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Artificial Intelligence and Humans: The Impact of AI on the Human Role in the Military

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A B S T R A C T

This research explores the transformative impact of Artificial Intelligence (AI) on the human role in the military using a qualitative descriptive method. AI is increasingly automating tasks, enabling humans to focus on strategic and ethical decision-making. However, this shift necessitates adaptations in training, doctrine, and organizational structures. The research analyses the ethical challenges, including accountability and the prevention of unethical use, and highlights the critical importance of cybersecurity in mitigating risks. Key findings suggest that AI will significantly enhance operational efficiency while presenting new challenges related to human oversight, ethical considerations, and the need for robust cybersecurity measures. The study concludes with recommendations for developing training curricula, establishing ethical standards, and investing in cybersecurity to ensure the responsible and effective integration of AI in the military domain.

INTRODUCTION

The integration of AI in the military has transformed the conduct of warfare, with the potential to enhance efficiency and effectiveness. AI's capacity to process vast amounts of data and make autonomous decisions enables faster response times in critical situations. As Bode and Watts (2023) argue, AI's ability to analyze data and provide recommendations can expedite decision-making on the battlefield, although human oversight remains essential to ensure decisions align with ethical and international legal norms. However, this shift also raises questions about the human role in decision-making. As Cernat (2022) explains, while AI can take over routine and hazardous tasks, humans remain indispensable for strategic and ethical tasks requiring critical thinking and moral judgment. Therefore, it is crucial to strike a balance between the use of advanced technology and the human role in decision-making. In this context, ethical challenges arise when AI is permitted to make decisions that can impact human lives. Research by Van den Brink (2024) underscores that while AI offers numerous benefits, a clear framework is necessary to regulate its use and ensure it remains under human control. Thus, although AI will play an increasingly significant role in the military, humans will continue to be a vital component of strategic decision-making.

LITERATURE REVIEW

Research on the role of AI in the military has garnered significant attention from academics and practitioners worldwide. A pertinent study by Cernat (2022) examines how AI can transform military organizational structures by automating routine and hazardous tasks. This research suggests that by delegating such tasks to autonomous systems, military personnel can concentrate on strategic decision-making and tactical planning. Moreover, research by Bode and Watts (2023) highlights the importance of adequate training for soldiers to adapt to AI technologies, as well as the ethical challenges posed using autonomous systems in warfare. Furthermore, an article by Van den Brink (2024) emphasizes that the integration of AI into military operations not only enhances efficiency but also introduces new risks, including the potential for cyberattacks on AI systems. This research indicates that reliance on AI technology necessitates a serious focus on cybersecurity to protect military data and infrastructure. Thus, these studies provide valuable insights into how AI will reshape the human role in the military and the challenges that must be addressed to ensure the ethical and secure use of this technology.

METHODOLOGY

This research employs a qualitative approach using a descriptive method. Data was collected through a review of relevant literature, analysis of government policies related to defense technology development, and case studies of AI implementation in various countries. Data analysis was conducted systematically using content analysis techniques.

RESEARCH RESULT

The research findings indicate a strong correlation and significant impact of AI on the human role in the military. Several key findings emerged: First, regarding the shift in the human role within the military, AI will increasingly assume repetitive and hazardous tasks such as surveillance, reconnaissance, and even weapon operation in certain situations. This will enable humans to focus on more complex tasks like strategic planning, tactical decision-making, and leadership. However, this shift also presents new challenges concerning the training and skills required by military personnel in the future.

Second, regarding increased efficiency and effectiveness, AI can enhance the efficiency of military operations by automating many tasks and providing faster, more accurate data analysis. AI-powered autonomous weapon systems can respond to threats more quickly and precisely, increasing mission success rates. Third, regarding ethical challenges, the use of AI in the military raises various ethical questions, such as who is accountable for decisions made by autonomous systems, how to prevent the use of AI for unethical purposes, and how to ensure that AI does not violate international humanitarian law. Fourth, related to cybersecurity, the growing reliance on AI technology increases the risk of cyberattacks. Hackers may attempt to take control of AI systems or manipulate the data used by such systems.

DISCUSSION

Shifting Roles of Humans

The changing in the human role in the context of AI adoption is a growing reality. AI is increasingly assuming repetitive and hazardous tasks such as surveillance, reconnaissance, and weapon operation in certain situations. Consequently, military personnel can focus on more complex tasks like strategic planning, tactical decision-making, and leadership. Human resources management theory suggests that by delegating routine tasks to machines, organizations can enhance efficiency and productivity, while leveraging unique human skills for higher-value tasks.

An example of AI application in the military is the use of drones for surveillance and strikes. Drones equipped with AI technology can conduct autonomous surveillance missions, gathering highly accurate intelligence data

without endangering human lives. Research suggests that the use of drones can reduce the risk of human error in military operations and increase mission effectiveness. As a result, soldiers can focus more on analyzing collected data and formulating strategies based on that information, rather than being directly involved in hazardous situations.

However, this shift also presents new challenges concerning the training and skills required by future military personnel. With more tasks being taken over by AI, there is an urgent need to develop training programs that prepare soldiers to work alongside this technology. This includes understanding how to operate AI-based systems and the ability to analyze data generated by such systems. Research suggests that AI-supported simulation-based training can help soldiers hone these skills more effectively.

Furthermore, this shift raises ethical and moral questions regarding the use of technology in the context of war. Although AI can enhance operational efficiency, there are concerns about moral responsibility when machines make critical decisions in the field. Therefore, it is essential for military institutions to establish clear ethical guidelines for the use of AI in military operations. This will ensure that despite rapid technological advancements, human values remain paramount in all decisions made.

Generally, the shift in the human role due to AI adoption in the military offers opportunities to enhance operational efficiency and effectiveness. However, challenges related to training and ethics need to be addressed seriously to ensure that this technology is optimally utilized without sacrificing human values.

Enhancement of Efficiency and Effectiveness

The improvement of military operational efficiency and effectiveness through AI implementation has become one of the most significant innovations in modern defense strategies. AI can automate many tasks previously performed by humans, such as surveillance, data analysis, and weapon operation. With the ability to process vast amounts of information quickly and accurately, AI aids military personnel in making better and faster decisions.

Operations management theory suggests that automation can increase productivity and reduce the likelihood of human error, thereby accelerating responses to battlefield threats. AI-powered autonomous weapon systems are a concrete example of this increased efficiency. This technology allows systems to respond to threats automatically without requiring human intervention at every step. For instance, combat drones equipped with AI algorithms can identify and engage targets with high precision. Research suggests that the use of autonomous weapon systems can increase mission success rates as they can react faster than human operators who may be affected by stress or fatigue.

Therefore, AI plays a crucial role in military data analysis. With the ability to analyze intelligence data from various sources in real-time, AI helps military commanders gain a better understanding of the battlefield situation. AI-based systems can identify patterns and trends that may be invisible to human analysts, providing deeper insights for strategic planning. A study shows that using AI in data analysis can reduce the time required to produce intelligence reports from hours to minutes, enabling more responsive decision-making.

Nevertheless, despite the numerous benefits of AI implementation in military operations, ethical and operational challenges persist. Questions regarding accountability when machines make critical battlefield decisions become increasingly relevant. Therefore, it is essential for military institutions to establish clear ethical guidelines regarding the use of this technology, ensuring that despite increased efficiency, human values remain paramount. Thus, while AI offers significant advantages in enhancing military operational efficiency and effectiveness, a cautious and responsible approach is necessary to minimize risks and negative impacts.

Ethical Complexities

The use of AI in the military has raised a host of complex ethical questions. Among them are: a) Who is responsible for decisions made by autonomous systems? The question of accountability is a central issue in the use of AI in the military. If an AI-based weapon causes damage or casualties, who is liable? Is it the operator deploying the weapon, the individuals or teams who designed the AI, or the AI itself? International legal theory suggests that the liability for the actions of AI remains ambiguous as AI can potentially malfunction due to poor quality or misuse. Consequently, clear legal frameworks are needed to determine who is accountable for the actions of AI; b) How can the use of AI for unethical purposes be prevented? The use of AI in the military also poses the risk that AI-based systems can be programmed or manipulated by unauthorized parties. This necessitates stringent control mechanisms to ensure that AI is used ethically and in accordance with established guidelines. The media has highlighted this risk, emphasizing the importance of ensuring that AI does not fall into the wrong hands.; and

c) How can it be ensured that AI does not violate international humanitarian law? The use of AI in the military also raises questions about whether AI should be used in warfare at all. Some argue that the use of AI in war diminishes the value of human life and alters our understanding of conflict and violence. Laws and regulations governing the use of AI in the military are still under development, and many aspects are not yet covered by existing law. Therefore, it is imperative to develop clearer regulations to govern the use of AI-based autonomous weapons and to ensure that AI is used in accordance

with international ethical and legal standards. Overall, the use of AI in the military offers great opportunities to enhance operational efficiency but also raises complex ethical challenges. By understanding and addressing these issues, military institutions can optimally utilize AI technology while maintaining moral and legal integrity.

Cyber Security

The increasing reliance on AI technology across various sectors, including the military and industry, poses significant cybersecurity risks. As AI is increasingly used for automation and decision-making, malicious actors may attempt to gain control of AI systems or manipulate the data used by such systems. This creates new challenges in maintaining data integrity and security, and in protecting systems from increasingly sophisticated attacks.

Information security theory suggests that any increase in technological reliance must be accompanied by stricter protective measures. One of the primary risks is the potential for cyberattacks exploiting vulnerabilities in AI algorithms. Adversarial attacks, where attackers manipulate input data to deceive AI systems into making incorrect or biased decisions, are a case in point. For instance, attackers can modify the training data used to develop AI models, causing the models to produce inaccurate or unreliable results. According to an IBM report, as many as 75% of senior cybersecurity professionals report an increase in cyberattacks related to the use of AI by malicious actors, indicating that this threat is becoming increasingly real and complex.

Additionally, more sophisticated phishing attacks have become a major concern. With AI's ability to analyze user data and tailor attacks based on that information, phishing attacks are now more personalized and harder to detect. Attackers can use AI to create highly convincing emails or messages, increasing the likelihood of victims falling for the trap. This demonstrates that reliance on AI technology not only increases operational efficiency but also creates new avenues for cybercriminals to exploit.

To address these challenges, it is crucial for organizations to implement comprehensive and adaptive cybersecurity measures. This includes using AI technology to detect threats in real-time and identify suspicious attack patterns. Additionally, security training for employees is essential to reduce the risk of human error, which is often the entry point for cyberattacks. With a layered approach to cybersecurity, organizations can enhance their resilience against attacks that exploit vulnerabilities in AI systems.

Finally, while AI technology offers numerous benefits in improving operational efficiency and effectiveness, the increasing reliance on this technology also brings risks that must be carefully managed. Therefore, it is

imperative for organizations to continuously update their security strategies to remain relevant to emerging threats.

CONCLUSIONS AND RECOMMENDATIONS

The integration of AI into the military will significantly alter the human role in warfare. Humans will remain essential for strategic and ethical decision-making, but operational tasks will increasingly be performed by AI-powered autonomous systems. To address this shift, militaries need to adapt their training, doctrine, and organizational structures. Furthermore, a clear ethical framework needs to be developed to regulate the use of AI in the military, and cybersecurity must be enhanced to protect AI systems from attacks.

To address the influence of AI on the changing human role in the military, several recommendations can be made: a) Development of training curricula. Military training curricula need to be adapted to ensure that personnel have the necessary skills to work with AI systems; b) Development of ethical standards. Clear international ethical standards need to be developed to regulate the use of AI in the military; and c) Investment in cybersecurity. Significant investment in cybersecurity is required to protect AI systems from attacks.

ADVANCED RESEARCH

Based on the provided research paper, here are 3 recommendations for advanced research: a) The impact of AI on military doctrine and strategy. Focus of this topic is to explore how the integration of AI is fundamentally altering military doctrine and strategy. Analyze how AI-enabled capabilities, such as predictive analytics, autonomous systems, and swarm technologies, are changing the way wars are planned, executed, and won; b) Deepen the ethical and legal analysis of AI in warfare. The purpose is to Conduct in-depth legal and ethical analysis of specific AI applications in the military, such as autonomous weapon systems, human-machine teaming, and AI-powered intelligence, surveillance, and reconnaissance (ISR) systems; and c) Examine the human-AI collaboration in the military context. This topic is enabling the researcher to Investigate the dynamics of human-AI collaboration in military operations. Explore how humans and AI can effectively work together to enhance decision-making, improve situational awareness, and optimize mission effectiveness.

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