Forum: Disarmament and International Security Committee (GA1)

Issue: Addressing the potential risk of weaponisation of Artificial Intelligence (AI) and Big Data

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Introduction

Ever since McCarthy[1] coined the term "artificial intelligence in 1956, the world has been dreaming and contemplating on the possibilities that stem from something so grandiose. Perhaps it could solve problems that have been tormenting humanity, such as hunger, while also providing a society where justice and fairness is always present, were among the initial reaction of the public.

However, as time passed, public opinion has soured. Abstract possibilities and fears have come to dominate what people think about the future of AI. Among them are fears about dictatorship and private Data. However, all these scenarios pale in front of the militarization of AI. Many countries over the past years have shown increasing interest for the acquisition of potent AI driven weapons. This in tandem with the application of Big Data can take many shapes, such as autonomous weapon systems (AWS) to servers capable of analyzing and accessing enemy communications and infrastructure.

The particular interest of the US and China in the field testify to the world's military ambitions. But what does the militarization of AI and Big Data actually mean? The first thing that comes to many people's minds are drones, or more specifically autonomous weapon systems (AWS). Put simply these are the direct results of the weaponization of AI and big Data and are in essence the "physical manifestation" of the weaponization of AI. These are applicable in geospacer and space. On the other hand, there is the much more daunting possibility of an AI deployable in cyberspace. The main purpose of all these AWS is the surveillance, penetration and destruction of enemy infrastructure and assets.

However, one must consider all aspects of this urgent matter. For one a large ethical pushback against "killer robots" is gaining traction on this matter. The exact ethical debate will be analyzed in detail later on, however, keep in mind that most of the ethical debates regard the capability of a robot to judge and kill human lives with little to no [2]human supervision.

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[1] John McCarthy (not to be confused with Joseph McCarthy) is a founding member of AI, who contributed significantly to the public adoption of the idea as well as to the scientific feasibility of the idea

 [3]

Figure 1 a server that facilitates a massive AI program. Militarized AI and Big Data does not only come in the form of drones and missiles. In fact these types of servers could be much more dangerous.

There are also legal resistances to this widespread push for military usable AI. These are mostly due to the fact of the quick adoption of AI in military systems and the difficulty of labeling AI in general as a weapon. These will be analyzed in great detail further in the study guide.

Definition of key terms

Artificial Intelligence:

Although the definition is still heatedly debated, the most accepted definition is the ability of machines, specifically computer-based ones, to effectively operate as if they possess human intelligence and reasoning.

Big Data:

Extremely large data masses, that can be used in order to study the connection between seemingly unconnected events. They can reveal patterns and associations not easily discernible by conventional methods.

Militarization:

Refers to (in this case) the development of something, with the goal of being combat ready or of use in military conflicts.

[3] https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwjq9-Cz4p3jAhWFTLwKHaChBD4QjRx6BAgBEAU&url=https%3A%2F%2Frobohub.org%2F5-global-problems-that-ai-could-help-us-solve%2F&psig=AOvVaw1ecr9dIRC4hKptUqGXa6eO&ust=1562415757078075

Automated weapon system (AWS):

Defined by the U.S. Department of Defence as “a weapon system(s) that, once activated, can select and engage targets without further intervention by a human operator.”

Conflict:

A serious and protracted disagreement that in this case involves cross country violence.

Non-state actors:

An individual or organization that has significant political influence but is not allied to any country or state.

LAWs

According to many sources, Lethal autonomous weapons are weapon systems, that have expanded autonomous capabilities, that allow them to identify and attack enemy targets with little to no human supervision. These operate in geospacer and space.

Background information

History of AI

Early stages

The beginning of AI could be said to have begun with the first computer, in this case “the bombe” and its creator Alan Turing. The bomb (as it is known in English) was a successful British attempt to decipher the codes of the Axis. Alan Turing himself was considered a father of AI and devised many theories and tests, such as the Turing test, that had to do with machines and how they could reason and seemingly behave like humans. Ever since there has been an increasing amount of interest in AI with constant developments in many fields. For example, Wabot-1, which was completed in 1973, was built in Japan and is widely considered to be an “intelligent” robot.

First application of AI

Although the border between a simple manually controlled weapon and one that employs AI is very confusing, the first serious military application of drones, a form of AI in the military, was in the Vietnam war. These drones had

very limited autonomous capabilities and were simply a radio controlled drone.

State of military AI today

Ever since the early conception of autonomous weapons and their future capabilities, many militaries have been feverishly spending on trying to pull ahead of the competition. For example America has pledged to spend 2 billion over the next 5 years on the project. These investments have many different goals in mind. The most common goals are lethal autonomous weapons (LAWs), surveillance, cybersecurity, homeland security, logistics and autonomous vehicles.

LAWs and surveillance

Laws have drawn particular criticism from a variety of groups due to their notable autonomy that allows them to incapacitate or kill human beings. Must of the pushback is in America. Many countries and military contractors are exploring the capabilities of said drones. A perfect example of a LAW is the American contractors General Atomics MQ-1 Predator.

 [4]

Figure 2 A MQ-1 Predator drone from defence contractor General Atomics is shown operational in an undisclosed date and area

Cybersecurity

Cybersecurity has more to do with Big Data than with AI. The basic principle that many huge corporations such as IBM are exploring is the potential of Big Data to be skimmed from AI in order to provide information

[4] https://www.google.com/url?sa=i&source=images&cd=&ved=2ahUKEwjtpOz26J3jAhVGy7wKHdOOAhEQjRx6BAgBEAU&url=https%3A%2F%2Fen.wikipedia.org%2Fwiki%2FGeneral_Atomics_MQ-1_Predator&psig=AOvVaw27EnxgtuVSiu_Tvzhfnwc0&ust=1562417503680962

and apply it in many systems. This provides many potential capabilities for the safety of both public and governmental enterprises. By analysing the dangers in the systems it is easy to provide the appropriate safety countermeasures. On the other hand Big Data and AI can be used in the opposite way. Namely to find weaknesses and access public and private networks. An example of this is China. It has a massive network that controls the way Citizens behave in the internet. The so called "Great firewall[5]".

AI arms race

Over the past years there has been increasing competition about AI and who has the most capabilities. The competition is between China and the USA. Both have spent tremendous amounts of money in order to surpass each other in what is known as an AI arms race (a reference to nuclear arms race). This can be seen clearly in the public and private sector, as well as in public interest.

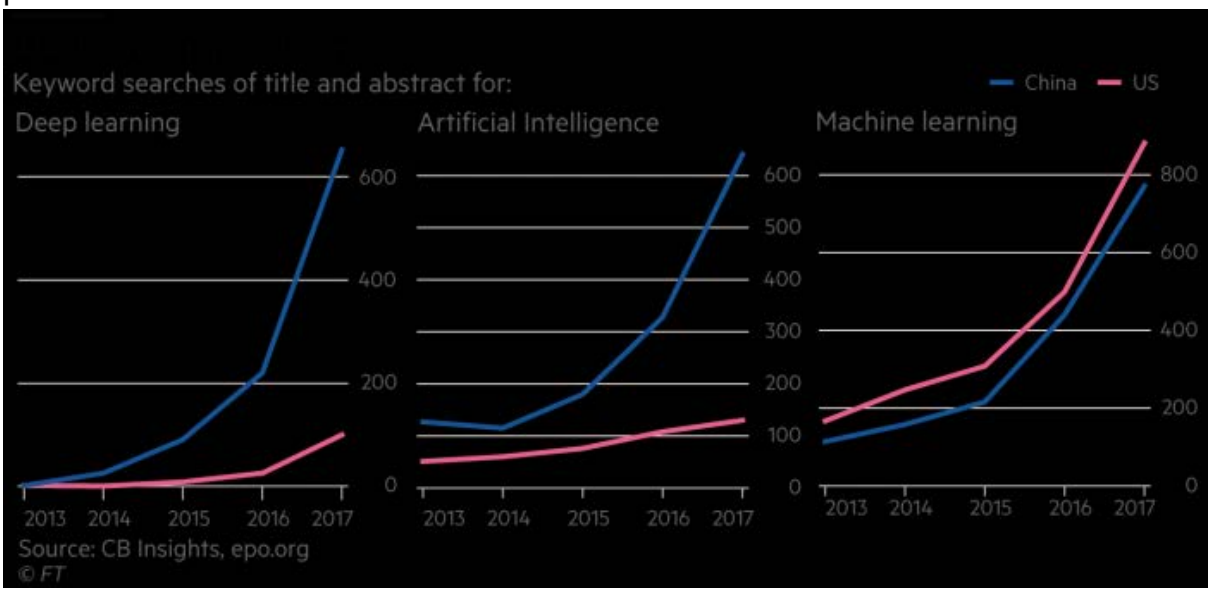


Figure 3 Depicts the public interest in AI, deap learning and machine learning. THis depicts grossly the public interest in said technologies.(population of each country must also be accounted for)

[5] https://www.newscientist.com/article/mg24132210-400-chinas-great-firewall-and-the-war-to-control-the-internet/

Both countries see this as an opportunity to surpass each other in ways excluding conventional military methods. China has been spending a notable

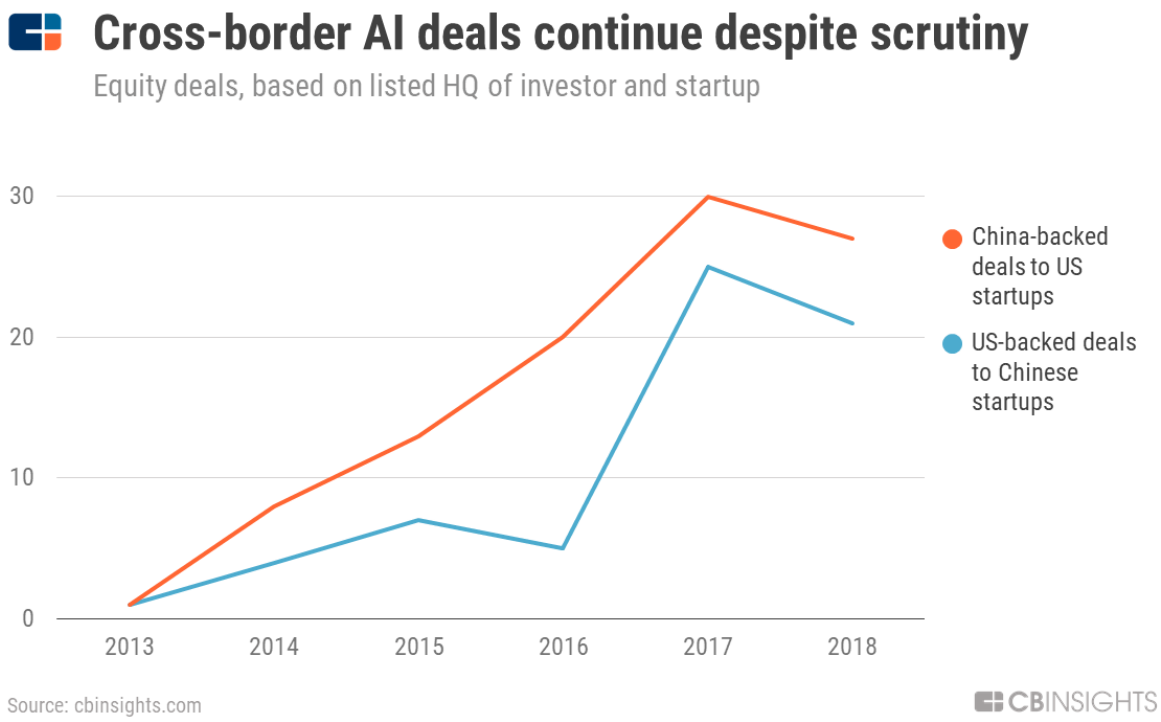


Figure 4 depicts the amount of money each country spends on tech startups that deal with AI. This could be an indicator as to what these countries think about the future capabilities of AI

amount of money on AI chips and servers, however the US possesses better and more modern drones, satellites etc.

Ethics

There has been a lot of outcry as to the ethical consequences of introducing robots to the military and giving them the direct or indirect ability to remove a persons life, cause damage and suffering to many people. There are people who believe that a machine which is cold and calculating has no right to remove a life, seeing as it does not understand the intrinsic importance of a life and therefore can not remove it. It is a complicated debate, therefore further reading is required (see bibliography). People counter this by saying that machines don't have human flaws, such as accidents and criminality and are also more precise minimizing the collateral damage. The debate has yet to yield significant results, the public in the US is generally in favour of using drones (an application of AI), in order to target terrorists, however, drones aren't necessarily fully AI driven, as they have

have various amounts of autonomy. American drones are considered by many specialists to be semi-autonomous.

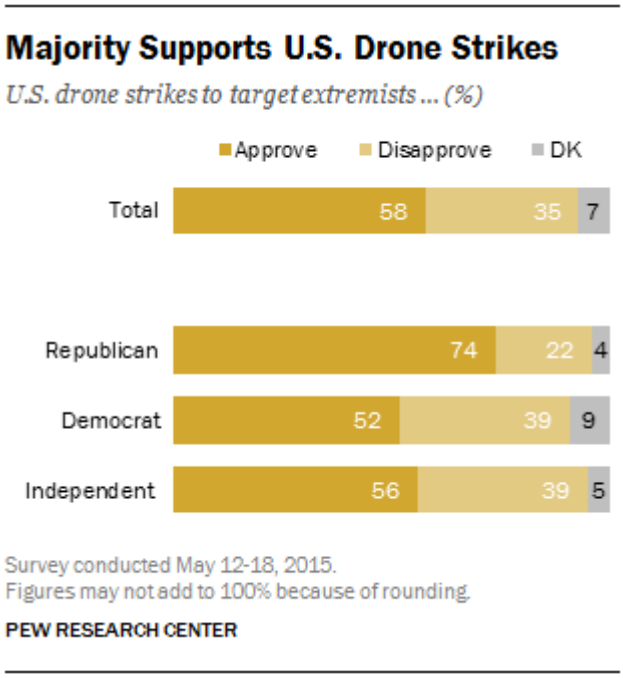


Figure 5 a research in america, asking random people as to whether they consider the use of drones to counter terrorism moral or not

Law

As of 2019 there is no internationally recognized law governing the principles and use of Drones. This largely stems from the military seeing AI in the form of drones, software, weapon systems, cybersecurity and surveillance systems as a domestic matter and there is also a difficulty in classifying something so broad as a weapon. Is the camera that is connected to a network that employs a limited form of AI and Big Data a weapon or just an asset? Thankfully the question of the US of Big Data has been in the past few years made major strides as to when it can be used, both commercially and military, due to the major public backlash against the misuse of Data. Although there are few laws that could be extended to fit AI there are few in number and vague in consequence.

Article 36 of additional protocol 1in the Geneva convention states that all new weapons must be reviewed by a panel in order to establish whether

they cause unnecessary suffering or too much collateral damage. Only after this review can they be used in warfare.

There is the right of remedy. This is the right that victims seek reparations or some sort of relief after they have been “unfairly” targeted or treated. Under normal circumstances it would be relatively easy to put the blame on someone, however with the advent of AI it is hard to put the blame. For example if an anti air missile system accidentally hits a commercial plane, that falsely met all the prerequisites, who would be held accountable? The person who set those prerequisites, the general, the company that built it or the programmer?

International Humanitarian law is also to be accounted for. Many doubt that AI in both cyberspace and in the actual world will be able to meet the requirements, such as the right of humanity, proportionality, precaution, distinction and military necessity, seeing as machines, no matter how smart they are lack human judgement, emotion and compassion.

Lastly there is the right of dignity. This s an international right that a human live is special and holds an intrinsic and inalienable value. Thus it is a violation if that live is removed without taking that value into account.

Maritime Big Data

Big Data is notorious for its future application in making the navies more sophisticated, by means of predicting hostile movement. For example Big Data has been used in many parts of Africa to track all illegal ships in a periphery, thus predicting and exposing the positions of many illegal ships and pirate ships. Big Data plays an advisory role in most cases to people.

MAJOR COUNTRIES AND ORGANIZATIONS INVOLVED

Russian Federation

The Russian federation has supported the adoption of AI in the military in various shapes. For example the kremlin (roughly the Russian opposite of the white house) has released videos showing its armed troops working in cooperation with undisclosed mechanical quadrupeds[6] that clearly play an active role in the quadrant. This was probably only a demonstration and the AI

[6] https://futurism.com/russia-ground-force-armed-military-robots

driven machine is still probably in its early development stages. There is also the Russian military program developing drones. Besides that Russia lags far behind China and USA in its server and chip capabilities, mainly because Russia does not have a public market that has a huge presence in Chips and servers, according to experts. Still the warming ties between Russia and China make it easier for Russia to acquire state of the art components for its weapons. However Russian capabilities in autonomous weapons and AI in general lag far behind those of the US, despite being technologically on par with the US in conventional weaponry.

Russian prime Minister Vladimir Putin has stated: “Artificial intelligence is the future, not only for Russia but for all humankind... Whoever becomes the leader in this sphere will become the ruler of the world"

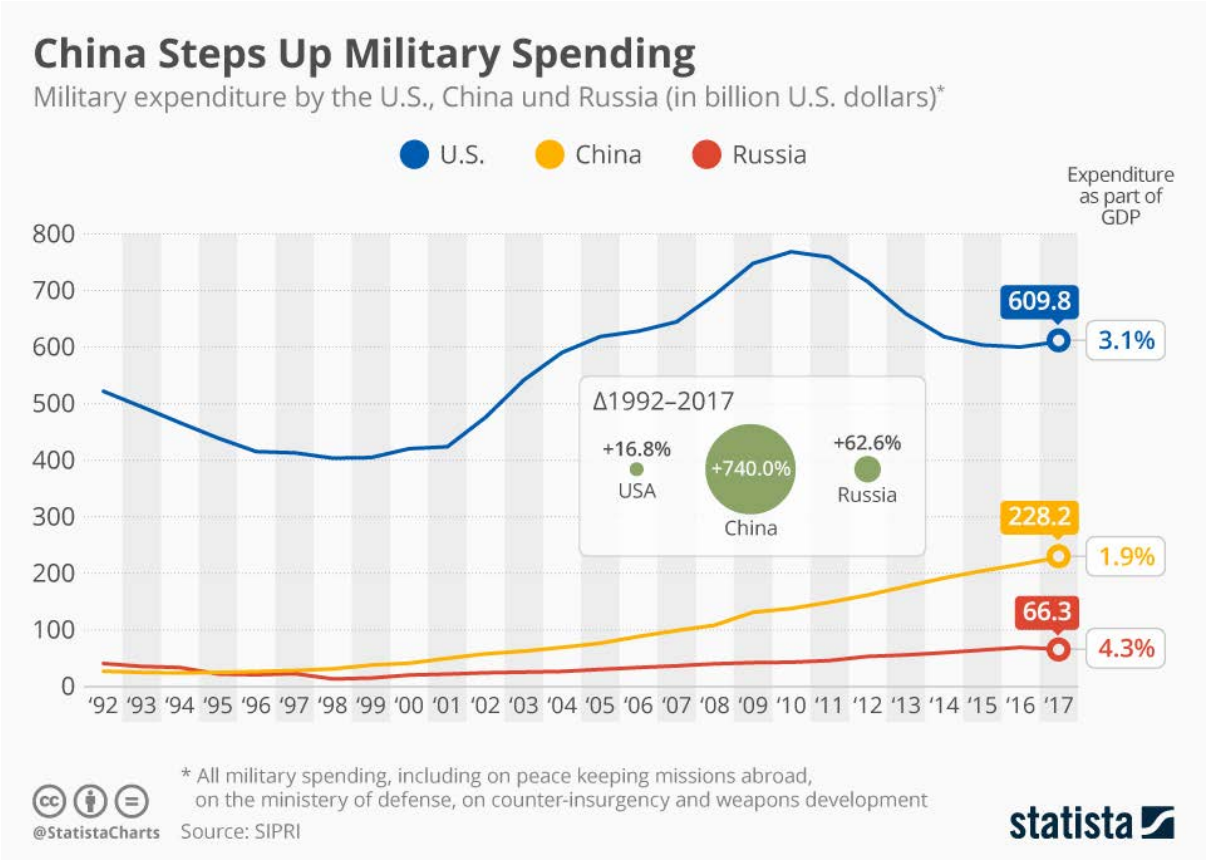
Figure 6 A meeting between Russian and Chinese leaders. Xi Jinping (left) shakes hands with Russian prime minister Vladimir Putin (right)

The strong and developing military ties with China are sure to be leveraged in the future and it seems that this alliance will surpass American efforts if left on a steady track.

However Russia is widely considered to not be able to mass produce advanced weapons of any kind, despite possessing the technology, something which is painfully obvious with russias production delays of its latest tanks, warplanes and submarines.

Peoples Republic of China

China is largely known to have difficulties modernizing its military. This does not seem to be the case with AI. It hasn't made much individual progress when it comes to drones, missile launchers etc. and relies mainly on Russian technology. However it has made alarming strides in its server capabilities and AI chip manufacturing. It is also increasing its military spending (measured as percentage of GDP).



Furthermore China has been using its ties with Russia in order to obtain cutting edge technology it has not so far possessed. As is seen on the graph China spends only 1.9% of its GDP on the military, compared with 3.1 for USA and 4.3 for Russia. This gives China the potential to grow its spending (despite still lagging behind America). The graph also makes Chinas growing spending in military over the period of 1992 until 2017 entirely obvious.

USA

The USA possesses the largest and strongest army in the world (in conventional and countable terms). Thus it is trying to keep its advantage in all areas. It has invested a considerable sum in AI and has recently provided an outline for its application of AI, which has mentioned its application in many fields (although falling short of mentioning autonomous weapons). The USA has many times over stressed that its goal is not to fully replace people in the army, but to decrease the risk of fatalities and injuries for its soldiers. Many activists and professionals have doubted that, providing the pentagons increasing interest in drones and autonomous weapon systems as evidence.

Furthermore the USA has most defence contractors that are capable of providing capable AI weapons, which will be mentioned later on. Furthermore it has expressed its interest in selling military grade drones to many of its allies, due to competition with China. The Trump administration has relaxed measures and prerequisites regarding the ssale of drones by its defence contractors to foreign purchasers. All in all the USA seems keen to maintain a lead over its enemies, however it has not gained a definitive lead over them as of today.

Israel

Israel has less restrictions over its use of AI, as is the case with most of its weaponry. It has recently developed many systems. Its notorious “Iron Dome” missile defence system is known for using AI and Big Data in order to be more efficient. Furthermore its contractors have developed many drones and other forms of weaponry such as the Harpy which is fully autonomous and is made in order to carry bombs (although its target is not personnel but infrastructure). It has also made contracts to sell its AI with many countries, such as South Korea and China, something which frosted its relations with USA. Israel’s top contractors have big ambitions over the future use of AI in all aspects of the military.

South Korea

South Korea has since its creation (from the division with North Korea) been in constant fear of conflict with its northern neighbour. As such it has a very high defence spending, something which a large economy such as South Korea can easily afford. It has shown particular interest in developing autonomous weapon systems, such as the Samsung-developed SGR-A1, which is a n autonomous sentry that can track, spy on and engage hostile forces and is meant to be used in the demilitarised zone. South Korea has also announced the opening of a new AI research centre in 2019, which has drawn backlash by many groups. The want for many AI systems in all aspects

of the military stems from The countries fear over the numerical superiority of North Korea, which has made it believe it is necessary to fill in the gap with AI and autonomous weapons.

Lockheed Martin

Lockheed Martin is worlds largest defence contractor. It supplies the USA and its allies with the most modern and effective military solutions such as the F-35 Raptor. It has branches in every sector of the military and is a public company independent of the US government (meaning anyone can theoretically buy a stake in the company). It has long discreetly flirted with the use of AI and has some programs that research it openly. The real life application of these systems is up to this date limited. Lockheed Martin has not made any sales of autonomous weapon systems so far.

Advanced technology laboratories

A subsidiary of Lockheed Martin, it is charged with researching AI in weapon systems among many other projects. Although it hasn't as of yet produced a working product that has been approved by the US government, the backing of Lockheed Martin can prove to be most useful in many cases.

Boeing

The second biggest military contractor in the world has a large history of supplying the military with combat ready vehicles and weapons. It has made many vehicles, primarily aircraft, that have the capability to be used as implements of war. Many of its products are fully operational or in the late stages of testing, which renders Boeing as one of the few companies to have such developed AI capabilities.

General Atomics

General Atomics is the maker of many US operated attack drones, which are fully operational. They operate in many regions, including Africa, which has raised ethical concerns over its uses. General Atomics has one of the most developed AI weapons program in the world.

TIMELINE OF EVENTS

1970	Invention of first computer
1955-1975	Vietnam War: Use of U.S. surveillance drones
2000s	Weaponization of Artificial Intelligence (AL)
Today	AL arms race

RELEVANT UN RESOLUTIONS, TREATIES AND EVENTS

As of 2019 there has been no passed resolution on the topic of Militarised AI and Big Data in the UN. Most UN ambassadors have briefly commented on them and there has been unrest regarding the topic in GA1.

There are no treaties solely regarding the use of AI and big Data. A more general treaty can be considered to be the Geneva Convention, which seeks to regulate all weapons of any kind.

There have been many protests, which could be counted as events, however they often bear no results and are decentralized and random, meaning that no significant progress has been made.

The lack of treaties and resolution on this topic is alarming in every way.

PREVIOUS ATTEMPTS TO SOLVE THE ISSUE

The UN has not yet proposed any resolution or really openly discussed this problem. Therefore no international body has made much of anything regarding this topic. Many countries do not see this as something that must be regulated. Furthermore the Geneva convention has not been strict enough in this whole process.

POSSIBLE SOLUTIONS

Before proceeding to showing all delegates possible solution I must firstly analyse the reasons that there has been no treaties or attempts to solve this problem, as can be seen above.

Taking into account the fact that it is close to impossible to separate an AI that is a weapon and one that is not. Put simply AI is a very loose term that covers a large mount of applications and specifications. This means that there has been a struggle to define AI in simple terms. Thus a goal of any resolution must be to have a firm grasp of what exactly they are targeting, especially in this one, seeing as the definition plays an inherently large role here.

Secondly we must acknowledge the lack of treaties as a problem in and of itself. Many countries feel as if their interests lie in further developing said systems. As has been mentioned before the world finds itself in a sort of Military arms race similar to the nuclear arms race. This situation must be quickly fixed before the escalation is drastically increased. Firstly countries must stop feeling threatened by each others arsenals, so as to stop developing AI and Big Data weapon systems in response. This is easier said than done. How is one not supposed to be afraid of another's arsenal?

The only solution is the creation of international safeguards including treaties and bans. Also the purchase of said AI and big data from other countries and organisations is exceptionally dangerous. Smaller countries and big organisations don't have as many obligations in order to use these weapons, making them even more dangerous than the already dangerous countries that possess these weapons. Then there is the problem of tracking AI and Big Data. Although many international organisations and NGOs comment on AI and Big data, specifically drones, none of them are specifically dedicated to them and have internationally accepted status. Obviously there are many more other solutions to these problems, but these will be left to the delegates to discover and fully implement.

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