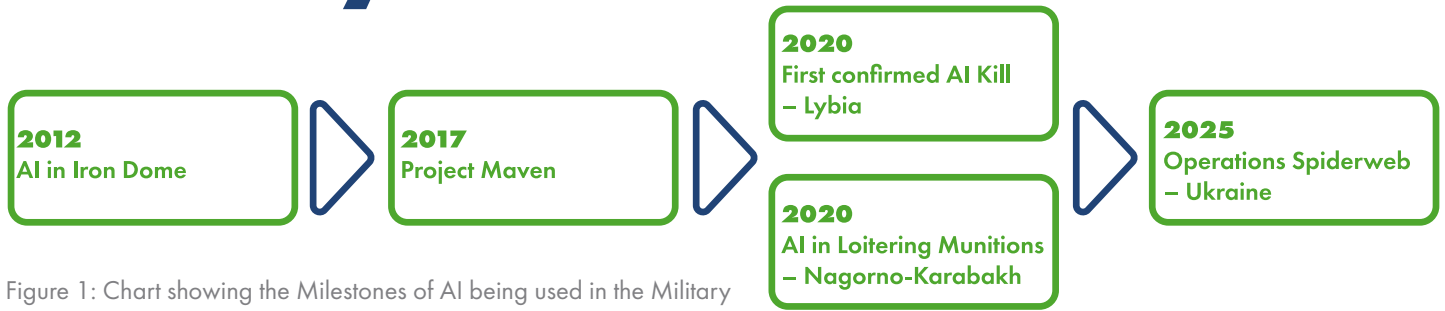


Figure 1: Chart showing the Milestones of AI being used in the Military

The applications of AI within warfare, as seen from the above examples of use cases over the past years, are varied and ever-expanding. Some of the most common applications of AI are for intelligence uses, including Signal Intelligence (SIGINT), Human Intelligence (HUMINT), and Open-Source Intelligence (OSINT). AI has seen heavy use in identification and recognition use cases, assisting the end users identify the targets on the battlefield. This cuts down on the amount of human intervention, making intelligence sorting and analysis quicker and more efficient, leading to a quicker cycle time for the warfighter. Past the battlefield, AI has also advanced in general surveillance, seeing many use cases for facial recognition and tracking as well. Another major application of AI is for target identification and targeting assistance by weapons systems on the battlefield. This has been seen in a multitude of platforms, ranging from UAVs (drones) to more traditional weapons platforms like automatic rifles with optics that may possess target identification as-

sistance. This use of AI is one that has advanced greatly in recent years, and what remains to be seen from this use-case is how much AI progresses from simply assisting in targeting identification and tracking to autonomously making target engagement and kill authority decisions. Another major use of AI that is still largely in an experimentation phase but will inevitably see expanded use is that of autonomous piloting. There was a recent successful test undertaken by Saab and Helsing, where the AI suite of Helsing was utilized to autonomously pilot a Saab Gripen fighter aircraft, with it successfully executing some maneuvers in response to combat-inspired inputs (Saab, 2025). Sixth-generation fighter aircraft that are currently in development such as the Future Combat Air System (FCAS) and the Global Combat Air Program (GCAP) are experimenting with the concept of “loyal wingmen” drone aircraft, that will augment the manned aircraft as part of a broader flying network.



Figure 2: Next Generation Fighter (NGF) Concept, with Manned Aircraft in Control of Unmanned Wingmen

3. Emerging Products / Technological Developments

A multitude of products and technological developments have emerged thanks to AI and autonomous systems. One of the arguably biggest benefactors of AI systems have been Unmanned Aerial Vehicles (UAVs), more commonly known as drones. Although inherently a different system and ecosystem entirely, autonomous systems have begun to be combined with AI software that scale their capabilities. These include enhancements to core functions that are performed by drones such as surveillance mission sets, with AI algorithms being leveraged to assist with automatic target identification. Increasingly, there has been increased testing with, and in some cases even the use of, AI in drones to take their automated identification and targeting software and allow it to make kill-chain decisions as well. This was seen in our example stated above during the Libyan Civil War in 2020. UAVs have not been the only unmanned systems to benefit from the incorporation of AI into their capabilities, however. Unmanned Ground Vehicles (UGVs), Unmanned Surface Vehicles (USVs), and Unmanned Undersea Vehicles (UUVs) have all benefited from the incorporation of AI into their systems.

Companies such as the German Defense Tech startup ARX Robotics have been incorporating AI into ground vehicles to create autonomous solutions that can help to make battlefield operations more efficient. Meanwhile, others such as the Delian Alliance from Greece are seeking to create Area Denial solutions using kamikaze USVs combined with kamikaze UAVs, that would lie dormant in pre-positioned locations, being activated when a threat is detected and then autonomously engaging. Although many of these are still in various stages ranging from research to development, to already deployed, it shows how quickly the proliferation of AI has progressed in military applications, and the amount of use cases that it has made its way into in a relatively short amount of time. Another emerging product that has begun to appear increasingly is AI-enabled loitering munitions. These are munitions (be

they missiles or drones) that are designed to loiter over a target location, and then able to autonomously identify their targets and engage them. These types of munitions are highly effective in combating ground targets, to include engaging enemy air defense units, as was shown in the engagement in the Nagorno-Karabakh conflict in 2020 between Armenia and Azerbaijan. Frontrunners in the development of AI-enabled loitering munitions include Anduril in the US, who manufacture the Barracuda line of AI-enabled, cruise missile-style loitering munitions (Trevithick, 2024). These munitions are claimed to have the capability to identify sources of increased radar activity, allowing them to coordinate autonomously between themselves to eliminate enemy threats more effectively. More recently in May of 2025, Anduril also unveiled Fury, their unmanned fighter jet that will leverage AI to perform autonomous flight and mission sets (Anduril, 2025). Hel-

sing, a German Defense Tech startup, also manufactures the HX-2, an AI-enabled drone that is designed to be manufactured at much more cost-effective rates than conventional munitions. The design of the weapon enables it to loiter

**Autonomous drones:
Unmanned aerial vehicles
that operate and attack
without human control**

in contested environments, and to autonomously identify and engage enemy targets utilizing the AI algorithms it is programmed with to enable identification and engagement. A technological development that has also come about as part of the development of sixth-generation fighter aircraft has been the testing that is being done on “drone wingmen.” The concept behind these is that the manned fighter jet would operate as a sort of central node, and can be supported by a number of autonomous aerial vehicles (AAVs) that would perform as “wingmen.” The pilot will be able to give commands to the AAVs on how to support (e.g., stand off support, ground attack, etc.), but they will be programmed to conduct flight and operate in their mission sets autonomously with the support of AI programming.

4. Companies in Industry Developing AI & New Defense Tech

There have been several companies who have been pioneering AI development in recent years. The main among them have been in the commercial sector, focused around every day, civilian use-cases, with the largest among them being OpenAI & Anthropic, having obtained between them over \$81 bn in venture funding. (Forbes, 2025) Furthermore, these companies have also been dabbling in the defense space, with OpenAI, Anthropic, Google, and xAI being chosen in July 2025 by the US Department of Defense to help them increase their adoption and use of AI in intelligence analysis, logistics, and data gathering functions (Albon, 2025). There have been additional entrants into the field of AI from China as well, with the launch of DeepSeek in 2024 making a large impact, as the model appeared to mimic the capabilities of western language models at a fraction of the cost. Elon Musk's xAI & recent European startups like Mistral AI have also entered the space, leading to a large confluence of AI capabilities. (Forbes, 2025) The growth of these mainstream AI companies has, in recent years however, overshadowed the growth of a multitude of defense technology companies who have been pioneering AI use specifically in the defense space as well. Some of the most well-known of these companies, that have already been mentioned in this paper include Anduril, Palantir, and Helsing. These companies have also managed to harness the power of AI whilst adapting it to a military use, creating potent products that have significantly changed the nature of modern warfare. There have been different uses of AI by each company, in the case of Palantir harnessing big data obtained through various sources and through monitoring to create predictive insights that can be utilized by government and intelligence agencies. The technology has been touted by the company as having stopped multiple terrorist attacks, and as having helped soldiers in Iraq & Afghanistan avoid ambushes. One of the first

**Human oversight:
Essential to ensure AI
weapons follow legal and
ethical rules in combat**

investors into Palantir was In-Q-Tel, the CIA's investment arm, underlining its use in the intelligence world. (Rumage & Rodriguez, 2025) Anduril, founded by the founder of Oculus VR, has created an AI platform that combines the inputs from various sensors, radars, etc., and conducts a rapid analysis to provide identification and threat analysis, feeding the data back to the operator, enabling more rapid decisions. The company has branched out, creating cost-effective cruise missiles and drones that also utilize the AI system it has created and can operate in contested environments. The integration of AI to these platforms allows the systems to interpret data from sensors and make decisions regarding engagement. The company has rapidly grown, landing massive contracts from the US DOD, and recently branching into unmanned undersea vehicles (UUVs) as well (Tashji, 2025). Helsing, like Anduril, is a German startup founded in 2021 that has the Altra Platform, that takes data from multiple drones and sensors, analyzes it, and provides recommendations for battlefield enhancements to operators. The company has recently started building drones, integrating their AI platform into them, allowing the drones to operate in contested environments where there may not be any signal to operations, maintaining the ability to locate, identify, and engage targets (Contrary Research, 2025). The company has also recently These companies, all innovative and pioneers just like their commercial counterparts, have fundamentally altered the nature of military operations and warfare with their application of AI to a military context. The use of AI has enabled governments and militaries to significantly increase the efficiency of data analysis in applications such as intelligence and combat situations. This increase in data analysis facilitates decisions to be made quicker and more efficiently, while also enabling enhanced combat operations and capabilities.

5. Conclusion

As we have seen, AI in the context of warfare and military applications has increased at a very rapid rate, particularly within the last years. The technology, having largely started out being applied to conduct large-scale data analysis and recognize trends, assisting human operators in making decisions, has been incorporated into more platforms and systems as time has progressed. AI is now incorporated into everything from surveillance cameras to missiles, unmanned systems, and even is beginning to be incorporated into aircraft. The companies behind the rise in the use of AI have played a large part in this and will continue to play a large part in the further development and incorporation of AI into military uses. As we have seen through the previous study, however, the core of most AI applications lies in data and data analysis. What makes the use of AI in a military context effective is that it enables the rapid analysis and interpretation of the

data that is being ingested, and enables decisions to be made off this analysis, whether that means making tactical decisions on the battlefield or a decision on the kill chain. Considering this, to come back to our initial question that was posed at the beginning of this section, are the companies and technologies in this space data companies at their core? The answer would be a clear yes, as the core of AI is data, and the companies and actors who have managed to harness the use of AI most effectively in the defense and military space have been the ones who have the capability to best harness the data and make analysis of it, then weaponizing the output of this analysis. This has led to the automation of data processing, leading to smoother and more streamlined military operations. This has led and will continue to lead to a new emerging group of defense contractors, who at their core are data companies.

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