Advanced Data Analytics for Network Security: Detecting and Mitigating Threats through Real - Time Data Processing

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Abstract:

This research aims to investigate the enhancement of real-time threat identification and mitigation through the application of advanced data analytics in network security. The findings of this literature review and qualitative interviews with field specialists indicate that real-time data processing significantly improves the precision of threat detection and the velocity of response. We highlight advanced machine learning techniques such as decision trees and neural networks due to their ability to identify patterns overlooked by traditional methods. The research underscores the essential requirement for a workforce skilled in data analytics and cybersecurity, as well as the significance of a systematic implementation approach. Recommendations for organizations encompass employee training, utilization of real-time data, and the establishment of systematic deployment strategies. This study has certain limitations, such as the exclusive use of qualitative data. Nonetheless, it demonstrates that data analytics can enhance network security management. It recommends that subsequent research examine ethical issues, such as data protection and privacy within advanced analytics, and do empirical assessments of the proposed methodologies. Businesses must modify their security protocols to leverage data analytics capacity to mitigate the effects of emerging cyber threats.

Keywords:

Data Analytics, Network Security, Threat Detection, Machine Learning, Real-Time Processing, Cybersecurity, Implementation Framework.