

Blockchain and Cryptocurrency Security: Challenges, Innovations, and Future Directions

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Abstract: *Blockchain technology and cryptocurrencies have emerged as transformative innovations with the potential to revolutionize various sectors, including finance, supply chain management, and healthcare. However, their widespread adoption also brings forth significant security challenges. This paper provides an overview of the security issues facing blockchain and cryptocurrency systems, explores current research efforts to address these challenges, and discusses potential future directions in blockchain and cryptocurrency security research. We examine topics such as secure consensus mechanisms, smart contract vulnerabilities, privacy-preserving techniques, and regulatory considerations. By understanding these challenges and exploring innovative solutions, we aim to foster the development of more robust and secure blockchain-based systems.*

Keywords: Blockchain, Cryptocurrency, Security, Consensus Mechanisms, Smart Contracts, Privacy, Scalability, Regulatory Compliance, Research Directions.

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