

Artificial Minds: in defence of borders.

In this report, I want to address the topic of Artificial Intelligence (AI) as it is used by the U.S. Department of Defence (DOD). I chose the DOD as they have real world use cases for improving upon and implementing AI for military functions. Given that AI is used in a military setting, I want to investigate their reasons for considering the use of AI as opposed to using humans; what is the motivating factor to adopt this technology.

The military functions using this technology raise a few personal concerns to consider relevant threats which military AI may bring to society -- as many may have noted in the Terminator movies. Such threats may either be founded as AI has no emotions and cannot empathise in situations that may require human judgement. The societal backlash against a rogue machine harming civilians would be devastating to the DOD's reputation as would the mistrust of other far more innocent uses of AI, such as trading algorithms, medical diagnoses, or automatic appointment reminders.

Given that self-driving cars are not yet a public reality, due to the sheer complexity of the many variables that humans are capable of handling with ease, it is of interest how DOD approaches these challenges in situations that are more life-threatening than merely driving a car to the corner café. As part of the report, I want to discuss and evaluate the potential drawbacks of implementing combat-ready AI given the ability of hackers to gain control of almost any digital system connected to the internet. This is a drawback, one that I trust the DOD has considered carefully. To achieve efficiency of AI in a defence setting, I shall consider security, possible battery packs for mobile soldiers, energy, and connectivity requirements. I will also consider the training models they utilise to train their algorithms. Lastly, I want to look at the positive aspects of utilising artificial intelligence in a military setting: eventual peace. If it is possible to send machines where men once fought, there is a strong possibility that men will no longer fight each other which will have a positive impact on society.

Lastly, the report will refer to the threats identified (hacking, lack of remote power, external countries, untrained AI models, unknown terrain, or territory) and make recommendations based on research from external industries such as robotics (I am considering Boston Dynamics), computer vision (Microsoft, Google), soldier health and network monitoring.

[Michael:

In summary, I want to address the topic of AI in a setting where technology and people interact very closely; handing human authority to something that is not living; to research where the technology is at in handling complexities we demand of it. In a way too, using the topic of DOD also tackles the idea of Internet of Things in a limited sense because of the connected devices they utilise on the battlefield. This topic also attempts to briefly touch on the ethical nature of using AI and its societal impact if anything goes wrong -- I am not sure how best to structure the report to bring out these points.

I feel I might struggle to locate tables or diagrams to show much, however I hope that research will uncover a few; otherwise, I might have to generate my own diagrams.

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OVERVIEW

I will use text from the paragraph above.

Introduce the notion of Artificial Intelligence (AI). Introduce the Department of Defence and their link to AI

WHAT IS ARTIFICIAL INTELLIGENCE?

~~*Describe what is AI and Machine Learning (ML).*~~

~~*Discuss the concepts of “models” and “supervised”, “unsupervised” learning.*~~

~~*Discuss the applications of AI in general real-world context, without reference to DOD at this point.*~~

NATIONAL SECURITY

Discuss the importance for each country to maintain defence of their borders and sovereignty where desired.

Introduce the U.S. Department of Defence and the type of projects they have engaged with over the years.

Discuss the DODs adoption of AI into the use of national security.

AI WARNINGS

Critique the use of AI in a military setting, explain the dangers and highlight the imperfect nature of the technology.

Discuss the concept of hacking, unknown terrain, “system reboots” or any number of mechanical failures that could occur to a device which soldiers or colonels are depending.

Discuss the theft of intellectual property by other nations and how such theft may work against the DOD.

Discuss the notion of Asimov's five laws of robotics which we would weave into the AI narrative.

AI BENEFITS

Discuss the DOD's beneficial use of AI

TECHNOLOGY IMPROVEMENTS

Analyse the current state of the technology.

RECOMMENDATIONS

Provide recommendations to the adoption of AI in a military function. These recommendations will arise from the "WARNINGS" and "BENEFITS" and "IMPROVEMENTS" listed above.

Other recommendations may also arise from research obtained from other industries, such as computer vision work done by Microsoft and Google.

References

TO BE FILLED WITH MORE APPROPRIATE REFERENCES

Hoadley, D. & Lucas, N (2018) Artificial Intelligence and National Security [pdf]
Available from <https://a51.nl/sites/default/files/pdf/R45178.pdf>

https://www.researchgate.net/profile/Jan-Kallberg/publication/341525577_For_ethical_artificial_intelligence_security_is_pivotal/links/5ec57fc0a6fdcc90d6891663/For-ethical-artificial-intelligence-security-is-pivotal.pdf

[Michael] [below are personal notes for author, **start**]

Answers these questions:

1. **Evaluate** how the organisation has adapted the technology that helped facilitate changes

2. **Critically discuss and evaluate** benefits and drawbacks of implementing such technology
3. **Critically analyse** (using diagrams, models and/or frameworks), how the organisation can achieve efficiency by implementing proposed technology – consider competitive advantage
4. **Recommendations** to protect organisation from outlined threats, security and other challenges imposed on the organisation.

[Michael] [personal notes, **end**]