



Rise of Autonomous Weapons: Challenges and Opportunities

This editorial is based on "[India, 'killer robots' and the China challenge](#)" which was published in The Indian Express on 15/11/2023. It discusses the implications of the development and deployment of Lethal Autonomous Weapons Systems (LAWS), also known as "killer robots", for India's national security and foreign policy.

For Prelims: [Artificial intelligence](#) Lethal Autonomous Weapons Systems (LAWS), Role of Artificial Intelligence (AI) in LAWS

For Mains: Lethal Autonomous Weapons Systems (LAWS): Benefits, Challenges, Status and Way Forward for India

Similar to other significant technological advancements, [artificial intelligence](#) presents **substantial challenges globally, particularly concerning responsible utilization in both civil and military sectors**. While the discourse surrounding the regulation and promotion of AI in civilian applications has made notable progress in recent years, discussions about its military uses are gaining international momentum. There is a **growing global consensus advocating for stringent limitations on the military utilization of AI**, especially concerning autonomous weapons capable of independent operation. Concurrently, major powers are heavily investing in the rapid development of increased autonomy in weapons systems through AI.

What are Lethal Autonomous Weapons Systems (LAWS)?

- Lethal autonomous weapons systems (LAWS), also known as "killer robots", are a type of **autonomous military system that have the capability to select and engage targets without any human intervention**.
- They may operate in the air, on land, on water, underwater, or in space.
- An autonomous weapon system is **pre-programmed** to kill a specific "target profile."
 - The weapon is then deployed into an environment where it searches for that "target profile" using sensor data, such as [facial recognition](#).
- LAWS are controversial and raise ethical, legal, and humanitarian concerns.



What is the Role of Artificial Intelligence (AI) in LAWS?

- **Autonomy in Weapons Systems:** Autonomous weapons systems **require “autonomy” to perform their functions** in the absence of direction or input from a human actor. Autonomy can be achieved through two Approaches:
 - **Through Pre-defined Tasks:** This involves **programming the system with a set of instructions to perform specific actions** without real-time decision-making based on the current environment.
 - **Through AI:** This involves **using AI tools to derive behavior from data**. The system learns from the data it receives, allowing it to make decisions or adapt its behavior independently.
- **AI as an Enabler:** Artificial intelligence is **not a prerequisite for the functioning of autonomous weapons systems**, but, when incorporated, AI could further enable such systems.
 - In other words, **not all autonomous weapons systems incorporate AI** to execute particular tasks.
- **AI in an Assistance Role:** Artificial intelligence can also be used in an assistance role in systems that are directly operated by a human.
 - For example, a computer vision system operated by a **human could employ artificial intelligence to identify and draw attention to notable objects** in the field of vision, without having the capacity to respond to those objects autonomously in any way.

What are the Benefits of Lethal Autonomous Weapons Systems (LAWS)?

- **Force Multiplier and Battlefield Expansion:**
 - LAWS can **enhance military effectiveness by acting as a force multiplier**. They can potentially carry out tasks autonomously, allowing human forces to focus on strategic planning and decision-making.
 - LAWS may **expand the battlefield by providing additional capabilities and coverage**, enabling a more comprehensive approach to military operations.
- **Resource Allocation Efficiency:**
 - LAWS have the **potential to improve resource allocation efficiency** by reducing the costs associated with training, logistics, and personnel.
 - Automated systems can **operate for extended periods** without the need for rest or extensive training.
- **Reducing Casualties and Human Suffering:**
 - LAWS may contribute to **reducing casualties for one's own forces** by taking on risky tasks or engaging in dangerous situations where human involvement could lead to higher casualties.
- **Improving Information Gathering and Decision-Making:**
 - LAWS equipped with advanced artificial intelligence, sensors, and algorithms can **enhance information gathering, detection, and decision-making capabilities**.

- They can process large amounts of data quickly and potentially provide more accurate and timely information to commanders.

What are the Issues with LAWS?

- **Ethical Issues:** Delegating the decision to use lethal force to algorithms raises significant questions about **who is ultimately responsible and accountable for the use of force by autonomous weapons**, particularly given their tendency towards unpredictability.
- **Legal Issues:** LAWS pose challenges for the **compliance with international humanitarian law and human rights law**, such as the principles of distinction, proportionality, and precaution, as well as the accountability mechanisms for violations.
 - The United Nations Secretary General António Guterres agrees that “machines with the power and discretion to take lives without human involvement are politically unacceptable, morally repugnant and should be prohibited by international law.”
- **Technical Issues:** LAWS are subject to **errors, failures, and vulnerabilities that could compromise their reliability, safety, and security**, such as the lack of robustness, interpretability, and adversarial resilience of artificial intelligence, sensors, and algorithms.
- **Security Issues:** LAWS could increase the risk of armed conflict, escalation, and proliferation, by lowering the threshold for the use of force, expanding the scope and scale of warfare, and enabling new forms of attacks and countermeasures.

What is the United Nations' stand on Autonomous Weapons?

- The UN General Assembly recently voted on a resolution regarding lethal autonomous weapons.
- The resolution received overwhelming support, with **164 countries in favor, five against, and eight abstentions**.
 - The voting pattern among major military powers varied, with the US and its allies supporting the resolution, China abstaining, and India voting against it.
- The UN urged the international community to address the challenges posed by autonomous weapons through this resolution.
- The resolution specifically called for a report from the UN Secretary-General, taking into account the views of governments and civil society groups.

What are the Countries doing in the Field of Autonomous Weapons?

- **United States:** The U.S. is a major player in the development of autonomous weapons. It has **deployed unmanned systems, including naval ships, and plans to expand its fleet** of uncrewed ships in the coming years.
 - The U.S. military branches, such as the Navy, Air Force, and Army, are investing in drone systems and experimenting with combined operations involving both manned and unmanned systems.
 - The Pentagon has **established institutions to integrate AI into defense management**, emphasizing the importance of human control over the use of autonomous weapons.
- **China:** China has prioritized AI in building an "**intelligentized**" People's Liberation Army (PLA). China is deploying AI across various military functions, including inventory management, maintenance, logistics, reconnaissance, surveillance, and combat.
 - China's significant industrial capacity and centralized control over resources allow it to produce autonomous weapons at a fast pace.
 - The U.S. is actively trying to stay ahead of China in AI development, recognizing the importance of maintaining an edge in this technology.
- **India:** India is also navigating the field of autonomous weapons, signaling a pragmatic approach to global issues. Despite a negative vote at the UNGA on autonomous weapons, **India recognizes the importance of AI in national defense plans**, especially given the military imbalance with China. While India has strengths in AI, it acknowledges that it lags behind the U.S. and China in the military application of this technology.

What should India do to Enhance its Capacities on LAWS?

- **Invest in National AI Capabilities for Defence:**
 - Allocate substantial resources to build core AI sciences.
 - Develop a comprehensive range of technological capabilities related to AI.
 - Establish operational military doctrines that effectively integrate AI into Indian defense management and armed forces.
- **Enhance Technological Partnership with the US:**
 - Leverage the blossoming technological partnership with the US, particularly in the field of AI.
 - Collaborate on joint initiatives and projects to advance AI capabilities.
- **Shape International Norms:**
 - Continue the tradition of shaping international norms, especially in the realm of emerging technologies.
 - Work with like-minded countries to develop global governance for responsible military use of AI.
- **Cooperate on Responsible AI Use:**
 - Collaborate with other nations on ensuring responsible military use of AI.
 - Advocate for the inclusion of human control and oversight in the deployment of autonomous weapons.
- **Build Institutions:**
 - Establish institutions dedicated to AI research, development, and implementation in defense.
 - Strengthen existing frameworks for international cooperation on AI-related issues.
- **Engage in Diplomacy:**
 - Actively engage in diplomatic efforts to foster collaboration with other nations on AI governance.
 - Participate in international forums to discuss and set guidelines for the ethical use of AI in defense.

Conclusion

Given the massive military imbalance with China and the kind of challenges India confronts in both the Himalayan and maritime frontiers, AI should necessarily be an important part of India's national defence plans.

Drishti Mains Question:

Evaluate the benefits and challenges associated with Lethal Autonomous Weapons Systems (LAWS). Propose actionable steps that India could take to enhance its capacities on LAWS.

[//www.youtube.com/embed/ITg47Nu3jOg](https://www.youtube.com/embed/ITg47Nu3jOg)

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Q. With the present state of development, Artificial Intelligence can effectively do which of the following? (2020)

1. Bring down electricity consumption in industrial units
2. Create meaningful short stories and songs
3. Disease diagnosis
4. Text-to-Speech Conversion
5. Wireless transmission of electrical energy

Select the correct answer using the code given below:

- (a) 1, 2, 3 and 5 only
(b) 1, 3 and 4 only

- (c) 2, 4 and 5 only
(d) 1, 2, 3, 4 and 5

Ans: (b)

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