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INTERNATIONAL LEGAL REGULATION OF MILITARY AI AND ITS IMPLICATIONS FOR AFRICAN REGIONAL SECURITY

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Abstract

In 2021, a United Nations Panel of Experts report on Libya raised global alarm over the potential use of an autonomous drone during the 2020 Libyan civil war. The phenomenon immediately generated a flurry of intense debate among scholars, civil societies, and international legal experts, and policymakers. However, much of the discourse has been shaped by the interests and security priorities of wealthy and militarily advanced nations, with insufficient attention paid to the unique vulnerabilities and security concerns of developing countries, especially those in Africa and the broader Global South. The study, therefore, examines the adequacy of international law in the context of the foregoing and explored the special security challenges these emerging military technologies pose to Africa and how the continent should respond. The study adopts a doctrinal legal research methodology, complemented by a comparative legal analysis of relevant international legal instruments. Findings indicate that strategic security risks exist, including the potential proliferation of AI weapons to non-state actors. This study calls for proactive engagement by African political institutions to strengthen regional security and to assertively contribute to the development of future international normative frameworks governing the use of AI in warfare.

Keywords: African Regional Security, Artificial Intelligence, Convention on Conventional Weapons, Lethal Autonomous Weapons Systems, Military AI

1.0 Introduction

The rapid evolution of Artificial Intelligence (AI) in military contexts has ushered in a transformative era in global security dynamics.[2] Central to this shift is the emergence of Lethal Autonomous Weapon Systems (LAWS), weapons capable of selecting and engaging targets without direct human intervention.[3] As military powers integrate AI into their defense strategies, concerns over the ethical, legal, and strategic implications of such technologies have grown, prompting urgent debates on the need for international

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[2] Amani Africa, Artificial Intelligence and Its Impact on Peace, Security and Governance (19 March 2025) <https://amaniafrica-et.org/artificial-intelligence-and-its-impact-on-peace-security-and-governance/> accessed 12 June 2025.
[3]UNODA, *Convention on Certain Conventional Weapons – Group of Governmental Experts on Lethal Autonomous Weapons Systems: Working Paper* (CCW/GGE.1/2024/CRP.1, March 2024) <https://docs-library.unoda.org/Convention_on_Certain_Conventional_Weapons_-Group_of_Governmental_Experts_on_Lethal_Autonomous_Weapons_Systems_%282024%29/CCW_GGE1_2024_CRP1.pdf> accessed 12 June 2025.

regulation.[4] For Africa, the stakes are particularly high. The continent faces complex and multifaceted security challenges that test the capacity of national governments and regional bodies. While the constitutions of African states affirm the fundamental duty of governments to ensure the safety of their citizens,[5]this responsibility is further codified in regional legal instruments. Notably, Article 23 of the African Charter on Human and Peoples' Rights declares: "All peoples shall have the right to national and international peace and security."[6] the primary objective of the Charter is to prevent conflicts and promote peace, stability, and security across the African continent. Regrettably, despite these lofty constitutional and legal commitments, the continent of Africa has continued to grapple with persistent and evolving threats to peace and security. [7] Particularly, in the last two decades, the security remodel of the continent has undergone a dramatic transformation, particularly from the effects of excessive proliferation of small arms and light weapons leading to an explosion of a myriad of security crises such as terrorism, banditry, insurgencies, farmers-herders clashes, among others.[8]In contemporary Africa, security threats have become increasingly diverse, diffuse, and complex one of the most alarming being the emerging risks associated with the development and deployment of Artificial Intelligence (AI)-driven weapons systems.

While emerging military technologies, particularly those driven by artificial intelligence, have the potential to revolutionise modern warfare by enhancing intelligence gathering, decision-making, autonomous operations, and cyber capabilities, their growing adoption by military organisations globally is also reshaping the nature of conflict. States are increasingly leveraging these technologies to boost operational efficiency and gain a strategic advantage over perceived adversaries.[9] However, the expanding role of AI in military contexts raises complex legal, ethical, and security dilemmas for the international community, while simultaneously posing distinct and serious threats to peace and stability across the African continent. Accordingly, scholars have pointed out that these AI weapons have the potential to disrupt the balance of power and escalate conflicts, leading to near-instantaneous wars of unimaginable

[4] Ibid.

[5] Section 14 of the Federal Republic of Nigeria's Constitution which states that "The security and welfare of the people shall be the primary purpose of government,"In*Minister of Safety & Security v Van Duivenboden* (2002) 87 SA 431 (SCA), South Africa's Supreme Court of Appeal confirmed that the State has a positive constitutional duty to act in protecting rights enshrined in the Bill of Rights, including safety and security.

[6]Organisation of African Unity (OAU), African Charter on Human and Peoples' Rights ("Banjul Charter"), 27 June 1981, CAB/LEG/67/3 rev. 5, 21 I.L.M. 58 (1982), <https://www.refworld.org/docid/3ae6b3630.html> accessed 3/11/ 2023.

[7]Otu Akanu. "Urbanization and Insecurity in Africa: Issues, Problems and Prospects."(2022) ESCET 3(2) Journal of Educational Research and Policy Studies, 27-47.

[8]Alaowei Al-Bashir and Lekan Da-Cocodia. "The Role of Small Arms and Light Weapons as a Catalyst for Terrorism in Africa: A Nigerian Perspective." (2022); Ngboawaji Daniel Nte. "The changing patterns of small and light weapons (SALW) proliferation and the challenges of national security in Nigeria."(2011) 1(1) Global Journal of Africa Studies, 5-23.

[9] James Johnson. "Artificial intelligence & future warfare: implications for international security."(2019) Defense & Security Analysis 35(2),147-169.

proportions.[10] Additionally, the introduction of AI weapons in Africa raises concerns about the potential for misuse and abuse. Given the existing challenges in the African context, such as weak governance structures, porous borders, and ongoing conflicts, the introduction of AI weapons could aggravate the already bad situation.[11]

In 2021, a United Nations Panel of Experts report on Libya raised global alarm over the potential use of an autonomous drone during the 2020 Libyan civil war.[12]The phenomenon immediately generated a flurry of intense debate among scholars, civil societies, and international legal experts, and policymakers. However, much of the discourse has been shaped by the interests and security priorities of wealthy and militarily advanced nations, with insufficient attention paid to the unique vulnerabilities and security concerns of developing countries, especially those in Africa and the broader Global South.[13] This study, therefore, examined the international law governance of AI weapons and explored the special security challenges these software-based, data-driven military technologies pose to Africa.

Against this background, the study is structured into five substantiating sections. Section two defines the key phenomena central to the discussion. It clarifies what AI is and explains the basis for the term. Section three contextualises AI technologies and their applications in the Military. This section emphasises the significance of AI in military operations, the contemporary applications of AI in the Military, and specific instances of the adoption and use of AI weapons in Africa. In section four, the study focuses attention on the key international laws relevant to Military AI. It also considered the Guiding Principles adopted at the level of the United Nations to regulate AI weapon systems. Section five identified the threats Military AI pose to African Peace and Security, while section six advocates far-reaching measures to aid Africa in safeguarding the continent against the dangers associated with AI weapons.

2.0 The Defining Characteristics of Military AI

Artificial Intelligence (AI) constitutes the core enabling technology of all categories of AI-powered weapon systems. Establishing a clear understanding of what AI entails is therefore essential, as it lays the groundwork for comprehending the broader and more complex concept of AI-integrated weapons systems.

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[10] Jonathan Stray, 'The Shape of Trust: Designing Explainable AI for Human Control in Military Decision-Making' (2024) arXiv preprint arXiv:2405.01859 <https://arxiv.org/abs/2405.01859> accessed 10 June 2024.
[11] Ibid (note 4)
[12]Zachary Kallenborn, "Was a flying killer robot used in Libya? Quite possibly" (2021) <https://thebulletin.org/2021/05/was-a-flying-killer-robot-used-in-libya-quite-possibly/> 12/9/2023
[13]Liu Zelin, and Michael Moodie. "International Discussions Concerning Lethal Autonomous Weapon Systems." (2019) Recuperado<de https://fas.org/sgp/crs/weapons/IF11294. pdf> .z

2.1 What is Artificial Intelligence?

Despite being widely adopted in various industries and having grown into a multidisciplinary field, the foundation of AI is firmly rooted in the realms of mathematics and computer science.[14] The core ingredients of AI are, therefore closely related to innovations in those fields.[15] In 1956, at a gathering where researchers from various disciplines were discussing the future of AI, John McCarthy, an esteemed computer scientist, first introduced the term artificial intelligence. Within the perspective of its usage by these scholars, AI primarily refers to computers that mimic human cognition, machine that learn and solve problems i.e., systems capable of imitating intelligent human behaviours.[16] For this reason AI has been defined as the science of making machines that think rationally and act rationally.[17]

Cummings is, however of the view that there is no one commonly agreed definition of AI, even among computer scientists and engineers.[18] He, therefore, offered a working definition denoting that AI is the capability of a computer system to perform tasks that normally require human intelligence, such as visual perception, speech recognition, and decision-making.[19] Considering the foregoing, this study is of the view that AI refers to the intelligence simulated in machines that allows them to replicate human-like behaviour. This includes tasks such as rational reasoning, problem-solving, and decision-making. AI is based on algorithms, which are mathematical instructions that perform specific tasks. In essence, AI involves the use of computer systems to perform tasks that typically require human cognition and reasoning.[20]

One captivating branch of AI is machine learning, which refers to a computer system that has the ability to improve its performance without explicitly being programmed. Machine learning does just that by analysing vast amounts of data and creating its own instructions or rules based on patterns and correlations found within that data. It's like teaching a computer to learn from experience instead of being given a fixed set of rules. This enables machine learning algorithms to make predictions, identify patterns, recognise images, recommend products, and so much more. These systems continuously evolve and adapt as they process more information, making them incredibly powerful tools for solving complex problems in today's ever-growing, data-driven world. For this reason, experts suggest that AI weapons will continue to advance,

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[14] Van Assen, Scott J. Lee, and Carlo N. De Cecco. "Artificial intelligence from A to Z: from neural network to legal framework." (2020) European Journal of Radiology 129, 109083.
[15] Ibid.
[16] Apurva Sanaria and, 'The Past, Present and Future of Artificial Intelligence' (2023) Journal of Management Research and Technology https://www.researchgate.net/publication/375779303 DOI: 10.1177/jmrt.231199305 accessed 12 June 2024.
[17] Ibid.
[18] M. L. Cummings, Artificial Intelligence and the Future of Warfare (2017) <https://www.chathamhouse.org/sites/default/files/publications/research/2017-01-26-artificial-intelligence-future-warfare-cummings-final.pdf> accessed 21/8/2023
[19] Ibid.
[20] Jake Frankenfield. "Artificial Intelligence: What it is and how it is used." (2023) <https://www. investopedia. com/terms/a/artificial-intelligence-ai. Asp>

becoming more intelligent, precise, faster, and cost-effective. Additionally, they will possess the ability to acquire new skills, such as forming swarms and collaborating as a team, making them almost invincible in accomplishing their objectives.[21]

2.2 Core Ingredients of AI Weapon Systems

AI weapon systems are also known as autonomous weapons systems and refer to military platforms that use AI to make decisions and carry out lethal actions without direct human intervention.[22] These advanced systems employ various technologies like machine learning, computer vision, and natural language processing to perceive, interpret, and respond to their environment. Thus, at the very core, the intelligence of AI weapons hinges upon efficient sensor systems that enable data collection and interpretation. These systems can include visual, auditory, and even tactile sensors, providing an array of information for the AI to process and understand the battlefield environment. Also, the effectiveness of AI weapons depends on robust decision-making algorithms that allow them to process the information collected by sensors and learn from various scenarios.[23] These algorithms strive to replicate human cognitive processes, ensuring intelligent and adaptive responses in complex operational environments. As stated earlier, an essential component of AI weapons is the implementation of powerful machine learning algorithms.[24] These algorithms allow the system to analyse vast amounts of data, recognise patterns, and generate insights, significantly enhancing the AI's comprehension and decision-making capabilities. These are weapons systems that are AI-driven in their critical functions.[25] That is weapons that process data from on-board sensors and algorithms to 'select[26] and attack[27] targets without human intervention.'[28] Thus, at the very minimum, AI weapons encompass weapon systems capable of altering their internal states to accomplish specific objectives within their dynamic operational setting without requiring direct involvement from humans.

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[21]Kai-FuLee(2021)<https://www.theatlantic.com/technology/archive/2021/09/i-weapons-are-third-revolution-warfare/620013/> accessed 13/10/2023.

[22] Alan Schuller, "At The Crossroads Of Control: The Intersection Of Artificial Intelligence In Autonomous Weapon Systems With International Humanitarian Law."(2017) Harv. Nat'l Sec. J. 8, 379.

[23]Johnson James. 'Artificial Intelligence, Drone Swarming, and Escalation Risks in Future Warfare'. The RUSI Journal 165.2 (2020), 26-36.

[24] Ibid. (note 16).

[25]Ingvild Bode and Hendrik Huelss,Artificial Intelligence, Weapons Systems, and Human Control<https://www.e-ir.info/2021/02/16/artificial-intelligence-weapons-systems-and-human-control/> accessed 25/11/2023.

[26] That is, search for or detect, identify, track, select

[27] That is, use force against, neutralise, damage, or destroy

[28] ICRC, 'Views of the International Committee of the Red Cross (ICRC) on Autonomous Weapon Systems.'(2016) <https://www.icrc.org/en/document/views-icrc-autonomous-weapon-system>

In today's world, such AI-driven autonomy has already become a new reality of warfare. Bode and Huelss[29] have discovered them in various types of weapons, including the British Taranis for aerial combat, the South Korean SGR-A1 for stationary guarding, the Israeli Harop and Harpy for aerial loitering munitions, and the Russian Uran-9 for ground transportation. Thus, the primary uses of AI in the Military are for lethal autonomous weapons systems. This is the catch-all phrase (for instance, lethal autonomous weapons systems) used as a springboard to draw attention to present forms of human-machine relations and the role of AI in weapons systems,[30] as lethal autonomous weapons systems rely on artificial intelligence and other relevant emerging technologies to create their own autonomy and function wholly or partly independently of human involvement.[31]

In addition, lethal autonomous weapon systems combine a confluence of different existing and emerging technologies, such as drones, facial recognition, artificial intelligence, know-how, and big data, to create a sort of extraordinary weapons that not only detect and destroy targets but can make that decision themselves due to the fact that the weapon systems have the capabilities to operate autonomously without the direct intervention of human operators.[32] Unlike other conventional weapons, an autonomous fighting device does not singularly constitute a weapon system. It takes a complex networking of different capabilities. For instance, none of the likes of drones, facial recognition, artificial intelligence, and big data on their own can be deployed as lethal autonomous weapons systems. These capabilities become lethal in nature when their functionalities are integrated as a unified whole for the purpose of being used as weapons.[33] The autonomy of weapon systems is, thus, made possible by enablers that exist in the forms of hardware and software.[34] When these components are combined, they can be utilised to transform even general-purpose devices and systems, such as an automobile or a civilian drone, into weapon systems.[35] Within this perspective, hardware constitutes the physical platforms and delivery systems. Instances are fighter jets, drones, sensors, actuators, and processors and all their components.[36] While software, i.e,

[29]Bode I and Huelss H, 'Autonomous weapons systems and changing norms in international relations' (2018) 44 *Review of International Studies* 393, 393–413.
[30]Ingvild Bode and Hendrik Huelss, Ibid.
[31]Abaimo Stanislav and Maurizio Martellini. 'Artificial Intelligence in Autonomous Weapon Systems.'21st Century Prometheus. Springer, 2020.
[32] Surber Regina. "Artificial intelligence: autonomous technology (AT), lethal autonomous weapons systems and peacetime threats." Peace Foundation and the Zurich Hub for Ethics and Technology p 1 (2018) 21.
[33] Adam Tabriz, 'Artificial Intelligence: A Modern Weapon of Mass Destruction <https://medium.com/illumination/artificial-intelligence-a-modern-weapon-of-mass-destruction-a857b105325> accessed 21/10/2023
[34]iPRAW Working Paper – April 2020, "International Panel on the Regulation of Autonomous Weapons, LAWS and Export Control Regimes: Fit for Purpose?" (2020), <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-77412-6>; <https://www.ssoar.info/ssoar/handle/document/77412> accessed 24/1/2023.
[35] Ibid.
[36] Ibid.

artificial intelligence and self-learning algorithms are the key components that coordinates the functions of the physical systems.[37]

A careful observation of the forgoing reveals that these software components are generally immaterial, intangible, and non-physical in nature. Accordingly, it is difficult to check the proliferation the same way the proliferation of conventional military hardware is checked.[38] These intangible properties, which give AI weapons its distinct and unique status of autonomy, set them apart from other kinds of weapon systems.[39] Thus, AI weapons, by nature, substantially deviate from the conventional idea of weapons. The central reality, therefore, is that AI weapons components first exist in parts and these parts can be easily disguised as something else. Another characteristic of these weapon systems is that, unlike the threats of nuclear, biological, or chemical weapons of mass destruction, AI weapons do not require large-scale activities to pose threats to the human race. The main component of AI weapons required to pose a threat to humanity is knowledge for insatance., the threat of knowledge-enabled mass destruction.[40]

3.0 AI Technologies and their Applications in the Military

3.1 Significance of AI in Military Operations

The significance of AI in military operations cannot be overstated. AI systems possess the ability to process vast amounts of data at unparalleled speeds, enabling them to analyse information and make decisions in real-time. This capability is invaluable on the battlefield, where split-second decisions can mean the difference between victory and defeat. Moreover, AI has the potential to enhance the accuracy and precision of military operations. Whether it iss guiding missiles to their targets with pinpoint accuracy or aiding in the identification of potential threats, AI technology can significantly improve the efficiency and effectiveness of military campaigns. More importantly, AI is being integrated into critical functions of lethal weapons to the end that weapons systems are now able to identify targets and neutralise them without meaningful human control. By this means soldiers have been able to widen the distance between them and their enemies and are able to prevent casualties.[41] While establishing the significance of AI in military operations, it is imperative to reiterate that the rise of AI in military applications also raises important legal, ethical, and security questions.[42] Thus, the question of how these systems should be regulated, what implications AI weapons have for African regional security will be explored later in this study.

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[37] Ibid.
[38] Hagström Martin. Ibid
[39] Ibid.
[40] Surber Regina. "Artificial intelligence: autonomous technology (AT), lethal autonomous weapons systems (LAWS) and peace time threats." (2018) ICT4Peace Foundation and the Zurich Hub for Ethics and Technology (ZHET) p 1, 21.
[41]Fazekas Ferenc. "AI and Military Operations' Planning." Artificial Intelligence and Its Contexts: Security, Business and Governance.(2021) Cham: Springer International Publishing,79-91.
[42]Szabadföldi Istvan. "Artificial intelligence in military application–opportunities and challenges." (2021) *Land Forces Academy Review* 26(2), 157-165.

3.2 **Contemporary Applications of AI in the Military**

Military applications of AI are broad and diverse. In recent years, the development and deployment of these technologies have advanced significantly. As will be demonstrated below, one of the most controversial applications of AI is undoubtedly in the military sphere. AI technologies are being integrated throughout the realm of military activities and in support of varied types of military functions. For instance, in the Military AI has been deployed for purposes of intelligence gathering. AI plays a critical role in augmenting the intelligence-gathering capabilities of the Military. Through advanced machine learning algorithms, AI can quickly process vast amounts of data collected from multiple sources, such as satellites, drones, sensors, and social media platforms. This enables real-time analysis, pattern recognition, and the extraction of actionable intelligence, empowering military forces to make informed decisions and respond swiftly to evolving threats.[43]

Another area where AI is being applied in the Military is cybersecurity. With cyberattacks becoming increasingly complex and frequent, AI-powered defense systems can help detect and respond to threats more quickly and effectively than traditional methods. AI algorithms can analyse network traffic patterns, detect anomalies, and identify potential vulnerabilities in real-time. Furthermore, AI-enabled defensive systems can autonomously counteract counter-attacks, mitigate damage and ensure the integrity of critical military infrastructure. AI technologies have also been found useful in military logistics. AI's integration in military logistics has significantly enhanced efficiency and optimised the allocation of resources. By leveraging predictive analytics and machine learning algorithms, AI can analyse historical data, anticipate demand, and optimise supply chains. This facilitates streamlined resource allocation, better inventory management, and more accurate forecasting, ultimately improving mission readiness and reducing costs.[44]

AI is also being used to enhance decision-making capabilities on the battlefield. By analysing large amounts of data from multiple sources, AI algorithms can help commanders make more informed decisions about troop movements and resource allocation. AI-driven decision support systems can provide commanders with real-time situational awareness by processing data from various sensors, radars, and surveillance systems. This technology assists military leaders in making informed decisions promptly, thereby increasing operational effectiveness and minimising risks. Moreover, AI is helping the military with targeting and precision strikes. AI-enabled systems enhance the accuracy and precision of military targeting. By combining computer vision with machine learning capabilities, AI can identify and classify different targets swiftly, reducing the likelihood of collateral damage and civilian casualties.

[43]Morgan Forrest E., et al. "Military applications of artificial intelligence." Santa Monica: RAND Corporation (2020); Ozdemir Gloria Shkurti. "Artificial Intelligence Application in the Military." SETA, 2019. Masuhr, Niklas. "AI in military enabling applications."(2019) CSS Analyses in Security Policy 251

[44] Ibid.

Additionally, AI algorithms optimise the trajectory, speed, and timing of munitions, enhancing the overall success rate of precision strikes.[45]

In intelligence analysis, AI is, at present, the best. AI technologies, such as natural language processing and sentiment analysis, can aid military intelligence analysts in extracting critical insights from vast amounts of unstructured data. By rapidly analysing open-source intelligence, AI can identify covert activities, predict potential threats, and assist in understanding the intentions of adversaries. This empowers military organisations to respond effectively and proactively. Even in the area of Communication and Language Translation AI has proven to be helpful to the Military. The deployment of AI-powered language translation systems enhances communication capabilities in multilingual military operations. Intelligent translation technologies can translate voice, text, and images in real time, overcoming language barriers and facilitating smoother coordination between multinational forces. This improves operational efficiency, enhances cooperation, and minimises the risk of miscommunication.

However, the primary uses of AI in the Military are for lethal autonomous weapons systems. These systems can operate without human intervention, making them ideal for tasks that are too dangerous or time-sensitive for human soldiers. Autonomous drones, for instance, can be used for reconnaissance missions or targeted strikes without putting pilots at risk.[46] A typical instance is Pegasus X-47B owned by the United States Navy.[47] This thinking drone represents one of the most significant progresses in aerial combat today. It is a jet-powered machine, not like a propeller-driven predator. It goes 2000 miles into the enemy territory. It carries 2000 kilogram of explosives and is run by artificial intelligence. Pegasus starts alone, flies its mission alone, and comes back alone. It lands all by itself on an aircraft carrier despite the fact that aircraft carriers are the most challenging landing aerial for air vehicles because of their short runway and because things keep moving on the sea. However, this AI weapon system can land effectively all by itself. Another amasing reality is that Pegasus is invisible. This is not about stealth and being invisible to the radar. Pegasus is invisible to human eyes. This is because the bottom has a LED layer on it. The top has cameras that film the sky and project a live picture of clouds up above the aircraft, making it difficult to see the aircraft. Pegasus can decide by itself whether or not to kill somebody.[48]

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[45] Ibid.

[46] Berenice Boutin " State responsibility in relation to military applications of artificial intelligence."(2023) Leiden Journal of International Law 36, 133–150. <https://doi.org/10.1017/S0922156522000607>

[47]Bergmann Kym. "The remarkable X-47b–The future of combat aviation?." Asia-Pacific Defence Reporter(2017) 43(1), 14-16; Kumar Shashank. "A brief review on Unmanned Combat Aerial Vehicle (UCAV)'(2020) Available at SSRN 3593220; Aleisa Hassan, et al. 'Conceptual Design of a Nonconstant Swept Flying Wing Unmanned Combat Aerial Vehicle." *Journal of Aircraft*, (2023) 1-17.

[48] Ibid.

3.3 **Applications of Military AI in Africa**

In the case of Africa, the dynamics of armed conflicts and violence are already adjusting to the realities of AI. For instance, law enforcement agents now utilise AI-driven surveillance and smart policing platforms to respond to attacks by violent extremist groups and organised criminal networks.[49] These systems rely deeply on neural networks for image classifications.[50] In Nairobi. An advanced surveillance system is being used.[51] Also, in Johannesburg, law enforcement authorities now rely on automated licence plate readers to track violent organised criminals who are suspected of having ties with the Islamic State.[52] What is more, battlefield tactics and combat operations are now being conducted using AI weapons. In Malawi, where poaching has become a big security problem, Park rangers of Liwande National Park now utilise Earth Ranger Software, which uses AI and predictive analytics and detects patterns in poaching to fight poaching.[53] In Libya, AI weapons programmed to attack targets without requiring data connectivity between the operator and munition were reported to have been deployed to kill humans during the country's civil war.[54] Also in South Africa, the Paramount Group has launched its 'N-RAVEN' UAV system.[55] According to the group, this AI weapon system belongs to a family of autonomous, multi-mission aerial vehicles with next-generation 'swarm' technologies features. The group stated further that the N-RAVEN has the capability to swarm in units of up to twenty units, allowing the drones to share mission objectives, distribute tasks, and adapt collectively to changing battlefield conditions.

4. The International Legal Framework

4.1 Key International Laws Relevant to Military AI

The worrying questions generated by the emergence, adoption, and diffusion of artificial intelligence for military purposes have resulted in the international community making a series of frantic efforts to regulate the developing phenomenon. Before delving into contemporary regulations, it is crucial to

[49] Nathaniel Allen and Marian Okpali, "Artificial intelligence creeps onto the African battlefield" (2022) <https://www.brookings.edu/articles/artificial-intelligence-creeps-on-to-the-african-battlefield/?msg=fail&shared=email> 6/11/2023
[50] Ibid.
[51] Ibid.
[52] Ibid.
[53]Dina Temple-Raston, "Using AI In Malawi To Save Elephants (2019)" <https://www.npr.org/2019/09/17/761682912/using-ai-in-malawi-to-save-elephants> 14/11/2023
[54]Frantzman Seth J. The Drone Wars: Pioneers, Killing Machines, Artificial Intelligence, and the Battle for the Future. Bombardier Books, 2021.;Joe Hernandez, "A Military Drone With A Mind Of Its Own Was Used In Combat, U.N." <Sayshttps://www.npr.org/2021/06/01/ 100219 6245/a-u-n-report-suggests-libya-saw-the-first-battlefield-killing-by-an-autonomous-d><https://www.nytimes.com/2021/06/03 /world/africa/libya-drone.html> 24/11/2023
[55] Paramount launches N-Raven long-range swarming UAV system (2021) <https://www.defenceweb.co.za/aerospace/paramount-launches-n-raven-long-range-swarming-uav-system/>

understand the historical background of international law pertaining to weapons. The Geneva Conventions of 1949 and the Additional Protocols of 1977 serve as the backbone of modern international humanitarian law, [56]under which means and methods of warfare are regulated. These treaties aim to alleviate human suffering during armed conflicts, placing restrictions on the types of weapons used. AI weapons fall within the broader category of autonomous weapons systems. The United Nations Convention on Certain Conventional Weapons (CCW)[57], established in 1980, aims to regulate autonomous weapons systems. Protocol IV, adopted in 1995, bans the use of autonomous weapons that cannot distinguish between civilians and combatants or cause excessive harm. However, this regulation is limited, as it does not explicitly address AI weapons specifically. The lack of explicit regulations for AI weapons poses significant challenges. The autonomy of AI systems also raises concerns about accountability and the ability to ensure compliance with international law.

Thus, the fast-paced development of AI poses challenges for the application of existing legal frameworks. The nature of AI algorithms, their inherent complexity, and their potential to operate autonomously raises questions about accountability and responsibility. Who should be held accountable for AI-enabled actions? How can we ensure compliance with the laws of war when AI systems are making critical decisions? To resolve these issues, the principles guiding the regulation of AI weapons need to address various dimensions. Firstly, they need to uphold the principles of distinction between combatants and civilians, proportionality, and military necessity. Secondly, the responsibility and accountability of both the developers and deploying states must be emphasised. thirdly, proper review processes to assess the legality of AI weapons systems are crucial to ensure compliance with international law. Addressing these challenges requires a collective effort from the international community to update and adapt existing legal frameworks to encompass new and emerging AI weapons. Hence, the appointment of the CCW by the United Nations in 2014 to assess the potential threats posed by autonomous weapons systems powered by AI.[58]

4.2**The Guiding Principles**

In 2014, the United Nations Convention on Certain Conventional Weapons (CCW) was entrusted with the mandate to fashion out an internationally agreed

[56]International Committee of the Red Cross (ICRC), Geneva Convention Relative to the Protection of Civilian Persons in Time of War (Fourth Geneva Convention), 12 August 1949, 75 UNTS 287.

[57] United Nations, Convention on Prohibitions or Restrictions on the Use of Certain Conventional Weapons Which May be Deemed to be Excessively Injurious or to Have Indiscriminate Effects (and Protocols) (As Amended on 21 December 2001), 10 October 1980, 1342 UNTS 137.

[58]Liu Zelin, and Michael Moodie. "International Discussions Concerning Lethal Autonomous Weapon Systems.(2019)" Recuperado de <https://fas. org/sgp /crs/ weapons /IF11294. pdf .>; Altmann, Jürgen. "Autonomous weapon systems–dangers and need for an international prohibition." Advances in Artificial Intelligence: 42nd German Conference on AI, Kassel, Germany, September 23–26, 2019, Proceedings 42. Springer International Publishing.

legal framework to regulate AI weapons and such weapons with autonomy in any part of their critical functions. Regrettably, contrary to expectations for appropriate multilateral solutions on AI weapons, the body has been notoriously slow and encumbered by its consensus-driven model of decision-making.[59] It is now nine years since the group of governmental experts under the CCW commenced deliberations and to date, no legally binding agreement has been struck, rather in 2019, the 126 countries party to the United Nations Convention on Certain Conventional Weapons (CCW) agreed upon 11 guiding principles recommended by a Group of Governmental Experts (GGE) appointed by the United Nations to address concerns about AI weapons, which the group officially refers to as lethal autonomous weapon systems. Chief among those principles was a decision that international humanitarian law would fully apply to the development of AI weapons.[60]

In furtherance to 2019 guiding principles, the GGE[61] under CCW in 2023 concluded its work with the adoption of a report during its second session.[62] The report emphasises the importance of considering future developments in emerging technologies when examining autonomous weapon systems. It reiterates the need for states to adhere to international humanitarian law when using these systems and recommends limitations on target types and operational scope. It also stresses the necessity of providing adequate training to human operators. If a weapon system based on emerging technologies cannot comply with international law, it should not be deployed. However, international legal scholarship on the matter has questioned whether AI weapons could be used in compliance with the rules of IHL. Particularly with the principles of proportionality and distinction. Since AI weapons act as weapons per se as well as combatants, If a robot, for instance, commits a war crime, would it be the commanding officer in charge of the theatre of conflict who would be held responsible? Or would the manufacturer of the weapon be liable? These are questions that nations have radically different views on.

Russia, the UK, and the US are against legally binding regulations on autonomous weapons, preferring a political declaration as the first step.[63] However, many countries from the Global South, particularly in Latin America, Africa, and the Middle East, are pushing back against their objections. African and Middle Eastern nations like Algeria, Namibia, Ghana, Uganda, Zimbabwe, Morocco, Egypt, Jordan, Iraq, and Palestine have called for a complete ban on autonomous weapons, while South Africa supports regulations but not a full

[59] Ibid.
[60] Report of the 2018 Session of the Group of Governmental Experts on Emerging Technologies in the Area of Lethal Autonomous Weapons Systems, CCW/ GGE.1/2018/3, October 23, 2018, https:// www.unog.ch/ 80256ED D006B 8954/(httpAssets) /2009 2911F6495FA7C125830E003F9A5B/$file/CCW_GGE.1_2018_3_final.pdf (accessed May 21, 2020), para. 26(a).
[61] The 2023 Group of Governmental Experts (GGE) on emerging technologies in the area of lethal autonomous weapons systems (LAWS)
[62] Held between 15–19 May 2023
[63]Bode Ingvild, et al. "Prospects for the global governance of autonomous weapons: comparing Chinese, Russian, and US practices."(2023) Ethics and Information Technology 25(1) 5.

ban.[64] The European Parliament and the African Union have also voted for regulations. The lack of trust among nations is hindering progress in the discussions at the GGE (Group of Governmental Experts). Some states are concerned that agreeing to ambitious regulations could put them at a disadvantage if their adversaries develop autonomous weapons without following the rules.[65]

In sum, apart from the fact that the 11 guiding principles are non-binding statements, the principles are mere broad formulations of how states see the development and use of AI weapons-related technologies. The unambiguous implication of the foregoing is that at present AI weapons are operating freely in a legal void. Since states have not been able to shift from abstract talk to putting a new legally binding instrument in place. The GGE guiding principles are non-binding and, therefore, are inefficacious. The international community needs to take the bull by the horns and promulgate a legally binding instrument to regulate these weapons. The Secretary-General of the United Nations in his 2023 New Agenda for Peace reiterated this call and recommended that States should conclude a legally binding instrument to prohibit AI weapons that function without human control or oversight by the year 2026.[66]

5.0 Threats of Military AI to African Peace and Security

5.1 Current Challenges and Threats

African regions have long faced a range of security challenges.[67]One of the primary threats to African peace is ongoing conflict and political instability. Many African countries face internal secessionist movements, insurgencies, ethnic tensions, or power struggles that undermine national stability. These conflicts often arise from historical grievances, political marginalisation, competition over resources, or weak state institutions.[68] The consequences of prolonged conflict are dire, including loss of life, displacement of civilians, and socio-economic setbacks. African peace and security are further threatened by persisting socio-economic challenges. Poverty, inequality, and unemployment plague many African nations, exacerbating existing tensions and fuellingradicalisation and violence. Insufficient access to education, healthcare, and basic services perpetuate cycles of poverty, hindering sustainable development. Addressing these socio-economic disparities is critical to enhancing stability and mitigating the potential for conflict.

Also. the rise of terrorism and extremism poses a significant threat to African peace and security. Various extremist groups, such as Boko Haram, Al-Shabaab,

[64] Are killer robots the future of war?https://www.aljazeera.com/features/2023/5/16/are-killer-robots-the-future-of-war
[65] Ibid.
[66] United Nations, Lethal Autonomous Weapon Systems (LAWS) (2023) https://disarmament.unoda.org/the-convention-on-certain-conventional-weapons/background-on-laws-in-the-ccw/
[67]Metz Steven. "A strategic approach to African security: Challenges and prospects." (2000)African Security Review 9(3),3-18.
[68] Ibid.

and ISIS-affiliated factions, exploit fragile states, weak governance, and socio-economic grievances to gain support and carry out attacks.[69] These groups target vulnerable populations, perpetuate violence, and hinder development efforts. Transnational organised crime networks in Africa, including drug trafficking, human smuggling, and arms trade, further destabilise the continent. These criminal activities fuel corruption, undermine state institutions, and finance conflict. Additionally, the illicit trade of natural resources, such as diamonds, fuels conflicts within African countries and across borders.[70]

Moreover, border disputes and regional tensions represent another significant threat to African peace and security. Ethnic, territorial, and resource conflicts between neighbouring nations can escalate into full-scale war or proxy conflicts. Weak border control mechanisms and unresolved territorial claims aggravate these disputes, impeding regional cooperation and integration. African peace and security also face challenges due to governance deficits and democratic shortcomings. Weak institutions, lack of accountability, and limited access to justice contribute to political instability and the erosion of trust between citizens and their governments. Electoral violence, human rights abuses, and restrictions on civil liberties further strain the social fabric of African societies.[71]

5.2 **Proliferation of Military AI and the Threat to African Regional Security**

As previously noted in this study, certain subsets and applications of military artificial intelligence are already proliferating across various parts of Africa. These include AI-enabled surveillance systems, automated target recognition, and armed drones with limited autonomy, all of which are being integrated into conflict dynamics by both state and non-state actors. Accordingly, across Africa, armed groups like Boko Haram and al-Shabaab have demonstrated a growing capacity for technological adaptation. Boko Haram, for instance, has employed commercial drones for surveillance and operational planning in northeastern Nigeria.[72] Should autonomous or semi-autonomous drones become commercially accessible or diverted from military stockpiles, such groups could exploit them to strike civilians, security forces, or infrastructure with impunity.
A major vulnerability in the region lies in the absence or weakness of robust national and regional arms control mechanisms. Although frameworks like the ECOWAS Convention on Small Arms and Light Weapons[73] and the African

[69]Antwi-Boateng Osman. "The rise of pan-Islamic terrorism in Africa: A global security challenge." Politics & Policy 45.2 (2017), 253-284.
[70] Ibid; Solomon Hussein. "African solutions to Africa's problems? African approaches to peace, security, and stability." Scientia Militaria: South African Journal of Military Studies 43.1 (2015). 45-76. Kagwanja Peter. "Counter-terrorism in the Horn of Africa: New security frontiers, old strategies." African Security Review 15.3 (2006) 72-86.
[71] Ibid.
[72] UN Institute for Disarmament Research, Use of Uncrewed Aerial Systems by Non-State Armed Groups in Africa (UNIDIR 2024) <https://unidir.org/wp-content/uploads/2024/01/UNIDIR_Use_of_Uncrewed_Aerial_Systems_by_Non_State_Armed_Groups_Africa.pdf> accessed 12 March 2025.
[73] ECOWAS Convention on Small Arms and Light Weapons, Their Ammunition and Other Related Materials (adopted 14 June 2006, entered into force 29 September 2009)

Union's Silencing the Guns initiative[74] exist, enforcement remains inconsistent, hampered by limited capacity, porous borders, and systemic corruption. Libya illustrates the danger expressed here; despite a UN Security Council arms embargo, foreign actors continue supplying advanced weaponry, including UAVs, to both state and non-state proxies.[75] Introducing AI-based weapon systems into such fragile perspectives, where oversight is minimal, would only worsen an already volatile proliferation landscape.

Another pressing concern is the growing accessibility of AI-driven military technologies, such as armed drones with limited autonomy, which can escalate violence and further destabilise the already fragile peace across various regions of Africa in unpredictable ways. For instance, during the Tigray conflict in Ethiopia, although the use of lethal autonomous weapons systems was not confirmed, drones supplied by foreign actors, including Turkey and the UAE, played a decisive role in shaping the course of the conflict.[76] Future deployments of fully autonomous systems in similarly unstable circumstances could trigger even more rapid escalations and inflict far more devastating consequences, particularly in areas where governance is weak and international oversight is lacking. As such, military AI has the potential to shift the balance of power in conflict zones, making peacekeeping interventions riskier, less effective, and more vulnerable to failure.

6.0 **Strategic Pathways to AI Arms Control in Africa**

Given the intangible nature of AI-enabled weapon systems, the challenges posed by these emerging technologies are extremely complex and far-reaching. This is primarily because they often operate beyond the scope of traditional arms control frameworks, lack transparency, and evolve rapidly, making it difficult for policymakers to track, regulate, or anticipate their strategic implications. Experts have warned that no single nation, nor even a regional alliance, possesses the capacity to effectively regulate, oversee, or mitigate these risks in isolation.[77] For instance, a commercially available drone equipped with open-source AI-based visual recognition software can be converted into an autonomous loitering munition capable of identifying and striking targets without human oversight. Such systems can be assembled from dual-use components, disguised as civilian tech, and easily transported across borders, rendering unilateral or regionally confined control measures ineffective. Addressing such global threats demands coordinated international cooperation, transparent governance mechanisms, and shared ethical frameworks. In this

[74] AU, Silencing the Guns in Africa (33rd Ordinary Session, Addis Ababa, 9–10 February 2020) (Theme of the Year 'Silencing the Guns').
[75] UN Security Council Panel of Experts on Libya, Letter dated 8 March 2021 from the Panel of Experts on Libya Established Pursuant to Resolution 1973 (2011) (UN Doc S/2021/229, 8 March 2021).
[76] Jonathan Spicer, Giulia Paravicini and Orhan Coskun, 'EXCLUSIVE: U.S. Concerned over Turkey's Drone Sales to Conflict-Hit Ethiopia' Reuters (22 December 2021) <https://www.reuters.com/world/africa/exclusive-us-concerned-over-turkeys-drone-sales-conflict-hit-ethiopia-2021-12-22/> accessed 12 June 2025.
[77] Nations meet at UN for 'killer robot' talks as regulation lags (Reuters, 12 May 2025) https://www.reuters.com/sustainability/society-equity/nations-meet-un-killer-robot-talks-regulation-lags-2025-05-12/ accessed 12 June 2025.

circumstance, Africa must not remain a passive observer but should actively engage in shaping global norms, invest in AI governance capacity, and foster regional partnerships to ensure that its unique security and ethical perspectives are incorporated into the evolving international arms control regime. As such, the following approaches outline potential avenues through which African states and regional bodies can proactively shape a responsible and secure AI governance framework:

6.1 **Establish a Continental AI Arms Control Observatory**

The African Union (AU), in collaboration with regional economic communities (RECs), should establish a dedicated observatory to monitor the development, importation, and potential militarisation of AI technologies across the continent. This body would serve as an early warning system, collecting data on AI weapon proliferation trends, and offering a knowledge-sharing platform to guide national policies and international negotiations.[78]

6.2 **Integrate AI Arms Governance into the AU Peace and Security Architecture**

AI arms governance should be integrated into the African Union's existing Peace and Security Architecture. Embedding regulatory protocols within structures such as the Peace and Security Council (PSC) would enable African states to address the risks posed by military AI through established mechanisms. This approach ensures that AI technologies are evaluated not only as strategic assets but also in terms of their implications for conflict prevention, peacekeeping operations, and the long-term stability of the region, which are core priorities of the African Union's mandate.[79]

6.3 **Invest in Technical Capacity and Regulatory Frameworks**

Many African countries lack the technical expertise and legislative instruments to regulate emerging AI systems. Investing in training programmes for policymakers, defense personnel, and civil society, as well as drafting adaptable legal frameworks, will be essential to ensure informed oversight and compliance with evolving international norms.[80]

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[78] African Union, Continental Artificial Intelligence Strategy (endorsed 18–19 July 2024) 60, which mandates the AU Commission to "work closely with regional AI observatories that will gather and analyse data" on AI's societal, economic, ethical, safety, and security impacts, and to "facilitate coordination between AU Member States and international engagement" on AI development and deployment.

[79] Peace and Security Council of the African Union, Communiqué of the 1214th Meeting on "Artificial Intelligence and its Impact on Peace & Security in Africa" (13 June 2024).

[80] Strengthening technical expertise and legal infrastructure is vital to ensure African countries can proactively govern AI technologies and avoid becoming passive recipients of externally imposed standards. African Union, Continental Artificial Intelligence Strategy (18–19 July 2024) 6–7.

6.4 Promote a Pan-African Ethical Charter on AI and Military Use

African nations should collaboratively develop an ethical charter that outlines continent-specific values and red lines regarding the use of AI in warfare. Such a charter would reflect Africa's historical experience with conflict and colonisation, emphasising principles like human dignity, accountability, and the protection of civilian populations.[81]

6.5 Assert Africa's Voice in Global AI Arms Governance

African states must play a more assertive and coordinated role in international forums such as the UN Convention on Certain Conventional Weapons (CCW), where critical negotiations on lethal autonomous weapons systems (LAWS) are shaping future global norms. This can be achieved by establishing a dedicated continental task force under the African Union to coordinate member states' positions, develop common negotiating frameworks, and provide technical support to African delegations. Additionally, African states should leverage their collective voting power, build strategic alliances with other Global South regions, and advocate for observer status or representation in emerging multilateral AI governance bodies. Through unified action, Africa can influence the direction of global norms, ensuring that international agreements reflect the continent's specific security needs, ethical concerns, and development priorities.

7.0 Conclusion

This study has examined the complex and urgent implications of military AI proliferation for African regional security. At present, these technologies operate within a legal void where binding international rules are either lacking or inadequately enforced. As technologically advanced states accelerate the deployment of AI-driven weaponry, the absence of effective regulatory frameworks leaves developing regions, particularly Africa, dangerously exposed. The unchecked spread of AI-based military systems in Africa, where governance remains fragile, borders porous, and conflict dynamics deeply rooted, poses a serious risk of escalation and destabilisation. Non-state actors may gain access to sophisticated tools of violence, while already overburdened institutions struggle to respond. Without timely and coordinated action, these technologies could undermine existing peace and security mechanisms, empower insurgent forces, and erode state legitimacy. Alarmingly, most African nations and regional bodies remain unprepared to address this emerging threat. The study therefore makes urgent call for robust, oversight mechanisms and proactive engagement in shaping global governance norms. Addressing this challenge requires urgent and coordinated measures, such as the measures outlined in Part six of this study, can Africa safeguard its regional stability and actively shape the global governance of military AI.

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[81] African Union, Continental Artificial Intelligence Strategy (18–19 July 2024) 10–11, advocates for ethical AI governance grounded in "human dignity, human rights and people's well-being," highlighting the need for norms reflecting Africa's values and context.