

# Ethical Dilemma in Future Warfare - Use of Automated Weapon Systems



ISBN: 978-1-943295-14-2

**Thomas Mathew**  
**Anita Mathew**  
Mumbai University  
(saintlvsnl10@gmail.com)  
(anu6189@gmail.com)

*Automated weapon system using artificial intelligence (AI) will be the norm of future warfare. The data analysis based on AI is incomparable compared to human knowledge. However, human intervention of human is crucial when considering the ethical issues based on machine judgements. The area of concern is to how to humanise warfare. The paper discusses the viewpoint of military personal looking at the moral dilemma of adopting advanced technologies to achieve international objectives. The implications would affect how future global developments develop based on disruptive technology in modern warfare.*

**Keywords:** Ethical Dilemma, Advanced Technologies, Human Knowledge, Future Warfare

## 1. Introduction

Robotics in the military domain is the new paradigm of security and defence, where increased intervention looks at the strategical levels in the future army formation. There are significant issues like artificial intelligence, robot ethics, research & training to prepare military commanders for future wars where robots will be playing a prominent role. (Borges, J. V. 2017) In a continuously changing environment, Governments have global security challenges like catastrophic events, irregular future warfare, and disruptive technologies. Jobs and markets are also high priorities. Defence security needs proper strategic planning that provides the best value solutions to the nation's national security strategy. The strategy involves the analysis tool that identifies the stakeholders in the strategic planning paradigm. (Murphy, R., & Beach, S. 2010) Opponents for banning autonomous weapons need to consider the threat to global peace and security, the principles of humanity and the public conscience (Gubrud, M. 2014).

Killing people in war is the same as individual self-defence. Fighting an unjust war is meaningless and equally liable to some civilians who may be morally responsible for suffering the harms in war (McMahan, J. 2009). Future war consists of increasingly populated technologies like artificial intelligence (AI) that act autonomously. The software controlling is "ethically blind" with decision-making capabilities that devoid of explicit moral reasoning. There is a need for future warfare systems that factor ethical and moral considerations in decision making. Machine design and strategies need to be ethical and sensitive. (Wallach, W., & Allen, C. (2009).

United States military during the War terror has set norms for military clinicians to conduct how to handle prisoners of war that use radioactive metal. There have been no updated Medical codes, nor the procedures for accountability of abuses in medical ethics are clear. The future wars need to articulate a vision for military-civilian dialogue in medical ethical practices (Miles, S. H. 2013).

In unconventional combat, soldiers follow the laws of war. There are problems in protecting civilians from war atrocities. Battlefield-ethics training becomes relevant in the purview of Geneva Conventions. Asymmetric conflicts result in role ambiguities and ethical behaviour that are a dilemma to the modern soldiers due to insurgent tactics. They have a greater responsibility to take difficult & timely independent moral decisions (Leaning, J., & Lappi, M. 2011).

Unethical battlefield conduct have resulted in breakdowns towards non-combatants resulting in grave concerns in war. Evidences from battlefield-ethics training in the US showed combat experiences was the strongest predictor of unethical behaviour. Leader-led battlefield ethics training helps understand and treat non-combatants, thereby reducing battlefield conduct. (Warner et al., 2011).

New reactive behaviours implemented enables us to reach the goals of the robotic team in laboratory simulation, on DARPA's the Unmanned Ground Vehicles integrated with the Autonomous Robot Architecture (AuRA). The results demonstrated autonomous formations that were human-led, however, with restricted communications applications appropriate in different types of environments. (Balch, T., & Arkin, R. C. 1998). It was (Arkin, R. 2009) work at the US Army DARPA, Naval Research, that led to the lethal behaviour of Autonomous Robots that produces an "artificial conscience" in robots can make them better than potentially perform better and more ethically on the battlefield. The author examined why modern soldiers fail to make ethical decisions in war. This study looks at the construction of autonomous robotic system capable of ethically using lethal force. The autonomous robotic system is possible using the opinions of policymakers, public and military personnel in conformity to international law.

Here the philosophy, motivation, architectural design criteria were supplied for various test scenarios in designing an autonomous robotic system that was ethically capable of using lethal force. The Human Interface and Smart Machines look at decision dynamics based on trust and communication between humans and robots, involving the social and psychological interactions with smart machines over some time. Development of decision dynamics models has resulted in significant

consequences to the political future. (Baillieu et al., 2012). Lawyers and scientists expressed the need for guidance on the legal framework development of autonomy of weapon systems (Schuller, A. L. 2017).

The future computers could possess intelligence and capacities exceeding humans in moral respect. Based on Alan Turing's "Turing test", that argued that machines think and fill the role of a person, In an ethical dilemma, computers face a "triage" situation when given a choice to save one of two human lives. Machines can be like a moral being when artificial intelligence replaces one person that preserves the growth of the human being in a one on one basis and the character of the dilemma intact remains. Future AIs will be like persons possessing critical cognitive capacities. However, in an interdependent network with moral responses, like grief, remorse, and sympathy the machines are unable to pass the Turing Triage Test unless the future devices have a body and facial expressions like a human form. (Sparrow, R. 2004). In this aspect, the robot needs to pass the Turing Test-a Moral Turing Test (MTT) that makes the robot responsible for its actions morally. It is impossible to decide who understands the moral situation actually (semantic or only syntactic) (Johansson, L. 2010).

The Future Combat Systems Project (USA) looked at the deployment of a 'robot army' using AI systems in modern warfare. The ethical decision to use AI robots in a war would look at who is responsible when using autonomous weapon system in a war crime atrocity. The possible loci of responsibility can evolve on the people designing or programming such a system, the commander who orders the use, or the system itself. None of these is ultimately satisfactory. Fighting a war that is, under the jus in bellum principle justly will make someone responsible for deaths in a war. Deploy of autonomous weapon systems has been concluded to be as deaths cannot meet the jus in bellum principle Sparrow, R. (2007).

According to some military robots are better ethically in action than human soldiers on the battlefield (Lin, P., et al. 2009), others are unlikely to believe this, thereby requesting such technology to be banned. It is difficult to imagine how algorithms can implement the International Humanitarian Law (IHL). IHL presupposes responsible human agency where the rules of distinction and proportionality require unquantifiable decisions. Second, it's argued humanitarian law presumes an accountable human in many ways (Asaro, P. 2013), (Egeland, K. 2016). Systems like cognitive robots developed in future decades would require human intelligence that requires morality in future operations. Several iterations tested in real-world situations along with moral competence and increasing human knowledge will contribute to the design of ethical robots (Dodig Crnkovic, G., & Çürüklü, B. 2012), (Malle, B. F. 2016). The basis for motivating IHL is on deontological grounds that appeal to the potential victims' fundamental rights (Tamburrini, G. 2016). The moral quality framework of robots' behaviour is essential robots' evaluation and design. From a consequentialist view, developing robots that can decide on life and death is highly immoral, without the base of a moral framework (Hellström, T. 2013), (Johnson, A. M., & Axinn, S. 2013). The crucial honest question is whether the technology redistribution risk is fair. Some killer robots would satisfy these requirements, and public responsibility will involve regulation of killer robots' design and manufacture (Royakkers, L., & Topolski, A. 2014). (Simpson, T. W., & Müller, V. C. 2016) (Crootof, R. 2016). There are arguments to suggest that the programmer in control who can predict behaviour and learns from experience is responsible based on the consequentialist case (Swoboda, T. 2018).

There is a concern when non-moral agents imposes moral consequences on moral agents. The ability to interact with humans is central to treating them morally. So it would seem wrong to subject a person to legal penalties based on machine judgments. It would be even wrong to submit them to life and death decisions based on machine judgements. Humans can show mercy and compassion during war times on prisoners of war, but machines cannot. Hence there should be specific laws and rules and regulations to keep the use of automated weapon system in control.

## 2. Methodology

In this paper, we have discussed with twenty-four military personnel of the level of sub-lieutenant level trained in the ethics of international relations. Half of these military personnel were from Sri Lanka as a discussion in class for three hours. The views of this military personnel and the ethical consequences recorded from the perception of users of this sophisticated robotics. All these military personnel come from a reasonable middle-class background with an average family size of four and from all around the Indian subcontinent. The culture, norms and value reflect the typical Indian culture as ranked in Hofstede classification. Ancient India considered the war based on politics as seen in the consequentialist or realist tradition described in the Kautilya's Arthashastra (Brekke, T. 2016). The moral and religious duty is the basic framework of the soldiers in war, as mentioned in the Ramayan and Mahabharata. The epic Mahabharata is the foundational text for Hindu traditions responsible for dharma (morals and religious duty) showed the relation between disorienting dharma and human suffering (Hudson, E. T. 2013).

The selection process of every entrant into the Indian army installs military skills, including moral ethics, to help guide them in the national interests. The ethical standards require maintenance of the societal trust and nobility of the profession. (Rana, A. 2014). The use of AI in several sectors like health, education, real estate and FMCG has shaped the discussions of its use in the military. There is, therefore, a need to build trust and confidence among the international players like the UK, Germany, France, Israel, Japan, Russia and India. (Gill, A. S. , 2019).

The case study shows the advantages and disadvantages of the automated weapon system and decision making in warfare. There are legal implications for such uses as these do not have sympathy. This system has a large amount of data analysis compared to humans, but there is a need for human intervention when ethics need to be concerned. We discussed the military personnel face when dealing with principals of law and the challenges concerning the ethical dilemma.

In humanitarian law, Article 36 AP-I (Armed Conflicts Protocol-1) determines the study of new weapons, development,

acquisition or adoption and prohibition.

While attacking an enemy, the principles of international humanitarian as below

- **The Principle of Distinction**
- Civilian Object or Civilian cannot be subjected to attack. As per the Protocol II in the Ottawa convention, it is a heinous crime to direct hostilities on civilians who do not take part in such hostilities.
- Direct and Indiscriminate attack

It involves the failure of the military in identifying the specific target. For example, the London bombing during World War II. It also includes weapons that can be indiscriminate, for example, chemical and biological weapons.

- **The Principle of Proportionality**

- It states that the counter-attack should be in proportion to the offence.

The weapon systems used need to avoid damage to civilian objects or civilian injury as compared to the anticipated military advantage.

- Collateral damage estimate methodology

It involves loss of property or people outside the target boundaries of war.

- **The Principle of Precaution It is unlawful in case of excessive damage compared to the overall military advantage. The leadership does the definition of extreme loss.**

It states that specific precautionary measures should be taken to protect your men. The timing of the attack must be such that warnings be issued whenever feasible.

Due consideration in ethical responsibility for the use of autonomous weapons as per international rules and regulation is needed. In the San Frontiers Hospital case during the Syrian conflict where 22 died, including children and doctors during the end of 2015 attracted a ban by international humanitarian law.

### 3. Challenges

The summary of challenges faced in such conflicts is as below.

#### Legal

Who is to blame and punishment for unauthorised harms and improper conduct caused by an autonomous robot (caused by error or intentional). Is it the robot manufacturer, robot controller, designers, procurement officer, the field commander, the country President or the robot itself? Entirely using autonomous weapons like robots violate the Martens clause that looks at the moral standards of humanity. The use of killing machines does not have human empathy and need proper social control. At present Russia opposes such a ban with the US expected to join.

- **Refusing an Order**

If an ethical robot detects children inside the military camp area, would it refuse the request of killing, that is system generated in him or will he go with the order showing no mercy?

- **Consent by soldiers to risks**

Can robots can make mistakes by killing friendly soldiers?

#### War-Related

- **Attack Decisions**

Looks at the number of decisions on attack given to a robot?

- **Lower barriers for war**

Risk-taking using robots in wars along with aggressive foreign policies in a normal situation can decrease the possibility of a just war as a last resort.

- **Imprecision in Rules of Engagement**

Evaluation of the rules of engagement and collateral damage.

#### Technical

- **Discriminating Among Targets**

Need to design a machine in order to distinguish between a combatant and a civilian.

- **First-Generation Problem**

If there are technical glitches, then the ethical stakes in war are high.

- **Unauthorised overrides**

Can the system be hacked into?

- **Competing Ethical Frameworks**

Military robots can be more discriminating if programmed correctly and thereby reduce the unethical behaviour associated with humans. For example, in Iraq and Afghanistan, the military robots had neutralized over 10,000 IED. However, there are failures by robots resulting in friendly fire and robot crashes in the US. Computer-related problems like bugs can result in more program challenges that need ethical compliance. As noted in the US there were massive blackouts in Florida in the '80s cascading a chain reaction on computer systems using robots. Here human intervention is necessary; otherwise, we may not be able to halt the fatal chain of events.

**Human-Robot**

- **Effect On Squad Cohesion**

Can human soldier bonding and cohesion be substituted?

- **Self Defence**

Do they have self-preservation for robots

**Societal**

- **Counter-Tactics in Asymmetric Wars**

Future battles depend on better technologies.

More desperate enemies can resort to acquiring robots for a pyrrhic victory.

- **Proliferation**

The Robotics Arms race is feared to have an enormous cost. Commanding technologies need to be leverage such that it's proliferation can be the moral ground for the army.

- **Space Race**

Space race has impacted the environment that could threaten communication and research satellites affecting the future war in terms of ethics. Depending on robots does not replace our ability to do things efficiently and ethically.

- **Technology Dependency**

Depending on robots does not replace our ability to do things efficiently and ethically.

- **Civil Security and Privacy**

Protection of civilians and property looks at the illegal surveillance that could involve robots using genome sequencing and nanotechnology that needs the consent of the public before being used.

**4. Results and Discussions**

The use of automated weapon system and decision making have particular challenges such as interpersonal relationships, legal implications, technical problems etc. They have advantages too, but their use in the current modern warfare is still a big question to answer. Almost 80% of our military personnel were most concerned with the social issues that a robotic war can bring about. Here the religion and culture were the main drivers for such a finding because all most all the military personnel believed in a superpower. Also, their family upbringing is the central cultural aspect that drove them to this decision,

**5. Conclusions**

In this paper, we have investigated the ethical, decision making and responsibility of use of autonomous weapon systems. We want to conclude that the use of the automated weapon system against other countries should be within the control of humans, if not, then it could turn against us. It can cause unnecessary civilian casualties.

The usage of automated weapon system is required based on the need of the hour, but it needs human supervision. The usage is a means of deterrence. The use of automated weapon system in other fields like medical, innovation and research and development can prove to be best but coming to warfare total dependency on computerised systems will not prove right.

The social challenges are critical, especially religion and culture influences the military personnel in the use of autonomous weapons. Human misery is caused by war, primarily when there is the usage of automatic weapons and technology in war. Structuring military training is crucial to avoid suffering on the battlefield. Since the entire batch was twenty-four, the researchers are regularly training the military personnel batch. They would increase the sample size and incorporate more structured interviews and questionnaire to establish more logical conclusions. The researchers are regularly training the batch size of twenty to thirty military personnel of the Indian Army every half-yearly.

**6. References**

1. Arkin, R. (2009). *Governing Lethal Behavior in Autonomous Robots*. *Governing Lethal Behavior in Autonomous Robots* (pp. 1–259). CRC Press.
2. Asaro, P. (2013). On banning autonomous weapon systems: Human rights, automation, and the dehumanisation of lethal decision-making. *International Review of the Red Cross*, 94(886), 687–709. Einstiegsdrohnen: Zur deutschen Diskussion um bewaffnete .... <https://link.springer.com/article/10.1007/s12399-014-0411-2>
3. Baillieul, J., Leonard, N. E., & Morgansen, K. A. (2012). Interaction dynamics: The interface of humans and smart machines. In *Proceedings of the IEEE* (Vol. 100, pp. 567–570). Interaction dynamics: The interface of humans and smart machines .... <https://collaborate.princeton.edu/en/publications/interaction-dynamics-the-interface-of-humans-and-smart-machines>
4. Balch, T., & Arkin, R. C. (1998). Behavior-based formation control for multirobot teams. *IEEE Transactions on Robotics and Automation*, 14(6), 926–939. Ronald C. Arkin - Wikipedia. [https://en.wikipedia.org/wiki/Ronald\\_C.\\_Arkin](https://en.wikipedia.org/wiki/Ronald_C._Arkin)
5. Borges, J. V. (2017). Robots and the military: A strategic view. In *Intelligent Systems, Control and Automation: Science and Engineering* (Vol. 84, pp. 199–205). Kluwer Academic Publishers. Intelligent Systems, Control and Automation: Science and .... <https://www.springer.com/series/6259>
6. Brekke, T. (2016). The Indian tradition. In *The Ashgate Research Companion to Military Ethics* (pp. 415–426). Taylor and Francis Inc. The Ashgate Research Companion to Military Ethics 1st .... <https://www.vitalsource.com/sa/en-us/products/the-ashgate-research-companion-to-military-ethics-james-turner-johnson-v9781317042600>

7. Crootof, R. (2016). War torts: Accountability for autonomous weapons. *University of Pennsylvania Law Review*, 164(6), 1347–1402.
8. Dodig Crnkovic, G., & Çürüklü, B. (2012). Robots: Ethical by design. *Ethics and Information Technology*, 14(1), 61–71.
9. Egeland, K. (2016). Lethal Autonomous Weapon Systems under International Humanitarian Law. *Nordic Journal of International Law*, 85(2), 89–118. Lethal Autonomous Weapon Systems under International .... [https://brill.com/view/journals/nord/85/2/article-p89\\_1.xml?language=en](https://brill.com/view/journals/nord/85/2/article-p89_1.xml?language=en)
10. Gill, A. S. (2019). Artificial Intelligence and International Security: The Long View. *Ethics and International Affairs*, 33(2), 169–179
11. Gubrud, M. (2014). Stopping killer robots. *Bulletin of the Atomic Scientists*, 70(1), 32–42. Einstiegsdrohnen: Zur deutschen Diskussion um bewaffnete .... <https://link.springer.com/article/10.1007/s12399-014-0411-2>
12. Hellström, T. (2013). On the moral responsibility of military robots. *Ethics and Information Technology*, 15(2), 99–107.
13. Hudson, E. T. (2013). *Disorienting Dharma: Ethics and the Aesthetics of Suffering in the Mahabharata*. *Disorienting Dharma: Ethics and the Aesthetics of Suffering in the Mahabharata* (pp. 1–256). Oxford University Press.
14. Johansson, L. (2010). The functional morality of robots. *International Journal of Technoethics*, 1(4), 65–73.
15. Johnson, A. M., & Axinn, S. (2013). THE MORALITY OF AUTONOMOUS ROBOTS. *Journal of Military Ethics*, 12(2), 129–141.
16. Leaning, J., & Lappi, M. (2011, September 3). Fighting a war, sparing civilians. *The Lancet*.
17. Lin, P., Bekey, G., & Abney, K. (2009). Robots in War: Issues of Risk and Ethics. *Ethics and Robotics*, 49–67.
18. Malle, B. F. (2016). Integrating robot ethics and machine morality: the study and design of moral competence in robots. *Ethics and Information Technology*, 18(4), 243–256.
19. McMahan, J. (2009). *Killing in War*. *Killing in war* (pp. 1–272). Oxford University Press.
20. Miles, S. H. (2013). The new military medical ethics: Legacies of the gulf wars and the war on terror. *Bioethics*, 27(3), 117–123.
21. Murphy, R., & Beach, S. (2010). Using Strategic Planning in Support of Defense Acquisitions. *Information & Security: An International Journal*, 25, 57–77. Using Strategic Planning in Support of Defense Acquisitions. <https://procon.bg/article/using-strategic-planning-support-defense-acquisitions>
22. Rana, A. (2014). Value and ethics: Indian army perspective. *Indian Journal of Health & Wellbeing*, 5(10), 1225–1228.
23. Royakkers, L., & Topolski, A. (2014). Military robotics & relationality: Criteria for ethical decision-making. In *Responsible Innovation I: Innovative Solutions for Global Issues* (pp. 351–367). Springer Netherlands.
24. Schuller, A. L. (2017). At the Crossroads of Control: The Intersection of Artificial Intelligence in Autonomous Weapon Systems with International Humanitarian Law. *Harvard National Security Journal*, 8(2), 379–425.
25. Simpson, T. W., & Müller, V. C. (2016). Just War and Robots' Killings. *Philosophical Quarterly*, 66(263), 302–322.
26. Sparrow, R. (2004). The turing triage test. *Ethics and Information Technology*, 6(4), 203–213.
27. Sparrow, R. (2007). Killer robots. *Journal of Applied Philosophy*, 24(1), 62–77.
28. Swoboda, T. (2018). Autonomous Weapon Systems - An Alleged Responsibility Gap. In *Studies in Applied Philosophy, Epistemology and Rational Ethics* (Vol. 44, pp. 302–313). Springer International Publishing. *Studies in Applied Philosophy, Epistemology and Rational Ethics* .... <https://www.springer.com/series/10087>
29. Tamburrini, G. (2016). On banning autonomous weapons systems: From deontological to wide consequentialist reasons. In *Autonomous Weapons Systems: Law, Ethics, Policy* (pp. 122–142). Cambridge University Press.
30. Wallach, W., & Allen, C. (2009). *Moral Machines: Teaching Robots Right from Wrong*. *Moral Machines: Teaching Robots Right from Wrong* (pp. 1–288). Oxford University Press.
31. Warner, C. H., Appenzeller, G. N., Mobbs, A., Parker, J. R., Warner, C. M., Grieger, T., & Hoge, C. W. (2011). Effectiveness of battlefield-ethics training during combat deployment: A programme assessment. *The Lancet*, 378(9794), 915–924.

## Internet

1. Disorienting Dharma: Ethics and the Aesthetics of .... <https://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780199860760.001.0001/acprof-9780199860760>
2. Einstiegsdrohnen: Zur deutschen Diskussion um bewaffnete .... <https://link.springer.com/article/10.1007/s12399-014-0411-2>
3. Interaction dynamics: The interface of humans and smart .... <https://collaborate.princeton.edu/en/publications/interaction-dynamics-the-interface-of-humans-and-smart-machines>
4. Intelligent Systems, Control and Automation: Science and .... <https://www.springer.com/series/6259>
5. Lethal Autonomous Weapon Systems under International .... [https://brill.com/view/journals/nord/85/2/article-p89\\_1.xml?language=en](https://brill.com/view/journals/nord/85/2/article-p89_1.xml?language=en)
6. Military necessity - Wikipedia. [https://en.wikipedia.org/wiki/Military\\_necessity](https://en.wikipedia.org/wiki/Military_necessity)  
Ronald C. Arkin - Wikipedia. [https://en.wikipedia.org/wiki/Ronald\\_C.\\_Arkin](https://en.wikipedia.org/wiki/Ronald_C._Arkin)
7. *Studies in Applied Philosophy, Epistemology and Rational Ethics* .... <https://www.springer.com/series/10087>
8. The Ashgate Research Companion to Military Ethics 1st .... <https://www.vitalsource.com/sa/en-us/products/the-ashgate-research-companion-to-military-ethics-james-turner-johnson-v9781317042600>
9. Using Strategic Planning in Support of Defense Acquisitions. <http://connections-qj.org/article/using-strategic-planning-support-defense-acquisitions>