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

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*Automated Weapon System using Artificial Intelligence (AI) will be the norm of future warfare. The data analysis based on AI is incomparable to that based on human knowledge. However, intervention of human is crucial when considering the ethical issues based on machine judgements. The area of concern is how to conduct warfare that is more dependent on human analysis rather than data analysis. The paper discusses the viewpoint of military personnel looking at the moral dilemma of adopting advanced technologies to achieve international objectives. The implications would affect how future global developments develop/evolve 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 ware consists of increasingly populated technologies like Artificial Intelligence (AI), that act autonomously. The software controlling is "ethically blind" with decision-making

capabilities that are 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 is 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 has resulted in breakdowns towards non-combatants resulting in grave concerns in war. Evidence from battlefield-ethics training in the US showed that combat experience 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 enable 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) the work at the US Army DARPA, Naval Research, that led to the harmful behaviour of Autonomous Robots, that produced an "artificial conscience" in robots and could make them perform potentially 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 an autonomous robotic system capable of ethically using lethal force. The independent robotic system is possible using the opinions of policymakers, public and military personnesl 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 (Baillieul 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 the two human lives. Machines can be like a moral being when artificial intelligence replaces one person that preserves the growth of human nature in a one-on-one basis, and the character of the dilemma

remains intact . 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 bello/Jus ad bellum principle, justly will make someone responsible for deaths in a war. Deployment of autonomous weapon systems has been concluded to not met this condition under the the jus in bello principle (Sparrow, R. (2007)).

According to some people/researchers in the US, military robots are ethically better 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 that 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 for 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 impose 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.

The neurons in the brain network inspire AI network. AI uses massive data information fed into the system that learns to get the correct output or image based on the hidden layers that are powerful tools for machine learning. Microsoft created such a deep neural network that surpassed human performance in identifying visual objects.

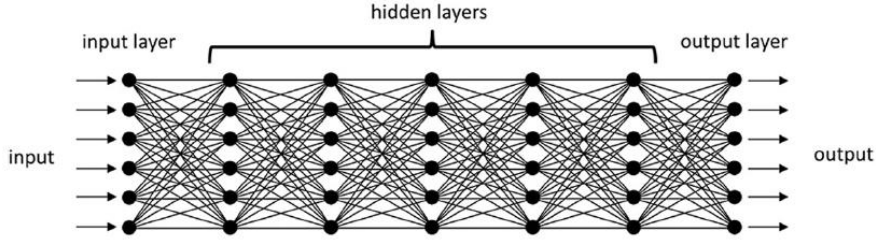


**Figure 1**

The neural networks unravel hidden spoofed images. "Fooling images" resolved by AI classifies images with high confidence distantly away from the 50/50 decision boundary that is far better than the human brain.

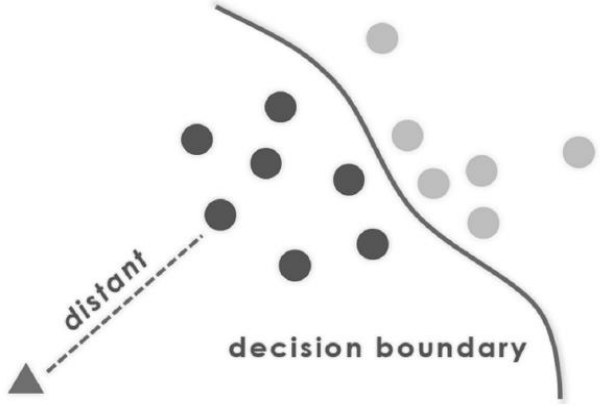


**Figure 2**

AI technology handles complex tasks to decide the 'how' of the process better than human. The identification of the target and data entry restricts human function.

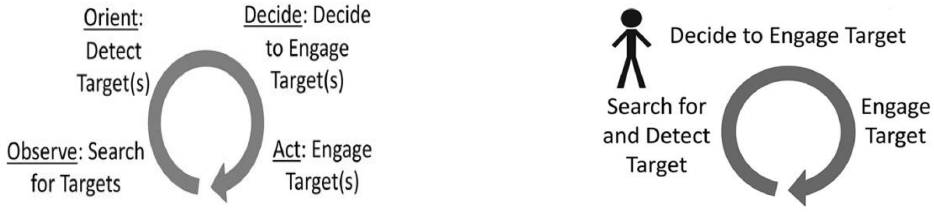


**Figure 3**

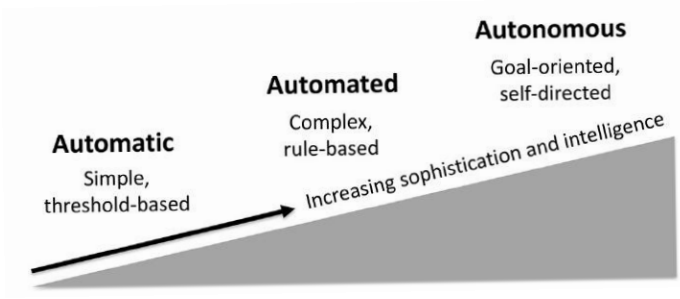


**Figure 4**

Target detection and engagement needs the human in the loop instead of being out of the loop, as seen in autonomous weapons. In war, the speed of engagement and various ethical responses makes it necessary for human in the loop for making human decisions.

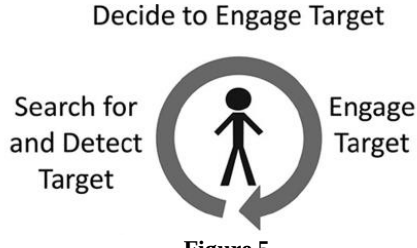


**Figure 5**

## 2. Methodology

In this paper, we present data collected from twenty-four military personnel of the level of sub-lieutenant level trained in the ethics of international relations. Almost half of these military personnel (50%) were from Sri Lanka. There are two distinct clusters in the sample, one with the predominant Hindu background and the other with Buddhist or Christian history. The use of sophisticated robotics would be divided based on their moral values and religious contexts. All these military personnels 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 of the sample interviewed reflect the typical Indian Hindu culture (for 50% of the sample were Hindus and 50% were Buddhist/Christians from the Sri Lankan military). 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) that showed the relation between disorienting dharma and human suffering (Hudson, E. T. 2013).

The selection process of every entrant into the Indian or Sri Lankan Army instills 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 considered. We discussed the issues military personnel face when dealing with principles of law and the challenges concerning the ethical dilemma.

In Humanitarian law, Article 36 AP-1 (Armed Conflicts Protocol-1) determines the study of new weapons, development, acquisition or adoption and prohibition.

While attacking an enemy, the Pprinciples of Iinternational Humanitarian Law, to be considered are as below:

### 2.1 The Principle of Distinction

1. Don't attack Civilian Object or Civilian targets. As per the Protocol II in the Ottowa convention, it is a heinous crime to direct hostilities on civilians who do not take part in such hostilities.
2. 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.

### 2.2 The Principle of Proportionality

1. It states that the counter-attack should be in proportion to the offence. Avoid damage to civilian objects or civilian injury as compared to the anticipated military advantage.
2. Collateral damage estimate methodology. It involves loss of property or people outside the target boundaries of war.

### 2.3 The Principle of Precaution

1. It is unlawful in case of excessive damage compared to the overall military advantage. The leadership does the definition of extreme loss.
2. 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.
3. 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.

### 3.1 Legal

Who is to blame and punish for unauthorized harms and improper conduct caused by an autonomous robot (caused by error or intention)? 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.

#### 3.1.1 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?

#### 3.1.2 Consent by soldiers to risks

Can robots make mistakes by killing friendly soldiers?

### 3.2 War-Related

#### 3.2.1 Attack decisions

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

#### 3.2.2 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 fight as a last resort.

#### 3.2.3 Imprecision in Rules of Engagement

Evaluation of the rules of engagement
The importance of collateral damage.

### 3.3 Technical

#### 3.3.1 Discriminating among targets

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

#### 3.3.2 First-generation problem

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

#### 3.3.3 Unauthorized overrides

Can the system be subject to hacking?

#### 3.3.4 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.

### 3.4 Human-Robot

#### 3.4.1 Effect on squad cohesion

Can human soldier bonding and cohesion be substituted?

#### 3.4.2 Self Defence

Do they have self-preservation for robots

### 3.5 Societal

#### 3.5.1 Counter-tactics in asymmetric wars

Future battles depend on better technologies.

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

#### 3.5.2 Proliferation

The Robotics Arms race is feared to have an enormous cost. Commanding technologies need to be leveraged such that its proliferation can be the moral ground for the Army.

#### 3.5.3 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.

#### 3.5.4 Technology Dependency

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

#### 3.5.5 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 sample size contained two distinct clusters based on religion. 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 decision analysis. Almost all the military personnel irrespective of the religious cluster or nationality believed in a superpower. Also, their family upbringing is the central cultural aspect that drove them to this decision. Our study clearly showed that human values are more critical compared to sophisticated technological advances when conducting warfare in the modern world.

## 5. Conclusions

In this paper, we have investigated the ethics, 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 causalities.

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 the best but coming to warfare, total dependency on computerized systems will not prove right.

The social challenges are critical, especially religion and culture, which influence 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 of twenty-four personnel, 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.

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