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Artificial Intelligence in Defence Warfare: A Review of Applications, Challenges, and Future Directions

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Abstract: *Artificial Intelligence (AI) is reshaping modern military strategies by enabling autonomous decision-making, enhancing threat detection, and revolutionizing defense systems across the globe. The integration of AI into defense has initiated a paradigm shift in how nations prepare for and execute warfare. AI technologies such as machine learning, deep learning, computer vision, and natural language processing are now being embedded in autonomous vehicles, drones, cybersecurity systems, and real-time surveillance infrastructures. This paper presents a comprehensive review of current AI applications in defense warfare, highlighting notable advancements, ongoing challenges, ethical concerns, and future research directions. Real-world case studies, such as the Russia-Ukraine conflict and US Department of Defense AI initiatives, are discussed to illustrate the real-life impact of AI in defense. By evaluating existing literature and military deployments, this study emphasizes the necessity for ethical governance, international regulations, and technological innovation in ensuring AI's responsible and effective use in warfare.*

Keywords: Artificial Intelligence, Defence Warfare, Military AI, Autonomous Weapons, Cybersecurity, Ethics in AI, Surveillance, National Security

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