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Analysis and Improvement Of An E-Voting System Based on Blockchain”

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Abstract: *This study explores the enhancement of e-voting systems through the integration of blockchain technology, focusing on addressing critical challenges such as security, transparency, and voter confidence. By leveraging a Permissioned Blockchain with a Proof of Authority (POA) consensus mechanism, the proposed system ensures decentralized and tamper-proof vote validation. Key features include secure voter authentication using multi-factor techniques, smart contract-driven candidate selection, and immutable vote recording to eliminate vulnerabilities like identity fraud and vote tampering. Additionally, error-handling mechanisms and scalability improvements enhance system reliability and usability. By addressing limitations in existing e-voting systems, this study highlights blockchain's potential to revolutionize digital democracy by providing a secure, transparent, and scalable framework for future electoral processes.*

Keywords: E-voting systems, Blockchain technology, Permissioned Blockchain, Proof of Authority (POA), Vote validation, Voter authentication

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