USE OF AUTONOMOUS WEAPONS AND AI IN DEFENCE: ISSUE OF AUTONOMY AND ACCOUNTABILITY

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ABSTRACT

The integration of Artificial Intelligence (AI) and Autonomous Weapon Systems (AWS) into India's defense sector is covered in this article, with particular focus on how these technologies have evolved over time, their functionality, and the crucial concerns of autonomy and accountability related to them. The study also examines the rapid global adoption and localized use of AI in India over time, from early post-independence R&D investments to more recent initiatives like the creation of the Defence AI Council (DAIC), the creation of Indrajeel drones, and Swarm Drone Technologies, all of which are intended to boost Indian military capabilities in areas like threat detection, surveillance, and logistics support. India's technological advancements, such as the Fully Autonomous Fast Intercept Boats and Sapper Scout UGVs, show that the country is already moving toward giving its armed forces more sophisticated autonomy. However, under International Humanitarian Law (IHL), AWS also raises a number of important legal and ethical concerns, such as the "black box" issue of opaque AI decision-making, challenges in assigning blame when civilians are harmed by conflict (such as the conflicts in Gaza and Ukraine), and transgressions of the principles of distinction and proportionality. Examples from real-world combat show ongoing problems with these technologies' biases and targeting errors, as well as a lack of accountability that calls into question government liability and command duty. The article advocates reforms such as mandatory human intervention, a global AWS registry, programmer accountability, and a binding international treaty to ensure meaningful human control and IHL compliance, preventing an unregulated arms race.

Keywords: Autonomous Weapons Systems, AI in Defence, Accountability, International Humanitarian Law, Indian defence technology, black box problem, IHL principles, Lethal and Autonomous Weapons (LAWS), ethical concerns.

INTRODUCTION

There has been a remarkable growth in the adoption of AI in the recent years in all the sectors of the society. AI and machine learning have gained the attention of scholars and researchers all around the world which in turn has left them exploring new research topics regarding the evolution of machines in different sectors for decision making, automation and data analysis. The entry of generative AI, like ChatGPT, Gemini, Perplexity, in the play has led to a whole new era in the field of Artificial Intelligence.

According to statistics, the adoption rate of generative AI, which is 39.4% presently, is increasing at a faster pace. According to a survey, the reported use of AI has increased in 2024 in the business sector by 78% as compared to the previous years. As reported by the 2023 global AI vibrancy ranking of usage of AI in different sectors, the United States, China and India are the countries that use most of their Artificial Intelligence in the research and development sector. AI's ability to drive innovation comes from its skill in processing large amounts of data quickly and accurately. It also helps improve decision-making. This is the main reason for its common use in research and development (R&D). The United States is ranked first in the usage of AI in all sectors, followed by China on second, the United Kingdom on third and India on the fourth position. The investment in the AI sector of these countries is $328 billion, $132 billion, $25 billion and $6 billion respectively. According to estimates, the overall AI market is projected to reach $3,680.47 billion by 2034.[1]

AI is emerging as a critical enabler of the next- generation defence capabilities. Its role in this sector is swiftly and quickly expanding in all levels. AI is playing a crucial role in warfare, cyber and strategic sectors of the field. According to the Hon'ble prime minister, Shri Narendra Modi, there is a need to "make artificial intelligence in India and make AI work in India". Keeping this view in mind, recently the Defence AI Council (DAIC) was made to help develop operating frameworks, make changes at the policy level, and provide support for using AI. The application of AI in the defence sector can be divided into various areas like; surveillance and reconnaissance in AI powered drones or for threat detection, autonomous weapons systems like the AI- enabled missiles, autonomous drones, cybersecurity like threat detection, logistics and supply chain management, decision making and various other areas. The Indian Defence industry is making significant progress in transforming the armed forces into one of the best in the world. Using technology based on Artificial Intelligence (AI) will change the Indian

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[1] Precedence Research, *Artificial Intelligence (AI) Market Size, Share and Trends 2025 to 2034* (Sept. 29, 2025), https://www.precedenceresearch.com.

Military. It also positions India securely in the large defence product market. According to the report from the Department of Defence Production, there has been noticeable growth in AI production by Defence Public Sector Undertakings (DPSUs). The production numbers were 16 in 2020, 26 in 2021, and 40 in 2022. There are various other developments also including the creation of the Indrajeel Autonomous Drone Security system which is capable of neutralizing aerial threats altogether,[2] the Defence AI council (DAIC) was created for international integration across defence operations and the Defence AI project Agency (DAIPA) that facilitates AI research and development for military applications.

The creation of autonomous systems is one of the most well-known applications of AI in defence. Applications for these autonomous systems range from autonomous vehicles to surveillance drones, and they can function autonomously without human assistance. Military systems called autonomous weapon systems can recognize, locate, and strike targets independently, without direct human input in the decision-making process. By using technologies like artificial intelligence, sensors, decision algorithms, and control systems, these systems can perform military missions without constant human oversight. According to several studies, there are different levels of autonomy which include; firstly, supervised autonomous weapons or the human on- loop category which can hit any target autonomously, but some human intervention is needed at some point, secondly, there is semi- autonomous weapon or human in- loop system which only attack selected targets approved by a human operator, and lastly, there is fully autonomous weapon or human out of loop system, which doesn't need any form of human intervention.

THE EVOLUTION AND GROWTH OF AUTONOMOUS WEAPON SYSTEM IN INDIA

Building on a lengthy history of developing autonomous weapons, the use of AI in warfare is expanding quickly. Land and naval mines are examples of early autonomous weapons that were among the first to function without any human intervention after being activated, and they have been around for centuries. Since the first large-scale mine deployment during the Russo Japanese War (1904-05), the topic of whether humans stay in or on the loop has been at the centre of contemporary discussions over LAWS. Although neutral merchantmen were also sunk by the weapon, which was incredibly effective at sinking enemy warships, they also broke loose from their moorings and floated down the Chinese coast, causing havoc in fishing and

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[2] Greener Robotics, *Comprehensive, networked drone security that can protect against areas upto 4000 sq.kms*, https://grenerobotics.com.

trade villages.[3] Autonomous targeting with human supervision has been integrated into modern systems such as automated missile defences and sentry guns, mainly to facilitate quick response. Drones also are expected to soon be able to make decisions without any human intervention during warfare due to the rapid advancements in technology and the defence sector spending hugely on drones and systems controlled by Artificial Intelligence. Given that, autonomous systems may only respond with retaliatory violence, this development may make it impossible for a war to be negotiated peacefully. The use of unmanned aerial vehicles (UAVs) by NATO, for example, to locate secret Serbian strategic locations during the 1999 Kosovo war marked the beginning of drone technology, which underwent a significant evolution following the Sept 11 terrorist attacks.[4] The modern warfare is evolving due to the quick development of AI and autonomous weapons, which offers improved capabilities but also raise questions related to the security and ethics based on the issue of human control.

If we highlight the situation in India, after gaining independence, it started a fascinating journey of industrial and technological transformation. Motivated by a sense of self- reliance and economic growth, India began to transform rapidly under the leadership of people like Jawaharlal Nehru. A thirst for technical education and ground- breaking innovation was sparked by the emergence of visionary institutions such as the Indian Institute of Technology (IITs). The first step toward the technological advancements in the defence sector was taken by the first Prime Minister, Pandit Nehru, when he introduced the Science Policy resolution in 1958 which showed his intention to adopt the scientific feature in the defence sector. Then he also gave a good amount of budgetary expenses to the R&D sector of the military. According to the government reports, there was a huge contribution in the defence budget as in the year 1949-50, the budget was Rs. 170 crores (Rs. 1.7 billion), and in the year 1950-51 it was 168 crores (Rs. Billion) approx.[5] Productions are caried out in Ordnance Factories, Defence Public Sector (DPSUs) and Defence Research and Development Organisation (DRDO). The Directorate of Technical Development & Production (DTDP), the Defence Science Organisation (DSO), and the Technical Development Establishments (TDEs) of the Indian Army were brought together to form it. Another development was the entry of the Bharat

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[3] Richard Dunley, Mines: *the Original Autonomous Weapons and the Failure of Early 20th Century Arms Control*, in *Britain and The Mine, 1900–1915: Culture, Strategy and International Law* (2020), https://www.palgrave.com/gp/book/9783319728193.

[4] Kristian Humble, *War, Artificial Intelligence, and the Future of Conflict*, 25 GEO. J. INT'L AFF. 1 (July 12, 2024).

[5] Speech of Shri John Mathai, Minister of Finance Introducing the Budget for the Year 1950–51, Government of India, Ministry of Finance (1950).

Electronics Limited, in the 1956-57, became a huge player in the defence sector as it made a substantial contribution to meeting the Armed Forces' requirements for electronic, radar, radio, and related equipment. During the first few years of independence, the five- years plans were initiated, which served as plans for economic and industrial policies of the country.

Another development in the 20th century was a turning point in the history of use of AI and science in the defence sector as India had its focus fixed particularly on the foundational technologies such as radar development, missile research, early computing and electronics, leading to the future of integration of artificial intelligence in the defence sector. The 1980s saw the entrance of computers to India, which led to a large-scale digital shift. During this era, we saw the emergence of IT companies also, like Tata Consultancy services, Infosys, and Wipro, creating a root to make India an important Global player in the software services and the tech sector. During this time, India also started working on the Light Combat Aircraft, their main aviation project. In 1998, India and the Soviet Union signed a deal to work together on the "Brahmos," a supersonic cruise missile system.[6] The founding of the Centre for Artificial Intelligence and Robotics (CAIR) in the 1980s marked a significant turning point in military AI research. CAIR placed India on the brink of incorporating AI science into military operations by securing AI applications in autonomous vehicles, pattern recognition, surveillance technologies, and decision-support systems. In the initial stage of development, CAIR'S research circulated around AI, robotics, cognition and control systems. The latter part of the 20th century also witnessed the deployment of computerised battlefield management systems and the initial utilisation of Unmanned Aerial Vehicles (UAVs), indicating a move towards automation and AI-based defence. In summary, the post-independence 20th-century growth of AI and science in the Indian defence sector was characterized by foundational institution-building, cautious but consistent exploration of AI applications, and an increasing alignment of defence research priorities with national security imperatives. This 20th-century scientific and technological base has paved the way for the 21st-century acceleration of AI-powered defence modernisation, highlighting India's dedication to strategic independence and the advancement of advanced military technology.

At the start of the 21st century, India took small steps to enhance its unmanned aerial vehicle (UAV) capacities by acquiring advanced platforms such as the Israeli Searcher Mark II and Heron drones. About 25 Searcher Mark II UAVs were initially acquires by the Indian army in

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[6] *India's Defense Paradigm: Evolution and Strategic Shifts in Defense Landscape Since Independence* (Nititantra 2025).

2002. Searcher MK II weights 500 kgs and had a payload of 68 kgs, was added to Indian Navy also, which was de-inducted in 2024.[7] The Indian Army primarily used the UAVs for surveillance and reconnaissance operations along the challenging border area with China and Pakistan, particularly in the Himalayas. About the same period of time, India started receiving 12 Heron drones in 2002, which were very helpful for intelligence, surveillance and reconnaissance (ISR) missions. These drones also helped with search and rescue works after the 2004 Indian ocean Tsunami. In order to improve marine and land-based surveillance, India started pursuing more Heron units by the year 2005 and placed orders for about 50 more Heron drones. The defence research and development organisation (DRDO) developed systems like Nishant and Lakshya, demonstrating the advancements of indigenous UAV technology. Because Nishant could be launched with a rail catapult and recovered by parachute, it was operationally significant and the fact that Nishant was launched without a runway was crucial for operations in the remote and difficult terrain of India.[8]

India has been showing growth in the making and usage of LAWS over the last two decades. Listed below are some of the LAWS used by India and their features:

- Autonomous Robotic systems include systems like the "**Sapper Scout – Mine Detection UGV**" which is being used by the Indian army to carry out mine field breaching, is that of trawl tanks. Its features include mine detection, IED detection long range surveillance, metal detection and minefield marking.[9] The "**AI Capability in Swarm Drones**" are a group of drones operating in conjunction with ground manoeuvre forces. This provides an aerial manoeuvre capability during offensive as well as defensive tasks.[10] There is another robotic system called "**Autonomous Fast Intercept Boat (AFIB)**" which is an AI-based flagship product in the marine segment and first of its kind in India. The vessel is capable of performing its autonomous operations even in dense maritime traffic and in shallow water areas. This equipment is unique as it has a remote-controlled mode and an autonomous USV mode.[11]

- The Lethal and Autonomous Weapons systems (LAWS) include the "**smart- counter measure dispensing system (CMDS)**" and the adaptive intelligent front towing

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[7] *Navy Bids Farewell to Eight Searcher Mk II UAVs*, The Hindu, Dec. 11, 2024.

[8] Lt. General P.C. Katoch, *Nishant Dumped Finally When Will We Privatise?* SP's Aviation.

[9] *Artificial Intelligence in Defence: The New Age of Defence*, Government of India, Department of Defence Production, at 25, https://www.ddpmod.gov.in.

[10] Id. at 26.

[11] Artificial Intelligence in Defence, supra note 9, at 31.

solution for artillery gun. The Smart - Counter Measure Dispensing System (CMDS) uses inputs from several sensors mounted on aircrafts to deliver payloads (flares or chaffs) to defend aeroplanes and choppers against incoming infrared and radar- guided missile threats. SMART-CMDS usually automatically dispenses the right kind and quantity of payloads in the right order to counter active threats when the aircrafts pass over enemy territory that is vulnerable to attacks. Overtime, SMART- CMDS will develop the ability to intelligently disburse payloads while flying over similar threat sites during subsequent sorties.[12] Meanwhile, **"Adaptive Intelligent Front Towing Solution for Artillery Gun"**, synchronises the movement of a driver component and another driver component. Gun can easily navigate a hairpin bend. It gives the gun regulated motion when negotiating turns also a dependable and redundant solution. It's also used for towing arrangements; the overall structural weight has decreased.[13]

LACK OF HUMAN INTERVENTION AND THE ACCOUNTABILITY, LEGAL AND ETHICAL CONCERNS

The biggest concern when it comes to the usage of LAWS and other AI armaments, is the accountability issue i.e. who would be held responsible for the acts of an autonomous weapon which does not have any human intervention, whether the programmer, the developer or the commander? The possibility of a distribution of accountability when LAWS causes harm is one of the most urgent issues. There is typically a distinct chain of command and accountability in combat. Additionally, when AI takes decisions on its own, without any human-in-the-loop control, or in unexpected circumstances, legal systems are ill-prepared to handle the intricacies of assigning responsibility or accountability. This raises a crucial legal question of should human operators be held responsible for AI's "actions," which they might not completely comprehend or control? Or, even if the AI system doesn't have moral intent in the conventional human sense, can it still be held accountable? These issues need for a whole new legal system as well as a better comprehension of how people interact with increasingly complex AI. According to the moral incompatibility theorists, genuine moral responsibility cannot be established when actions are caused. So, they are claiming that human moral responsibility cannot go hand in hand with the determination of actions. Compatibilities, conversely, claim that if humans exert the necessary control over their actions they can still be blamed morally, even if their behaviour has been causally impacted. Control over any action is important,

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[12] Artificial Intelligence in Defence, supra note 9, at 78.
[13] Artificial Intelligence in Defence, supra note 9, at 79.

especially when it comes to the military, as the capacity to exert control over an action directly correlates with moral responsibility, without control over actions humans cannot be blamed morally.

The laws that govern armed conflicts and the effects of war on human civilization are known as International Humanitarian Laws i.e. IHL. It is also known as armed conflict or the rules of war. By establishing strict guidelines and limitations on the states that wage war, IHL shields humanity from severe harm caused by such conflicts. This guarantees that any military conflict may be settled without impairing society's ability to function. IHL is based on the 1949 Geneva convention and its additional protocols, attempts to strike a balance between the necessity of military action and human welfare. Regardless of how sophisticated they are, these regulations are applicable to all kinds of Lethal and Autonomous Weapon systems. Article 36 of Additional protocol I states unequivocally that nations must verify that new weapons adhere to IHL. IHL as a whole is a body of legislation designed to lessen the suffering that armed conflicts inflict on people. Limiting conflict and protecting individuals who do not or no longer participate in hostilities are the main goals of international humanitarian law. It must strike a compromise between this goal and another, which is to safeguard the military's right to pursue the armed conflict. Similar to how mechanization changed warfare in the 20th century, the emergence of AI and AWS is expected to change warfare.[14]

The fundamental tenet of the IHL is the principle of distinction. According to this theory, to control the killings of innocents, combatants must be able to differentiate between military objects and civilians. This idea is compromised by the employment of autonomous weapons systems, which lack human-specific situational and moral judgement. It is possible to train AI to identify target attributes based on visual cues, such as military gear or uniforms. However, when fighters hide among civilians, these visual clues may become inaccurate.[15] Target acquisitions and identification are handled probabilistically by AWS, which raises the possibility of misidentification and unintentional civilian fatalities. Additionally, there are instances where AWS and AI-enabled weapons have in reality killed innocent people in Gaza, despite claims of accuracy on those AWS. One of the first armed conflicts to employ killer robots or the LAWS was the war in Ukraine. According to Hellman, there is evidence that AI technologies are actively utilized in Gaza for target identification, which leads to indiscriminate

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[14] Yatish Ojha, *Artificial Intelligence in Armed Conflict: Perspectives from International Humanitarian Law*, 6 Unity J. 34 (Feb. 2025).

[15] *A Hazard to Human Rights: Autonomous Weapons Systems and Digital Decision-Making*, Human Rights Watch, Apr. 28, 2025, https://www.hrw.org.

strikes, severe civilian casualties, and suspected violations of international norms. After examining these real-world scenarios, it is concluded that while human supervision is necessary, limited autonomous targeting may be possible in isolated, predictable locations. To increase the safe usage of autonomous attack systems, the parties must make sure the dependent monitoring and override capabilities through cutting-edge technologies.[16] Experts point out that minimal accountability and increased civilian damage to any battle will result from AWS's lack of effective human management and oversight. An already inadequate legal framework is more likely to be violated if AWS is unable to recognize dynamic, live, and variable combat scenarios and rigorously adhere to IHL for managing military operations. According to IHL, the harm done to civilians cannot be comparable to the expected military advantage. However, AWS lacks a moral compass to evaluate civilian suffering and only uses quantitative methods to determine value. This might result in situations where AWS launches attacks that a human commander would consider excessive. For instance, these AWS will focus more on completing the mission or the task given to them, rather than focusing on civilian casualties, which goes against the fundamentals of the protections outlined by the IHL. Another major thing is that AWS questions conventional notions of combat accountability.

Situations when military AI became an issue:

There have been many cases when AWS or the AI-enabled systems led to an issue which further raised the questions of critics globally. The topic of state liability for damages to civilians by AI-based lethal autonomous weapon systems (AWS) poses serious challenges to the implementation of International Humanitarian Law (IHL). A key challenge is determining liability when these systems are functioning autonomously, potentially without any involvement from a human or clear intention by a human. This can make it difficult to identify who the legal actor is—the operator who activated the weapon, the commander who ordered it activated, or the programmers and manufacturers who coded the AI algorithm? Some international law concepts such as command responsibility provide an avenue for accountability, particularly when a commander acted despite knowing or having reason to know that unlawful acts might be occurring.[17]

Incidents involving accidental civilian casualties due to incorrect targeting of AI demonstrate difficult legal issues of attribution and accountability in military operations using AI. AI

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[16] Ojha, supra note 14, at 39.
[17] Sharanabasayya S & Prof. Dr. Chandrakanthi L, *Military AI and International Humanitarian Law: Navigating Ethical and Legal Frontiers*, JSS Law College, https://www.jsslawcollege.in.

systems, which include lethal autonomous weapons (LAWS) and AI-enabled targeting assistance, use algorithms and extensive training data to complete target identification and targeting. Inadequate data, bias, or issues with the algorithm can result in targeting errors that can lead to producing harm to civilians and damage to civilian infrastructure. One instance to mention is the concerns regarding the use of AI targeting by the Israeli Defence Forces during the Gaza conflict. Reports indicated the use of AI for target identification, and may have "traded off between speed and discrimination", thus exacerbating the risk of civilian casualties. Human Rights Watch and others noted that the command-and-control systems were using incomplete or flawed data, leading to potential violations of the IHL principle of distinction and precaution.

From a legal perspective, the complexities of the operational decision-making of AI systems may impede efforts to establish better accountability through familiar tort laws to show causation between adverse consequences and specific operational decision-makers or commanders, often called a "**black box**" issue. Compounding this issue, the automation of lethal operational decision-making reduces meaningful human engagement in that effort and complicates questions of moral judgment and compliance with humanitarian obligations. In addition, the uneven effects of bias in AI increases dangers to vulnerable groups, which can potentially lead to discriminatory casualties, ramping-up the legal and ethical dilemmas described above. While IHL obliges states to take all practical distances to reduce civilian harm, the unaccounted decision-making is potentially flawed as well as opaque, thereby creating gaps in current accountability frameworks. That said, the operational performance of autonomous systems in these scenarios draws attention to the urgent need for transparent, and explainable AI technology autonomously systems, rigorous legal framework mechanisms, and increased surveillance in order to uphold norms of IHL. Lastly, these scenarios illustrate that although society is developing faster technologies for military engagement, it does not lessen the burden of human responsibility, but rather creates an ongoing obligation to ensure high standards of legality and ethics in order to safeguard human life in armed conflict contexts.

The "black box" nature of military AI algorithms raises deep ethical and legal issues, particularly whenever such opaque systems function in lethal environments. These algorithms—both on weapons systems if they are wholly autonomous or weapon systems with targeting support—often function with such complexity and lack of transparency that sometimes they obfuscate the reasons for the algorithm's decisions.[18] As a consequence, the

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[18]Diana Popa, *Conflict Contestable Military AI*, The Digital Humanitarian Journal, Oct. 17, 2024, https://tdhj.org.

human actor—including military operators, military commander, or legal investigator—may not know how exactly a targeting or engagement decision, or an error, was made. This complicates accountability in the case of a war crime investigation, where understanding responsibility is crucial for International Humanitarian Law (IHL) determinations. Additionally, the black box issue damages trust among operators, who must rely on AI-generated recommendations without knowing how the recommendation was derived. In a fast-paced combat environment where choices must be made quickly, operators will simply utilize the AI outputs without questioning them, making wrongful engagements more likely. This diminishes the notion of meaningful human control and human judgment, which is vital to ethical and lawful warfare.

From a legal standpoint, we need proof of things like intent, negligence, or command responsibility in war crimes investigations. The complete lack of explainability of AI systems contradicts all evidentiary needs in these cases, as it may not be possible for prosecutors to show liability for unlawful strikes. In addition, if AI recommendations are involved in unlawful strikes, victims may have no way of knowing what transpired and face hurdles to access justice or compensation without AI explanations. Calls to create explainable AI specifically for military purposes, greater algorithmic openness, and thorough legal and ethical scrutiny before to any deployment are some of the measures taken to solve these problems. In order to help assure compliance with international law and ethical standards, there was a global debate that also stressed the significance of strong human oversight, which should be based on AI operability. Lastly, the fundamental issue brought about by military AI algorithms being black boxes is transparency, trust in operations, and legal responsibility; overcoming this issue is essential to safeguarding rights, adhering to IHL, and upholding the rule of law in future conflicts.

While there are few publicly available records of actual legal cases directly examining military AI, several incidents and controversies exist that display the significant issues involved. These include instances where AI correctly or incorrectly identified targets and subsequently caused accidental civilian casualties, raising substantial questions as to whether actions adhere to International Humanitarian Law (IHL), specifically with regard to the principles of distinction and proportionality. The "black box" nature of AI algorithms complicates accountability by degrading transparency and impeding actual war-crimes accountability. Moreover, the presence of bias in AI decision making raises ethical and legal questions on discrimination and unlawful harm, which again complicates adherence to humanitarian norms. The cybersecurity

vulnerabilities and exploitable weaknesses presented by military AI also raise new questions about state responsibility, while other challenges present even starker questions about the integrity of missions. These layered challenges illustrate the urgent need for sensible rules of regulation and robust human oversight of military AIs, as well as more transparent research. Future litigation, policy-based remedies, and multilateral talks will probably lead to the development of jurisprudence as military AI technology evolves quickly.

CONCLUSION AND RECOMMENDATIONS

There are a lot of opportunities and big obstacles associated with integrating artificial intelligence (AI) into international security and military warfare. AI technologies have the power to completely transform military operations by improving decision-making, efficacy, and efficiency in a number of areas. AI applications provide previously unheard-of benefits in contemporary warfare, from autonomous cyber defence systems to predictive maintenance in logistics. Additionally, armed personnel can quickly adapt to and respond to complex and dynamic security threats thanks to AI. Military strategists may examine enormous volumes of data, spot trends, and more accurately predict enemy operations by utilizing machine learning algorithms. This predictive capability strengthens national defence capabilities in a constantly changing security environment by improving strategic planning and operational readiness. But there are also ethical, legal, and strategic issues with the broad use of AI in military settings. The use of AI-driven technologies in contemporary combat raises serious moral, legal, and humanitarian issues that call into question the fundamental tenets of international humanitarian law, especially as seen in Gaza. Regulations must be put in place to guarantee adherence to IHL in light of these legal shortcomings. A legally binding document to regulate the use of AI in warfare has been proposed by the United Nations Group of Governmental Experts (GGE) on Lethal Autonomous Weapons Systems, highlighting the need for human control over crucial targeting decisions. As of right now, problems about accountability and control in relation to AWS are not well addressed by international law. States may get confused about liability if current frameworks are not updated, and even worse, civilians may suffer from unintentional or unjust attacks. An arms race in autonomous technology might potentially be sparked by this ambiguity, with states vying to create these potent weapons without clear regulations or restrictions.

Multiple reforms are required at national and international levels for the safe usage of AWS. Some are recommended below: -

- **Mandate a human intervention-** In order to offer ethical and legal accountability in armed conflict, it is crucial that Autonomous Weapon Systems (AWS) have a human control mechanism. In order to implement this system, humans would need to maintain significant control over how the AWS is run, particularly with regard to the choice to launch an assault or employ deadly force against a certain target or goal. Making sure operators have access to sufficient knowledge about the context, mission objectives, and likely impacts and repercussions of an assault is essential to meaningful human control.

- **Creation of a global AWS and AI-enabled systems' registry-** To increase accountability and transparency in the usage and deployment of AWS worldwide, it is imperative to establish a Global Autonomous Weapon Systems (AWS) Registry. States would be required by a registry to publicly provide comprehensive data about all AWS deployments, including information about targeting errors, system failures, and operational issues and nothing to be kept confidential.

- **Fixation of accountability on the programmers/ creators-** To solve accountability difficulties in military AI, it is required to establish holding manufacturers and programmers accountable for Autonomous Weapon Systems (AWS) infractions. While AWS complicates culpability since autonomous choices are made by computer programming and algorithmic processes, traditional legal approaches concentrate on making commanders and operators accountable for the use of force. According to legal research and international humanitarian law, programmers and manufacturers may be held liable, especially if they intentionally or carelessly designed systems that would inevitably violate the law

- **Need for a binding law-** To ensure ethical use, accountability, and transparency among nations, Autonomous Weapon Systems (AWS) must be governed by binding international law. A legally binding treaty, as opposed to voluntary guidance, imposes responsibilities on governments (or related entities) to adhere to humanitarian principles, rules of engagement, and orders under international humanitarian law (IHL). An international legal framework is necessary to stop the illegal or indiscriminate use of deadly force since AWS technology is developing so quickly that it may alter the character and delivery of lethal devices.

Lastly, an international law that binds states is important to regulate the uncontested

proliferation of AI-driven weapons technology. Artificial intelligence technologies provide states and non-state players with new and unprecedented advantages in a variety of domains, including cyberwarfare, automated retribution systems, and asymmetric wars. The international community must act swiftly in light of these difficulties. States, international organizations, and legal professionals must collaborate immediately to create legally binding standards. To sustain world stability, such standards must assure that systems using AI in warfare adhere to IHL principles and state accountability. Unchecked militarization of AI would undermine legal responsibility in wartime, erode the fundamental tenets of international humanitarian law, create risky precedents for future conflicts, and destabilize global security if strong action is not taken.