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Introduction

Robots with Weapons

Throughout history, technology has played a vital role in human life. From horses to fully functioning cars; from cameras, telephones, and notebooks to one smartphone; from a folding fan to an air conditioner, technology has made human life quicker and more convenient. Over the last few decades, technology has advanced with unprecedented speed, causing technological development in various parts of human life. More recently, a newly rising advanced autonomous technology and Artificial Intelligence (AI) have been spotlighted. The fact that they can independently function without any human control has brought whole new insights to people.

Likewise, weapons have always developed along with advancements in technology. More developed technologies made weapons more lethal and effective. Recently, autonomous technology and AI allowed weapons to function themselves without any human control: these weapons are now referred to as Lethal Autonomous Weapon Systems (LAWS). When widespread, experts anticipate that LAWS

will create a big paradigm shift in how wars work because these weapons basically allow wars and military operations with very low cost and without any human casualties. As a result, a lot of nations have started to invest in LAWS, seeking for more international power.

However, with great benefits comes great risks as well. The weaponization of autonomous technologies and AI triggered a lot of objections as autonomy in weapons is directly related to ethical, political, and legal debates, and, most importantly, human lives. As it is inevitable that these technologies will continuously develop at great speed, the urgency for countries and international organizations to set regulations on them also grows. As it is an urgent time, urgent solutions need to be quickly addressed to combat the weaponization of autonomous technologies and AI.

Background

Countries' foremost goal when operating missions is maximizing their benefits and minimizing their loss. Thus, the nation's desire to create weapons that can effectively eliminate targets without any human cost was always high. Starting with remote control weapons, a lot of nations continuously attempted to develop their technology to make such weapons. For example, the MQ-1 Predator, one of the first

MQ-1 Predator

remotely piloted aircraft, can provide near real-time reconnaissance using a satellite data link system and perform attack missions as well. Starting with its first flight in 1994, it served over various different areas such as the Balkans, Afghanistan, and Pakistan. Though it was not fully autonomous as human controls were needed to operate, this marked an important starting point of the non-human military operations. As technology becomes more advanced, AI weapons have become more developed as well. Surprisingly, current work to incorporate AI into the military is already far advanced. Militaries in major countries like the US, Russia, and China have already implemented AI in cybersecurity, combat, and drones. These continuous efforts to develop autonomous weapons has created AI arms race between great powers. For

instance, China has invented an autonomous A3 helicopter drone equipped with machine guns. As such, this continuous trend of AI arms race can potentially reform the conventional knowledge of war.

Despite AI weapons' continual development, numerous objections have always existed. Because AIs and their algorithms are killing humans, they have brought moral and ethical issues. People questioned whether it is just and respectful to the human rights for machines to kill humans. Also, due to their lethality, the problem of global insecurity arose. From the current point of view, the negative impacts of AI weapons far outweigh the benefits. U.N. Secretary-General Antonio Guterres said, "Autonomous machines with the power and discretion to select targets and take lives without human involvement are politically unacceptable, morally repugnant, and should be prohibited by international law." Hence, it has been necessary for solutions and regulations to be addressed on a global scale to combat the weaponization of autonomous technologies and Artificial Intelligence.

Problems Raised

Human Rights

Autonomous and AI weapons function independently, meaning that they do not require any meaningful human controls. The algorithm inside the weapon self-determines the target and eliminates them. This completely violates the fundamental rules of human rights and International Humanitarian Law (IHL). IHL consists of international treaties or customary rules that are specifically meant to resolve humanitarian issues arising directly from armed conflict. IHL seeks for humanitarian reasons to protect human in conflicted zones. IHL

People Protesting for Human Rights

sets a strict restrictions on some excessively detrimental weapons used in wars such as LAWS. Thus, machines killing humans based on mere lines of code threatens the fundamental right to life and the principle of human dignity. Autonomy in weapons violates human dignity because when killed by killer robots, the victim is reduced to an object, a mere data point fed to an automated, indifferent killing machine. The algorithm devalues human life, rights, and dignity.

Accountability Issue

IHL states that individuals should be held legally responsible for war crimes. However, the proliferation of autonomous and AI weapons causes a big conflict on who should be responsible for the actions of the machines used in military operations. Machines obviously cannot be punished. If the commanders are accountable for the action, it would be legally challenging and arguably unfair to hold operators responsible for the unforeseeable actions of an autonomous robot because they are not the ones who actually killed people. If the developers are responsible for the action, it would also be unfair since they only did what they were tasked to do. These kinds of ambiguity trigger another global legal issues regarding accountability.

Global Insecurity

The weaponization of autonomous technology and AI poses a serious threat to global security. All nations want to increase the effectiveness of their security; since the effectiveness of the security is directly related to nation's military power, as long as the technology continues to develop, autonomous weapons will endlessly develop as well. This ultimately leads to a tense international AI arms race which seems to have already been started. This can destabilize and threaten international peace and security. Additionally, since autonomous weapons can eliminate the targets with great ease, continuous usage of autonomous weapons will lower the incentive to find political solutions to end conflicts. Consequently, it could lower the threshold for the use of force. In other words, even though the use of autonomous weapons can reduce the casualties during operations, the frequency

Terrorists

of weapon usage might increase. Moreover, if this weapon technology goes into the wrong hands, it can cause serious global insecurity and instability. Some people may be in danger of being killed by a random machine. These situations undoubtedly cause severe global insecurity.

International Actions

Actions from Convention on Certain Conventional Weapons (CCW)

In 2014, Convention on Certain Conventional Weapons (CCW) held the first informal Meeting of Experts on LAWS. Experts have examined the extensive challenges raised by the AI systems to IHL and emphasized the importance of retaining human control over the use of force. Additionally, in 2016, High Contracting Parties — states that could cause problems of legal recognition in armed conflicts — decided to establish a Group of Governmental Experts (GGE) on LAWS to meet for the first time in 2017 with a mandate to address issues regarding emerging technologies in LAWS. Furthermore, in 2019, 11 guiding principles were adopted by the Meeting of the High Contracting Parties to the CCW. In short, these principles state that since IHL still applies to these AI systems, a human must always be responsible for the decision to use these systems; also, nations must examine the legality of new weapons that they are developing or requiring at the design stage. These principles serve as a formal declaration that human decisions on the use of LAWS must be retained.

GGE ON LAWS
Guiding principles

International humanitarian law applies fully to all weapons systems, including the potential development and use of LAWS.

Human responsibility for decisions on the use of weapons systems must be retained since accountability cannot be transferred to machines. This should be considered across the entire life cycle of the weapons system.

Human-machine interaction should ensure that the potential use of weapons systems based on LAWS is in compliance with applicable international law, in particular IHL. In determining the quality and extent of human-machine interaction, a range of factors should be considered including the operational context, and the characteristics and capabilities of the weapons system as a whole.

Accountability for developing, deploying and using any emerging weapons system must be ensured in accordance with applicable international law, including through the operation of such systems within a responsible chain of human command and control.

In the study, development, acquisition, or adoption of a new weapon, means or method of warfare, determination must be made whether its employment would be **prohibited by international law**.

When developing or acquiring new weapons systems based on emerging technologies in the area of LAWS, **physical security, appropriate non-physical safeguards** (including cyber-security against hacking or data spoofing), **the risk of acquisition by terrorist groups and the risk of proliferation should be considered**.

Risk assessments and mitigation measures should be part of the design, development, testing and deployment cycle of emerging technologies in any weapons systems.

In crafting potential policy measures, emerging technologies in the area of LAWS should n**ot be anthropomorphized**.

Consideration should be given to the use of emerging technologies in the area of LAWS in **upholding compliance with IHL** and other applicable international legal obligations.

Discussions and any potential policy measures taken within the context of the CCW should **not hamper progress** in or access to peaceful uses of intelligent autonomous technologies.

Extract from the 2019 report (advanced version) of the GGE on LAWS.

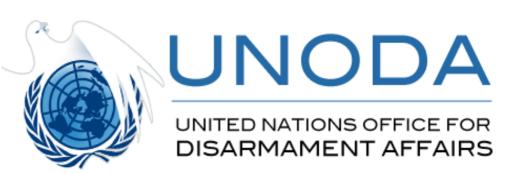*Guiding Principles from the Group of Governmental Experts (GGE)*

Actions from International Committee of the Red Cross (ICRC)

With the rising use of LAWS, in 2021, ICRC publicly declared its position on LAWS, stating that LAWS will raise serious concerns from humanitarian, legal, and ethical perspectives due to the loss of human controls and judgements in the use of force and weapons. In agreement with the statement that nations should limit autonomous weapon systems to ensure civilian protection, compliance with international humanitarian law, and ethical acceptability in 2014, ICRC proposed new legally binding rules for states to adopt. The rules state that unpredictable autonomous weapon systems that targets humans should be expressly ruled out. These rules primarily were aimed at establishing international limits on autonomous weapon systems.

Key Players

United Nations (UN)

To combat the weaponization of autonomous technology and Artificial Intelligence, actions from United Nations (UN) must take place. This problem of autonomous technology is related to various issues of the current world such as human rights, politics, and armaments. Hence, actions from various parts of the UN including the CCW and Human Rights Council (HRC) are necessary. First held in 1981, CCW, as a part of the UN, serves to ban or restrict the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately. Some past protocols CCW passed attempted to protect innocent people from getting unjustifiable harms. For instance, CCW has passed "Prohibitions or Restrictions on the Use of Mines, Booby Traps and Other Devices", and "Blinding Laser Weapons". Like some of the positive outcomes in the past, collective actions and treaties from DA, CCW, HRC, and other parts of the UN, concerning feasibility of autonomous weapons, must happen.

Logo of UNODA in which CCW is held

United States

As the first country to implement autonomous weapons in military operation, the issues of LAWS are directly related to US. Staring with MQ-1 Predator, US has invested significant amount of money and made a lot of effort on developing AI weapons. Even though US claimed that LAWS raise important legal, policy, and ethical issues and recommended further discussion in an IHL forum in 2013, US is constantly developing and using AI weapons. The US military is already integrating AI systems into combat in Project Maven, which uses AI algorithms to identify insurgent targets in Iraq and Syria. Also, in 2018, the U.S. National Defense Strategy identified AI as one of the key technologies that will ensure win the wars of the future. Thus, as one of the world's most powerful countries and leader AI technology, relevant actions from US are imperative to combat the weaponization of autonomous technologies and AI.

China

Cooperation from China is necessary to combat autonomous weapons. Unlike China's claim in 2018 advocating for a ban on fully autonomous weapons, China has been continuously developing their AI weapons. According to "'AI weapons' in China's military innovation," it states, "While there is currently no direct evidence that the Chinese People's Liberation Army has formally fielded a weapons system fully consistent with the definition of 'AI weapon,' a number of systems are analogous or comparable in their functionality." China, as one of the world's fast-paced weapon developing countries, must take appropriate action to globally combat AI weapons.

Possible Solutions

Obligation of Meaningful Human Control

Although the importance of human control on weapons has been emphasized in previous years, nations still do not fully act in accordance with the IHL. Thus, it has become necessary for international organizations to oblige nations to prohibit autonomous weapons fully and employ meaningful human controls. International organizations should not only oblige nations by certain

Humans Controlling Weapons

regulations but should also implement effective prohibitive measures to ensure all nations are acting appropriately. Ultimately, human decision making must be encompassed in a decision to take a human life. It is true that adding human controls to autonomous weapons may not evidently influence military operation as weapons might ask humans only for final permissions. However, like stated in IHL, weapons that cause unnecessary suffering to innocent civilians and long-term damage that raises humanitarian issues must be banned. Retaining meaningful human controls significantly reduce the problem of morality, political issues, human rights, and responsibility issues.

Glossary – Define jargons specific to the topic

Artificial Intelligence (AI)

Artificial Intelligence (AI) is the simulation of human intelligence in machines that are programmed to think like humans and mimic their actions

Lethal Autonomous Weapons System (LAWS)

Lethal Autonomous Weapon System (LAWS) is weapon system that can independently search for and engage targets based on the programmed algorithm

Convention on Certain Conventional Weapons (CCW)

Convention on Certain Conventional Weapons (CCW) exist to ban or restrict the use of specific types of weapons that are considered to cause unnecessary or unjustifiable suffering to combatants or to affect civilians indiscriminately

International Committee of the Red Cross (ICRC)

International Committee of the Red Cross (ICRC) is an independent, neutral organization ensuring humanitarian protection and assistance for victims of war and armed violence. It takes action in response to emergencies and promotes respect for international humanitarian law and its implementation in national law.

International Humanitarian Law (IHL)

International Humanitarian Law (IHL) is a set of rules which seek for humanitarian reason in war zones and try to limit the effects of armed conflict. IHL claims the protection of those who are not, or no longer, taking part in fighting. It also restricts the particular weapons and the methods of warfare such as military tactics.

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