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AI-Driven Threat Intelligence: Leveraging Machine Learning to Empower Cybersecurity Applications for Enhanced Threat Detection and Response

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Abstract

This paper presents an in-depth exploration of the application of Artificial Intelligence (AI), specifically Machine Learning (ML), in enhancing threat intelligence for cybersecurity applications. As cyber threats continue to evolve in complexity and sophistication, traditional cybersecurity measures struggle to keep pace. This research proposes AI-driven threat intelligence as a viable solution, leveraging the predictive and adaptive capabilities of ML to enhance threat detection and response. Our study delves into the role of ML in cybersecurity, highlighting its potential in automating and improving the accuracy of threat detection. We further explore how AI can empower cybersecurity applications, transforming them into proactive systems capable of anticipating and mitigating threats before they cause significant damage.

Key findings reveal that AI-driven threat intelligence significantly improves the efficiency and effectiveness of cybersecurity applications. Our research demonstrates that ML algorithms can successfully identify patterns and anomalies that indicate potential threats, thereby enabling faster and more accurate responses. Furthermore, we propose a novel ML-based framework for threat intelligence, which shows promising results in early testing. This paper contributes to the growing body of knowledge on AI in cybersecurity, providing valuable insights for researchers, practitioners, and policymakers in the field. The findings underscore the potential of AI and ML in revolutionizing threat intelligence, paving the way for more secure digital environments.

Keywords: Artificial Intelligence, Machine Learning, Cybersecurity, Threat Intelligence, Threat Detection, Threat Response