

To Ensure Maximum Voter Privacy in E-Voting Using Blockchain, Convolutional Neural Network, and Quantum Key Distribution

Authors : Bhaumik Tyagi, Mandeep Kaur, Kanika Singla

Abstract : The advancement of blockchain has facilitated scholars to remodel e-voting systems for future generations. Server-side attacks like SQL injection attacks and DOS attacks are the most common attacks nowadays, where malicious codes are injected into the system through user input fields by illicit users, which leads to data leakage in the worst scenarios. Besides, quantum attacks are also there which manipulate the transactional data. In order to deal with all the above-mentioned attacks, integration of blockchain, convolutional neural network (CNN), and Quantum Key Distribution is done in this very research. The utilization of blockchain technology in e-voting applications is not a novel concept. But privacy and security issues are still there in a public and private blockchains. To solve this, the use of a hybrid blockchain is done in this research. This research proposed cryptographic signatures and blockchain algorithms to validate the origin and integrity of the votes. The convolutional neural network (CNN), a normalized version of the multilayer perceptron, is also applied in the system to analyze visual descriptions upon registration in a direction to enhance the privacy of voters and the e-voting system. Quantum Key Distribution is being implemented in order to secure a blockchain-based e-voting system from quantum attacks using quantum algorithms. Implementation of e-voting blockchain D-app and providing a proposed solution for the privacy of voters in e-voting using Blockchain, CNN, and Quantum Key Distribution is done.

Keywords : hybrid blockchain, secure e-voting system, convolutional neural networks, quantum key distribution, one-time pad

Conference Title : ICBC 2023 : International Conference on Blockchain and Cryptocurrencies

Conference Location : New Delhi, India

Conference Dates : February 06-07, 2023