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Decentralized Voting System using Ethereum Blockchain Technology

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Abstract: *The Ethereum blockchain has transformed the landscape of decentralized applications (DApps) by offering a secure, transparent, and tamper-resistant framework. This paper delves into Ethereum's core functionalities, such as smart contracts, MetaMask integration, and decentralized voting systems. Promoting transparency, preventing fraud, and removing the need for intermediaries. Additionally, we explore challenges like scalability constraints, high gas fees, and vulnerability to Sybil attacks, which may limit its feasibility in certain voting environments, particularly those with low trust and restricted internet access.*

Beyond technical hurdles, we assess the legal and ethical implications of decentralized voting, including privacy concerns and regulatory complexities. By analyzing both real-world applications and theoretical models, this study sheds light on the strengths and shortcomings of Ethereum-based voting solutions. While blockchain holds immense potential to redefine digital governance, critical challenges must be addressed before widespread adoption. Lastly, we propose strategic enhancements, such as hybrid blockchain models and advanced security mechanisms, to improve the accessibility, scalability, and reliability of decentralized voting in future elections.

Keywords: Ethereum , Blockchain , Voting , Decentralised