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Optimization of IoT Network Security in Smart Cities Using Neural Network-Based Algorithms

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Abstract:

The rapid proliferation of Internet of Things (IoT) devices in smart cities has heightened concerns about network security, data integrity, and system resilience. This research explores the deployment of neural network-based algorithms to optimize IoT network security within urban smart city infrastructures. The study proposes a deep learning framework for real-time anomaly detection, intrusion prevention, and adaptive threat response. By analyzing heterogeneous traffic data across smart city services, the system learns complex threat patterns and dynamically enhances security protocols. Performance evaluation demonstrates significant improvements in detection accuracy, false-positive reduction, and computational efficiency compared to traditional security models. This approach provides a scalable and intelligent solution to fortify IoT ecosystems, ensuring robust and sustainable digital urbanization.

Keywords:

IoT security, smart cities, neural networks, intrusion detection, deep learning, cybersecurity optimization.

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