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Network Anomaly Detection System

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Abstract: *The Network Anomaly Detection System aims to spot unusual activities or cyber threats inside a computer network by comparing live traffic with normal behavior. With the rise in complex and encrypted network data, traditional inspection methods fall short. Our system uses a mix of* ***machine learning algorithms, statistical models, and rule-based logic*** *to detect abnormalities like intrusions, DDoS attacks, and unauthorized access. The model studies* ***traffic flow, packet features, and user activity patterns*** *to build a clear baseline of normal behavior. Once deployed, it monitors network traffic in* ***real-time*** *and instantly flags anything that looks suspicious. By automating this process, it not only improves the speed of response but also cuts down manual monitoring efforts. The system focuses on* ***accuracy, low false alarms, and adaptability*** *against new threats. Overall, it provides an intelligent and efficient way to protect networks, ensuring stronger cybersecurity and smoother network operations.*

Keywords*:* Network Security, Anomaly Detection, Machine Learning, Intrusion Detection, Encrypted Traffic, DDoS Prevention, Cyber Threat Analysis, Real-Time Monitoring, AI in Cybersecurity, Traffic Flow Analysis

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