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## **Artificial Intelligence and Non-linearity: An Analysis of the Limitations of Statistical Learning AI in Warfare**

Artificial Intelligence (AI) is poised to have a deep transformative effect on the character of war. While discussions on military AI predominantly centered on the implications of Lethal Autonomous Weapons Systems (LAWS), empirical evidence highlights that AI applications extend beyond the notion of “killer robots”, especially in the form of decision-support and Lethal Targeting Assistance software. This is shown in these systems' increasing presence in contemporary conflicts, as exemplified by the Russo-Ukrainian war and the conflict between Israel and Hamas.

However, the existing body of literature in Security Studies investigating military AI usually falls short of comprehensively understanding the functioning, advantages, and limitations of statistical learning-based algorithms underpinning current AI systems. This hinders the effective study of military AI and often leads to tendencies of technological determinism and overestimation of AI's actual role and capabilities in warfare. This research seeks to address this pitfall by integrating Strategic Studies literature with knowledge from the field of Machine Learning to understand whether current AI systems are capable of facing war on their own devices.

This research aims to demonstrate the limitations of statistical learning-based AI in warfare by drawing on Security Studies literature to identify the set of capabilities required to effectively address the inherently nonlinear and chaotic nature of warfare. Subsequently, these capabilities will be tested against the heuristics and main tenets of Machine Learning. By doing so, this research provides technically informed insight into the suitability of AI in warfare, shedding light on its actual limitations and potential. The central argument posits that current AI systems are not ready to be deployed autonomously and without human judgment, as they rely on an inductive type of reasoning based on dataset analysis that is ill-suited to face the complex and unpredictable nature of warfare.

**What discipline or branch of humanities or social sciences do you identify yourself with?**

Security Studies

**If you are submitting an Open Panel proposal, have you included all four abstracts in attachment?**

No, I am submitting a Closed Panel abstract

**Are you a PhD student or early-career researcher?**

Yes

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