

## UxVote – Blockchain-Based E-Voting System for Secure Electronic Voting

BAK Vinsura<sup>1#</sup>, RMVD Bandara<sup>1</sup>, ADAI Gunasekara<sup>2</sup>, B Hettige<sup>1</sup> and GAI Uwanthika<sup>2</sup>

<sup>1</sup>*Department of Computer Engineering, General Sir John Kotelawala Defence University, Sri Lanka*

<sup>2</sup>*Department of Computer Science, General Sir John Kotelawala Defence University, Sri Lanka*

#vinsurakumuthu@gmail.com

Voting is a process of group decision-making or opinion-gathering that can be utilized to resolve any ideological disagreements. Voting on paper is still the most popular method. However, this traditional method of collecting votes is quite expensive and employs paper ballots. As a solution to this, a very secure and transparent solution, which should also ensure the privacy of the participants, is a necessity. An e-voting system can be taken into consideration as a remedy to the problems the traditional voting system currently has, and one of the technologies that are most suited for use in highly secure situations like blockchain. A hashing technique serves to strengthen the security of a blockchain, which is a decentralized system. Peer-to-Peer networks and a decentralized timestamping server make it difficult to manipulate or alter the data in this system. In this paper, we present a safe voting system that was created using blockchain technology that allows voters to select one candidate from an existing group for major elections (e.g.: presidencies) and general elections. In this system, we used the Ethereum network, Ganache blockchain, and the Solidity programming language to create and test an example e-voting application as a smart contract for the Ethereum network. The records of ballots and votes will eventually be stored on the Ethereum blockchain. Voting requests are handled by the consensus of all Ethereum nodes and can be made by users straight from their Ethereum wallets. This agreement offers an open environment for electronic voting. With the help of this system, voting may be done more securely and affordably online.

**Keywords:** *Blockchain, UX of voting, E-voting system, dapps, ethereum*