

ABSTRACT

ETHEREUM E-VOTING SYSTEM FOR DECENTRALIZED AND SECURE ELECTIONS

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As we keep on moving forward towards a more sophisticated world, one of the things remained being done mostly traditionally is voting. Considering how widespread computer literacy has been, it is more surprising that we have not implement e-voting widely yet. Voting is one of the things that would improve greatly should it be digitalized. It could save a lot of work, paper, and manual labour. And luckily for us, the emerging blockchain is just the right technology to make that a reality. Lately, blockchain technologies have seen a significant boom, mostly due to the many advantages it offers that could be applied in just about every aspects. Blockchain is also seeing huge potentials in a future of decentralization.

In this research, an Ethereum Blockchain is integrated into an e-voting system in hopes that upon using this system, election could be done more efficiently, effectively, decentralized, transparent, and fraud-proof. Ganache is used to simulate the Ethereum network, while Metamask is used as the wallet to handle the transactions performed.

The developed application simulates the Ethereum Virtual Machine locally and the smart contracts can be successfully deployed to the blockchain. The application interface then can communicate with the blockchain with the help of Web3.js that it could fetch and write data immutably to the blockchain, successfully hot reloading the interface with every transaction added to keep track of the vote count. In spite of that, further research and development is needed for this application to be adopted into real world use.

Keywords: e-voting, blockchain, ethereum, bitcoin, decentralized applications