Autonomous Weapon Systems

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Definition

- Autonomous weapons are robotic weapon systems that can engage in offensive or defensive operations without requiring human intervention.

- An autonomous weapon is triggered by sensors and software, which match what the sensors detect in the environment against a 'target profile'.

Context

- Autonomous Weapons systems seem to be one of the grievous inventions which is interlinked to enormous socio-political disparities. The threshold of this invention is directly points toward the survival of the human race. The usage and the reliability on this technology has been always questioned. Since the origination of this ideology, there has been a various shift in the geopolitical point of view. The basic human ethic of survival has been questioned. This modern world invention has always been in the context of the law. The accuracy and the efficiency of this technology plays a significant role in shift of power on international platform

Implementation

These systems are primarily used in the army, military, and navy.

For example, this could be the shape of a military vehicle or the movement of a person. It is the vehicle or the victim that triggers the strike, not the user.

Implementation

AI Innovation is rapidly growing at very fast pace in military applications making it possible to deploy fully autonomous weapon systems that incorporate software and algorithms which, on their own, would be able to make critical determinations about life and death

AWS main value, design goal is to save lives they are mainly designed for military purposes also to put lethal force across different terrains (Air, Land, Sea)

These weapons are designed mainly to reduce loss of human life where machines will fight conflicts instead of humans.

Implementation

There has been political disparity on the usage of these weapons, which is not really affecting countries' governments in stopping the production or usage of autonomous weapons. I feel that the usage of these weapons should be limited (partially used for the benefit of humankind) because, in some situations, autonomous weapons reduce human risk.

Geopolitical Issues

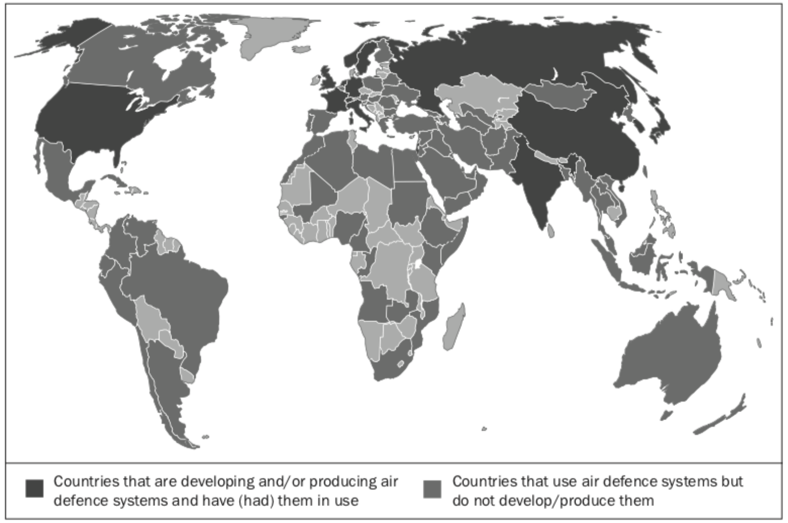
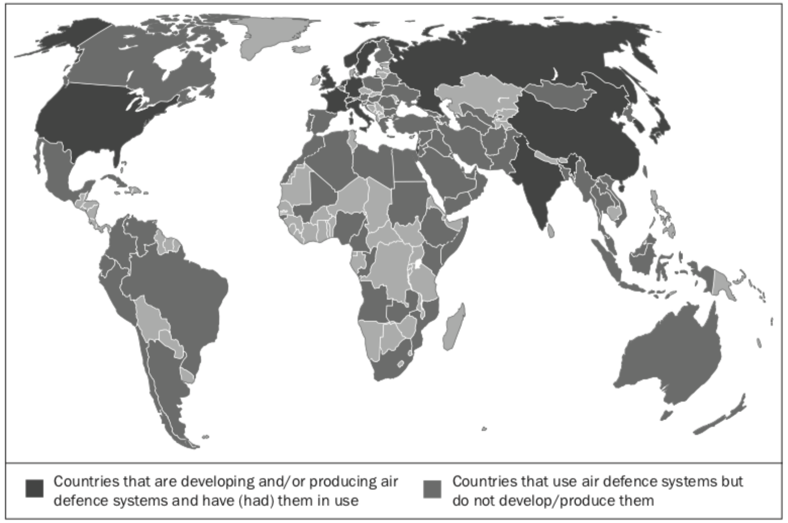

Countries that are developing and/or producing air defence systems and have (had) them in use
Countries that use air defence systems but do not develop/produce them

Figure 3.6. Countries with ‘automatic’ or ‘semi-automatic’ air defence systems

Source: SIPRI dataset on autonomy in weapon systems.

- This modern period invention has always been a geopolitical concerns
- The cover of this invention might have colours that shows it is to support the integrity of a nation In contrast there are clear shadows of the enormous destruction which manifest that it is for geopolitical supremacy.

Geopolitical Issues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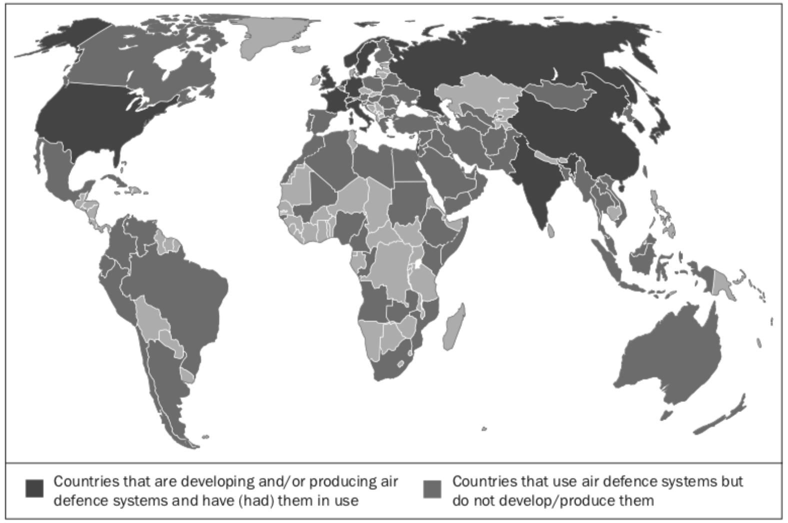
Source: SIPRI dataset on autonomy in weapon systems.

- It puts mankind at the edge , Same as invention of nuclear or hydrogen weapons.
- People might feel that it might be the newer version of a weapon, but it isn't.
- It might be the one last invention.

Geopolitical Issues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Ethical Concerns surrounding AWS

- The AWS weapons could not comprehend human dignity and right to life this inability raises serious moral questions about the prospect of allowing a fully autonomous weapons to take a human life

Ethical Concerns surrounding AWS

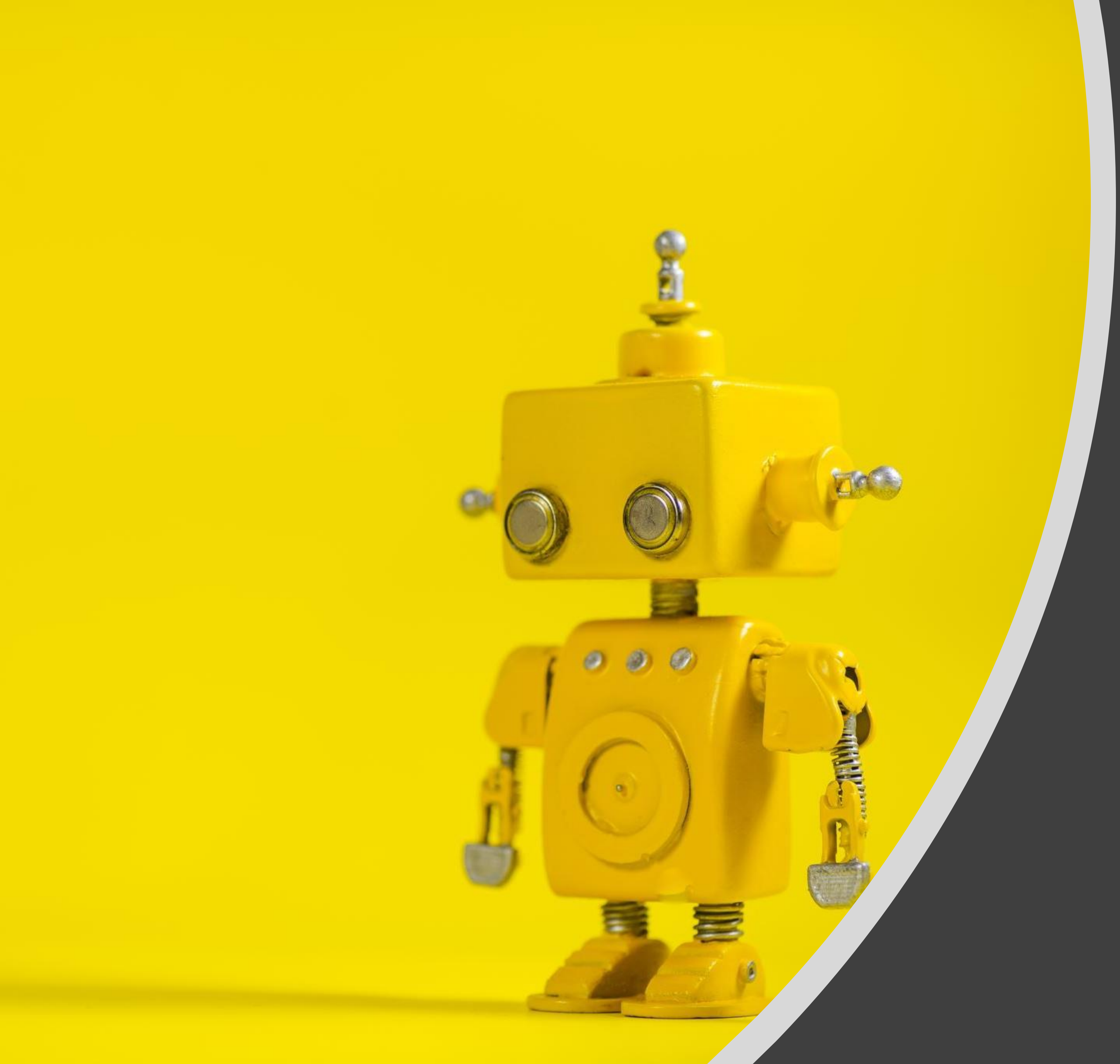
- Though many root causes of war crimes which are caused by human attributes like Revenge, Frustration, Pleasure, Immaturity can be removed still human life and death decisions cannot be given over to machines as that diminishes the value of human life.

Reliability

- Machines powered with AI could malfunction like harming every moving target, sensor breakdown, connectivity loss, etc.
- Systems relying on internet are at risk of cyber attack
- AI Malfunction – AI evolvement to level of disobeying humans
- Accidental shooting risk due to confusion from false signals.

Reliability

Autonomous weapons systems will be more reliable than humans considering that humans are bound to life and death. In contrast, they are not reliable in making decisions as they are not capable of making human emotional decisions. Of course, they can minimize human errors, but at the end of the day, they are obeying a few sets of commands. Robots are not better soldiers



Machine don’t have emotions

The machines are considered as implementors of commands.

A human cannot rely complete on an autonomous vehicle ,Which always arise a question on AWS reliability.

Leave me...leave me...

Legal Concerns

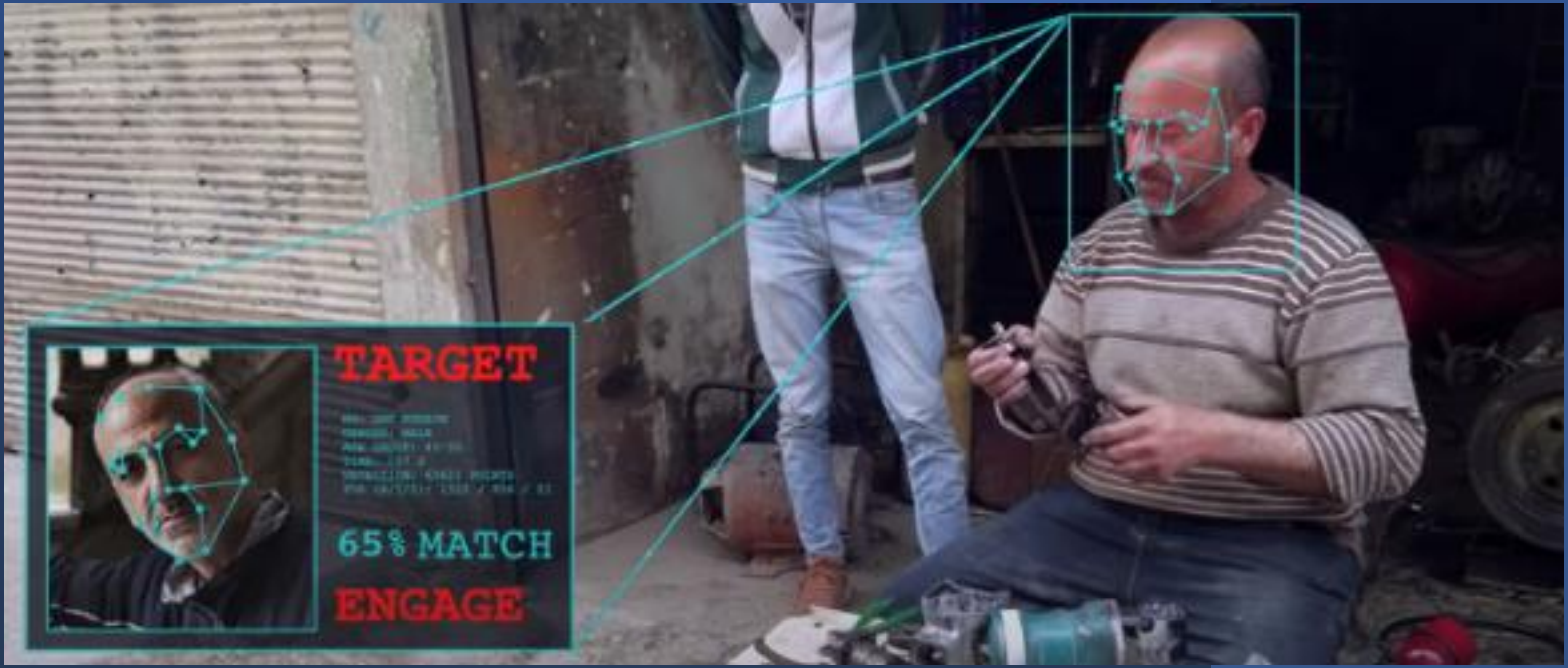
- AWS which are fully autonomous (systems are unpredictable) they threatens people protected under international humanitarian law
- The Standards like Accountability, Moral Responsibility and the ability to safety control the weapon cannot be predicted with evolving behavior of AI implemented in weapons.

Legal Concerns

The Legal Policies, Governance rules are not compatible with use of fully AWS yet so currently it is necessary to stop use of AWS which are designed directly for targeting humans.

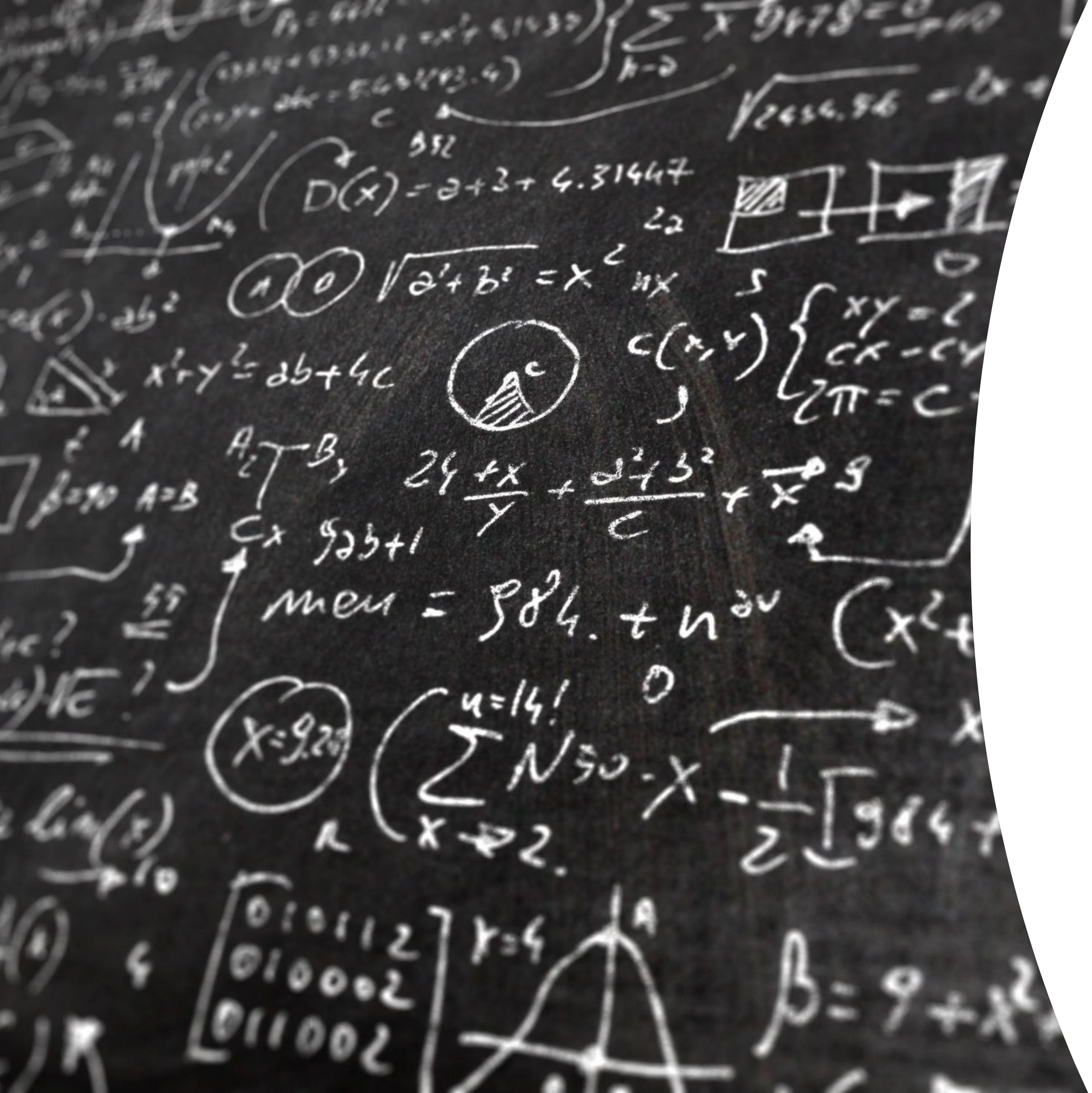
Technical Concerns

Even though we are in the decade of technological supremacy, there are still some areas where technical glitches exist. If the weapon system fails to differentiate between a farmer, a citizen, and a soldier, there might be a greater mess and the loss of innocent lives. Even Tesla autopilot mode needs human interaction and is not 100% reliable.


TARGET
65% MATCH
ENGAGE

Social Issues

- Racism In Artificial Intelligence
- Protection of civilians
- LAWS lack meaningful human control they create a moral accountability gap. If they malfunction or commit war crimes.



World is not a simulator

- Testing and Evaluating – Challenges
  - To develop standards and verifiable requirement for AWS, and to include testability throughout the system's lifecycle.

Ensuring Robustness – Challenge

- An Autonomous system could be entirely pre-programmed without AI.
- To ensure that safety and security, with respect to minimizing harm to humans and other types of collateral damage.
- To establish standards and legal norms regarding hacking and adversarial manipulation of AWS.

Advantages

- Remove Human error in warfare – Avoiding misinterpretation of an enemy's intent and starting a war scenario due to stress, emotions(anger , fear), where use of machines could eliminate accidental deaths as they do not stress during combat situations .
- Loss of Human life can be minimized – Where humans are directly involved exchanging ammunition, AWS machines could replace them.
- Reduce risk of Nuclear war due to human error
- Increased Defense and Security, Elimination of Human Suffering

Disadvantages

- The core meaning or development of autonomous weapons systems seems to be for the purpose of war. The threshold for war will be increased because a technical glitch in an autonomous weapon system could result in starting a war. A robotic war might decrease human loss, but the intensity of the war changes. The combination of AI and weapon systems seems more dangerous. An autonomous weapons system can initiate a war