Enhancement and Evaluation of a Blockchain-Based Electronic Voting System

Prof. R. C. Dumbre, Dr. Sunil S. Khatal, Sumit Sunil Gawali,
Sambhaji Eknath Avhad, Sanket Vitthal Doke
Department of Computer Engineering
Sharadchandra Pawar College of Engineering, Otur (Dumbarwadi), Junnar, Pune

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.