

Enhancing Internet of Things Security: A Blockchain-Based Approach for Preventing Spoofing Attacks

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Abstract : With the proliferation of Internet of Things (IoT) devices in various industries, there has been a concurrent rise in security vulnerabilities, particularly spoofing attacks. This study explores the potential of blockchain technology in enhancing the security of IoT systems and mitigating these attacks. Blockchain's decentralized and immutable ledger offers significant promise for improving data integrity, transaction transparency, and tamper-proofing. This research develops and implements a blockchain-based IoT architecture and a reference network to simulate real-world scenarios and evaluate a blockchain-integrated intrusion detection system. Performance measures including time delay, security, and resource utilization are used to assess the system's effectiveness, comparing it to conventional IoT networks without blockchain. The results provide valuable insights into the practicality and efficacy of employing blockchain as a security mechanism, shedding light on the trade-offs between speed and security in blockchain deployment for IoT. The study concludes that despite minor increases in time consumption, the security benefits of incorporating blockchain technology into IoT systems outweigh potential drawbacks, demonstrating a significant potential for blockchain in bolstering IoT security.

Keywords : internet of things, spoofing, IoT, access control, blockchain, raspberry pi

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