

Intelligent Finance: Harnessing AI for Enhanced Cyber Security

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Abstract

The rapid digitalization of the financial sector has transformed banking, payment systems, investment services, and financial management while simultaneously increasing exposure to sophisticated cyber threats. Artificial Intelligence (AI) offers significant opportunities to strengthen cybersecurity by enabling intelligent, automated, and adaptive approaches to threat detection and risk management. This paper explores the role of AI in enhancing cybersecurity within intelligent financial systems, with particular emphasis on machine learning, deep learning, behavioural analytics, and automated threat detection. AI-based systems can analyze large volumes of financial transactions and network activity in real time to identify anomalies, fraudulent behaviour, unauthorized access, malware, phishing attempts, and other potential security incidents. Predictive analytics can further support proactive risk assessment by identifying patterns associated with emerging cyber threats. The integration of AI into financial cybersecurity can improve the speed and accuracy of threat detection while reducing dependence on purely rule-based security mechanisms. However, the use of AI also introduces challenges, including adversarial attacks, data privacy concerns, biased models, false positives, lack of explainability, and the security of AI systems themselves. This study emphasizes the need for a comprehensive approach combining AI-driven security technologies with human expertise, robust governance, encryption, continuous monitoring, and regulatory compliance. By integrating intelligent analytics with established cybersecurity practices, financial institutions can strengthen their resilience against evolving cyber risks while maintaining trust, privacy, and operational continuity in increasingly interconnected financial ecosystems.

Keywords: Artificial Intelligence, Intelligent Finance, Cybersecurity, Financial Technology, Machine Learning, Fraud Detection, Threat Detection, Risk Management, Data Privacy, Financial Security.