Ethical Issues surrounding the technology used for Lethal Autonomous Weapon System

ASSIGNMENT 1
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Introduction

Now with the ever-changing IT industry, many aspects of the world have undergone several advancement and transformation and military is just one of the many that have experienced that. Artificial Intelligence (AI) is a well-liked and highly sought-after field of study during these recent years as the idea of being able to allow machines to understand and grasp human intelligence through analyzing various data and making adequate decisions according to different situations fascinates people (Kaplan & Haenlein, 2019). With the rapid development of AI, lethal autonomous weapon systems (LAWS) which are AI systems developed to control weapons that were tasked to identify, locate and eliminate their assigned targets without any form of human interference were developed. LAWS could make critical decisions by themselves and determine if their following actions is appropriate for their situation (Boisboissel, G. d., 2015).

The idea of automated machinery was first introduced by Leonardo da Vinci in 1495 where a machine intelligent enough to follow certain movements similar to human's actions is designed. In 1898, Nikola Tesla developed a boat that is wirelessly controlled and had the idea to develop radio-guided torpedoes but was unsuccessful due to unsupportive US government and military. In 1914, automated war happened whereby machineries like the Kettering bug ("National Museum of the United States Air Force", 2015) and V-1 flying bomb ("V-1 flying bomb", n.d.) was brought to the front in World War I and II (McCormick, 2014). Autonomous weapons were used as early as World War I and now, there are various records on the usage of LAWS all around the world. One of the many examples is the high amount of drone strikes happening in Libya since 2012 which took away hundreds of civilians' lives ("The U.S. Counterterrorism War and Libya", n.d.).

The fact that LAWS are more commonly seen and used in the western countries like the United States (US), LAWS were already slowly being implemented in real military applications (Russell, S., et al, 2021). Some people were uneased and some too has firmly stated their position on this matter like the International Committee of the Red Cross (ICRC) who advocated LAWS to be regulated by laws ("Lethal AWS", n.d.).

The main topic of this research report is surveillance where the ethical issue of whether LAWS should be further developed using AI and if it is an ethical decision to do so is investigated in this report. The fact that the decisions made by LAWS could implicate the life and death of every individual, programs written to the AI of these LAWS must follow the International Humanitarian Laws (IHL) and Laws of War (LoW) (Boisboissel, G. d., 2015) to ensure no innocent lives were taken unjustified. Computing professionals are bound to our code of conduct and are obliged to avoid any potential harm or negative impact brought upon to the public due to our work. To summarize, the purpose of this report is to research the ethical issues surrounding the technology used for LAWS. The report will first start with and introduction and is followed up with literature review and problem statement. This report will also end with a conclusion and discussion section and reference where additional links is provided for further reading regarding this topic.

Literature review

LAWS is a completely new technology invented to assist the military on decreasing death rate of military soldiers as well as enabling attacks of high accuracy which significantly minimizing the concern on the impact of collateral damage (Nasu, H., Korpela, C., et al, 2022). The military has already implemented AI in their systems and programs. AEDIS naval weapons system and Harpy are one of the few defensive and offensive weapons that are non-lethal military applications that targets their enemy's aerial warfare (Bartneck, C. et al, 2020).

AI comprised of many techniques, including machine learning and deep learning. LAWS falls under the deep learning category instead of machine learning as machine learning require human inteference for machines to be able to learn. Deep learning also known as neural network is a subset of machine learning with multiply processing layers, allowing it to learn from huge data sets without any sort of human interference (IBM Cloud Education, 2020). Most LAWS use intelligent document processing (IDP) and speech recognition technique with deep learning as their computing technique.

IDP, also known as Convolutional Neural networks (CNN) combine several AI technologies to adapt, classify and describe images in short sentences containing complicated information (Jnagal, A.,2018) which assisted LAWS on searching and locating their target from just an image of their target. STM CEO Murat Ikinci informed that their LAWS, Kargu-2, is a military drone equipped with facial recognition to search and locate targets (Hambling, D., 2020).

Some LAWS could locate and recognize their target with just their target's speech through automatic speech recognition (ASR) with the assistance of deep learning. ASR is the process of recognizing human speech and translating said speech to text. CNN was used on ASR and have been executed with significant result (Papastratis, I., 2021). Voice audio inputted into LAWS will be processed, extracted, classified and will undergo language model so the audio quality will improve through filtration until the audio is acceptable to be extracted (Papastratis, I., 2021). Extracted information will go through LAWS's database and language model to find the target's information and hence, locate the target.

The concept that LAWS is an invention instead of an idea is because LAWS is actually an idea that is already developed or undergoing development. Idea is conceptual in nature and generally does not impact the society in neither a negative nor a positive way until it is developed and is labelled an invention. Invention like LAWS could impact the society negatively and positively, depending on whoever point of view we are looking at LAWS. The fact that LAWS relied entirely on their algorithms and used deep learning to independently identify, locate and engage their targets without any human intervention puts great risks to humanity as there is many risks like one example would be unpredictable behaviors (Boulanin, V., 2020) of these LAWS. If the algorithms of LAWS malfunctioned and recognized the wrong individual, said individual will be killed just because of having similar facial

structure and voice as the LAWS's intended target. LAWS like flying killer drones could use deep-learning AI techniques to scan and identify people in public area to locate their targets (Yang, J. L. & Han, L. C., 2021). If the drones' target is someone with a long list of criminal records that include murdering people and the drones made the decision to kill if sighted, the innocent people in the public area will be implicated and may lose their lives. Although LAWS are said to have high accuracy rate due to them being machines but accidents may still happen. The drones using deep-learning AI techniques to scan and identify people so publicly also breached people's privacy as the people's profile and data is all laid bare to the LAWS and if LAWS was hacked and their database is compromised, people's information will be exposed to the hacker and their information could be used maliciously like for instance, gaining access to their bank account and stealing the money under the person whose information was exposed to the hacker.

The LAWS usually have the biometric information of their target and hence, during the scan, LAWS will compare everyone's information against the target and if any of their biometric information is the same (Harwell, D., 2019), they will be treated as an immediate suspect by LAWS which may put the safety of some of these innocent people that were treated as a suspect at risk. LAWS are morally abhorrent ("Lethal AWS", n.d.) as they decide on the death of these suspects according to their algorithms and if LAWS decided to kill all these suspects, it is a scandalous and sickening decision LAWS has made as although LAWS were generally designed to kill, these LAWS do not have the right to kill someone even though the person has done something that goes against the law. If LAWS killed someone innocent who LAWS suspected as their target, LAWS can't be taken accountable and responsible as according to IHL, individuals are responsible legally for any commit of war crimes but it is legally challenging and arguably unfair to hold an operator responsible for the unforeseeable actions of an autonomous robot, which means there is no one to task responsibility of the death of an innocent and hence, will be a violation of IHL ("Lethal AWS", n.d.).

Problem statement

It is undoubtedly true that AI greatly contributed to the invention of LAWS but the problems laid with how LAWS is programmed and how it is used. With numeral countries currently developing and have developed Unmanned Aerial Systems (UAS) (Singer, P. W., 2009), the moral and ethical issues linked to LAWS must be seriously discussed as using UAS may present unexpected ethical challenges to the world.

US military have already deployed thousands of Unmanned Aerial Vehicles (UAV) all around the world and there was an increase of 1200% of lethal UAVs for the past few years as stated in "Flight of the drones" (2011). Military soldiers who controlled the UAVs will usually be stationed far away from the actual battlefield if it was during war times (Salvini, 2007), which means that these military soldiers could only know of the battle situation from the camera and sensors attached on the UAVs and make their decisions according to what they see on their screen. These military soldiers could be new recruits and did not first-hand experience the battle situation and may take the severity of the situation lightly which will impact the military soldiers' ability to make ethical and appropriate decisions. Although it is true that with the assistance of LAWS like UAVs, military soldiers are quite a distance away from the actual battlefield which minimized the threats of losing any lives in the times of war is arguably morally good and ethical but military soldiers controlling these UAVs might be prone to distraction and inattentiveness (Salvini, 2007) to the battle itself which could be fatal to the country that wanted to win the war.

Responsibility of the action made by these LAWS must be borne by the individual who is controlling these LAWS. As a result of this reasons, the design, controls and algorithms of these LAWS must be changed and improved whereby the companies that manufactured these LAWS like UAVs could implement first-person-view and interface on the LAWS so the individual controlling the LAWS could perceive the situation as accurately as possible. For instance, military soldiers controlling UAVs with a first-person-view could know and understand the battlefield situation better and make life-and-death decisions that fits according to the battlefield situation. Unfortunately, to make the situation as stated above to work and fully implemented into all LAWS will be difficult (Sparrow, 2008).

In spite of that, fully automated lethal weapons systems are already under research and development. The problem with fully automated lethal weapons systems is that people are giving the ultimate decision on life-and-death of individuals to LAWS that are made up of algorithms so the decision is made by the algorithms itself, but is algorithms reliable enough to make these decisions (Russell, S., 2021)? The answer is that algorithms are not fully reliable to make life-and-death decisions as algorithms are not like humans that can have their own thinking and reasoning that followed the code of conduct of being a human that adhere to IHL. Algorithms relied on theories which undoubtedly could not determine if a person is a friend or enemy and whether they have a potential threat to the society (Boisboissel, G. d., 2015). Although with deep-learning algorithms implemented within the algorithms of these LAWS, these LAWS could learn and understand these risks and danger and could then determine their target accurately from a list of suspects but the time needed

for them to learn is long and if humans spend their whole lives learning, LAWS will also need that long to learn how to follow the correct code of conduct of a human and thus show ethical decisions. It is unknown is a transfer of acquired knowledge from one LAWS to another LAWS is applicable or not but it is known that this situation and method has not been trialed (Boisboissel, G. d., 2015).

Conclusion and Discussion

In my opinion, Lethal Autonomous Weapon System (LAWS) is indeed ethically abhorrent whereby it does not follow any human ethical values but it does have its uses in various aspects. Like during wars, countries would want to minimize the loss of their soldiers' lives and the soldiers' families would want their relatives and family members to return safely.

LAWS could be deployed to complete risky missions to prevent loss of talented soldiers (Boisboissel, G. d., 2015). The soldiers' lives could be kept safe by replacing soldiers with machineries like LAWS that could take the enemy's life without any extra unnecessary feelings like hesitation in a dangerous situation like wars (Boisboissel, G. d., 2015). Military soldiers could receive extra training on how to control and command these LAWS so LAWS could no longer have unpredictable behaviors and if any of these LAWS made decision and actions that goes against IHL, there will be someone that could be hold accountable and responsible. The consequences and punishment of going against the law could be shouldered by the person who controlled the LAWS (International Committee Of The Red Cross, 2021).

To be able to use LAWS legally in the society without arousing any fears and resistance from the people, the companies that manufactured these LAWS must find ways to allow their LAWS to adhere to IHL where the LAWS's action is made according to the principles of morality. If LAWS are not programmed to be ethical and could not adhere to IHL, then there should be a limit on who and how LAWS can search for their targets. LAWS should not be allowed to be used on a large geographical scale and should not be allowed to eliminate their targets. Instead, LAWS should capture their targets alive and leave the decision making on the outcome of the said targets to the judges and higher-ranking officials so no abnormal and unexpected behaviors will be made by LAWS that will threaten by-passers (International Committee Of The Red Cross, 2021).

In conclusion, LAWS bring forth both positive and negative impact. It could bring danger to every individual if LAWS was misused but could also be a good contribution to the society if implemented correctly like during the Winter war in 1940 where Unmanned ground vehicles (UGV) was controlled remotely by Soviets to breach and bomb enemy territory (AeroVironment, 2021). With that being the case, protective measures and new laws are strictly required to prevent LAWS being used for malicious reasons.

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