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The Terror Of One Preposition: Man In The Loop vs Man On The Loop

The new wave of technology is moving from “man in the loop” to “man on the loop” weapon system. The prime example is the advent of autonomous cars. From initial capabilities like cruise control which were initiated by the driver, we are now moving towards more autonomous capabilities. The new generation of cars like Tesla can shift to autonomous mode under certain conditions and only require the driver to take control if they feel Tesla’s AI cannot perform well in the given conditions. A similar development has been happening with military weapons. From traditional weapon systems where a human would decide when to fire, whom to fire at, etc., we are now transitioning to more sophisticated systems where autonomous weapons can perform certain tasks very well. Human intervention is limited to being aware of what is happening and having the power to veto the decision. There are three different types of classifications for human intervention: “man in the loop”, “man on the loop” and “man out of the loop”. All three of them have their own ethical and technical challenges associated with them. In this paper, I will discuss some challenges associated with “man in the loop” and “man on the loop” weapons and will provide some insights as to what I think is the next logical progression for these weapon systems.

For “man in the loop”, the computer assists the operator by providing critical information to aid in decision making. The responsibility of executing the action still relies on the human operator. Most of the traditional, somewhat, automated weapons fall under this category. There

are certain disadvantages to having these kinds of weapon systems. If all the actions are being relayed over communication, enemies can jam the communication lines and take out the robots. For all intent and purposes, the robots will be sitting ducks in this scenario and this is not ideal for close combat. Even if the communications are fine, there are certain situations where the human response time is unacceptable. For example, it may take too long for a human to return fire. By the time the human operator may take action, the attackers could have easily moved to a different spot. On the other hand, if the robot was able to return fire at whoever was shooting at it instantly, then that would be a more effective response. Furthermore, personnel savings and force-multiplying advantage through these systems can only be achieved through an operator commanding multiple robots. Studies have found that this is not very feasible as humans have a hard time controlling multiple units at once, reducing the performance levels by 50%. These weapon systems also have a big ethical question pinned on them. How do we assign responsibility for any accidents? With such close machine and human interaction, the process of isolating faults and assigning responsibility becomes a challenging task. I do concede that these weapons have their advantage. They help in reducing casualty, increase offensive capabilities, expand the defensive reach, and can help the military take actions in the areas which were not previously accessible. That said, there is a potential that more autonomy will provide significantly more benefits and that is why there is an impetus to move towards “man on the loop” and “man out of the loop” weapon systems.

On the other hand, “man on the loop” weapon systems have a different kind of human interaction. For the most part, these weapons work independently. The human operator is just monitoring the execution of certain decisions with the veto power to override them. These systems are also not infallible and come with their different ethical and technical challenges. Having the option of veto power does not necessarily mean that it is going to be exercised.

Given how much we trust these automated systems, would we question them during a high-stress combat situation? A good example of this is the incident with the Aegis system in 1988 U.S.S. Vincennes. Despite all the hard evidence pointing to the flying jet being a civilian aircraft, the operator chose to believe the computer's classification of the jet to be military and allowed it to fire. This incident raises some very crucial questions. How do we ensure that the operators using these technologies will use their veto power during similar situations as mentioned above? How can we ensure that these robots meet certain effectiveness criteria before they are deployed in the field? How do we make sure that these robots are only used in places for which they are designed for?

Additionally, there is an issue of moral disengagement as soldiers are pushed further away from the battlefield. The remote control of weapon systems like predators encourages a PlayStation like mentality that can make operators careless about the decisions to kill. Singer provides a quote from a young pilot to illustrate the point above: "It's like a video game. It can get a little bloodthirsty. But it's fucking cool". On the other hand, there have been some other reports where the pilots seem to be suffering from a different kind of combat stress. These pilots carry out the missions from a remote cubicle and then go back home. The stark transition from war to family life can be a little unpleasant. Furthermore, these pilots can see more of the aftermath of their actions due to the presence of high-resolution cameras on the drones. This is more than a conventional pilot will ever see. These are still relatively new issues and need to be further evaluated to identify and remedy the new problems arising due to the change in warfare weaponry.

At this point, I believe that we are at a stage between "man in the loop" and "man on of the loop". I don't think achieving "man out of the loop" weapons is possible right now with the current technology. Furthermore, there needs to be a discussion carried out on whether robots

should be able to kill people of their own volition without any oversight? That said, we are rapidly transitioning towards “man on the loop” weapon systems but there are some major technical challenges that need to be overcome. First and foremost, we need to create artificial intelligence that is capable of solving particular tasks with a similar fidelity as humans. These systems then need to be extensively tested to generate trust within the community. The reason for major reluctance for robotic weapons is the lack of regulations and awareness on how they will be tested and deployed. The operators for these weapons need to be trained in the fallacies of these weapons. They need to understand that these systems will not work 100% in all situations. Based on multiple sources of intel, these operators need to decide whether to let the weapon execute its action or whether to veto it. Furthermore, with the advent of more sophisticated autonomous weaponry, the rules of war need to be updated to reflect these changes. Although arguments can be made both for and against these kinds of weapons systems, I think they are an inevitable future of warfare. As such, there should be a global effort to explore the implications of these automatic weapons and mitigate their negative effects.

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