

Enhancement and Evaluation of a Blockchain-Based Electronic Voting System

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Abstract: *Emphasizing on addressing important issues such security, transparency, and voter confidence, this paper investigates the improvement of e-voting systems by means of blockchain technology. Leveraging a Permissioned Blockchain with a Proof of Authority (POA) consensus mechanism guarantees distributed and tamper-proof vote validation in the proposed system. Important characteristics include smart contract-driven candidate selection, secure voter identification utilizing multi-factor approaches, and immutable vote recording to eradicate vulnerabilities such identity fraud and vote manipulation. Furthermore improving system dependability and usefulness are scalability gains and error-handeling systems. By tackling constraints in current e-voting systems, this paper emphasizes blockchain's ability to transform digital democracy by offering a scalable, transparent, safe architecture for next elections.*

Keywords: Blockchain technology, permissioned blockchain, electronic voting systems, Proof of Authority (POA), voter authentication, and vote validation

