

Voting System using Blockchain Ethereum (dApp)

Dr. R. A. Zamare¹, Pramey Deshmukh², Chinmay Gulhane³, Mohd Meeran Iqbal⁴,
Mohd Daniyal⁵, Anurag Vinchurkar⁶

Professor, Department of Computer Science and Engineering (CSE)¹

Students, Department of Computer Science and Engineering (CSE)^{2,3,4,5,6}

Shri Sant Gajanan Maharaj College of Engineering, Shegaon, Maharashtra, India

Abstract: *The use of E-Voting systems has become popular in these recent years due to the ability of Blockchain environment to provide a more efficient and convenient voting process. Earlier, the security and integrity of e-voting systems has been very concerning, as they are vulnerable to cyber-attacks and manipulation. On the contrary, Blockchain technology provides a decentralized and distributed platform that can ensure the integrity and immutability of data. This research paper proposes an e-voting system based on blockchain technology. The proposed system aims to provide a secure, transparent, and tamper-proof voting process. The system utilizes smart contracts, which automates the voting processes and ensures the accuracy of the results. The system also provides transparency and accuracy, allowing voters to verify their vote and ensuring that the results are accurate and trustworthy. The proposed system will be tested and evaluated to determine its effectiveness and feasibility. The evaluation will focus on the security, scalability, and usability of the system. The security evaluation will test the system's ability to prevent attacks and ensure the confidentiality of the votes. The scalability evaluation will test the system's ability to handle a large number of voters and transactions. The usability evaluation will test the ease of use and accessibility of the system for all types of voters.*

Keywords: E-Voting

REFERENCES

- [1] S. Al-Maaitah, M. Qatawneh and A. Quzmar, "E-Voting System Based on Blockchain Technology: A Survey," 2021 International Conference on Information Technology (ICIT), Amman, Jordan, 2021, pp. 200-205, doi: 10.1109/ICIT52682.2021.9491734.
- [2] M. Al-madani, A. T. Gaikwad, V. Mahale and Z. A. T. Ahmed, "Decentralized E-voting system based on Smart Contract by using Blockchain Technology," 2020 International Conference on Smart Innovations in Design, Environment, Management, Planning and Computing (ICSIDEMPC), Aurangabad, India, 2020, pp. 176-180, doi: 10.1109/ICSIDEMPC49020.2020.9299581.
- [3] K. Patidar and S. Jain, "Decentralized E-Voting Portal Using Blockchain," 2019 10th International Conference on Computing, Communication and Networking Technologies (ICCCNT), Kanpur, India, 2019, pp. 1-4, doi: 10.1109/ICCCNT45670.2019.8944820.
- [4] S. T. Alvi, M. N. Uddin and L. Islam, "Digital Voting: A Blockchain-based E-Voting System using Biohash and Smart Contract," 2020 Third International Conference on Smart Systems and Inventive Technology (ICSSIT), Tirunelveli, India, 2020, pp. 228-233, doi: 10.1109/ICSSIT48917.2020.9214250.
- [5] S. K. Vivek, R. S. Yashank, Y. Prashanth, N. Yashas and M. Namratha, "E-Voting Systems using Blockchain: An Exploratory Literature Survey," 2020 Second International Conference on Inventive Research in Computing Applications (ICIRCA), Coimbatore, India, 2020, pp. 890-895, doi: 10.1109/ICIRCA48905.2020.9183185.
- [6] Benabdallah, A. Audras, L. Coudert, N. El Madhoun and M. Badra, "Analysis of Blockchain Solutions for E-Voting: A Systematic Literature Review," in IEEE Access, vol. 10, pp. 70746-70759, 2022, doi: 10.1109/ACCESS.2022.3187688.

- [7] D. Golnarian, K. Saedi and B. Bahrak, "A decentralized and trustless e-voting system based on blockchain technology," 2022 27th International Computer Conference, Computer Society of Iran (CSICC), Tehran, Iran, Islamic Republic of, 2022, pp. 1-7, doi: 10.1109/CSICC55295.2022.9780507.
- [8] R. Taş and Ö. Ö. Tanrıöver, "A Systematic Review of Challenges and Opportunities of Blockchain for E-Voting," *Symmetry*, vol. 12, no. 8, p. 1328, Aug. 2020, doi: 10.3390/sym12081328.
- [9] RuhiTaş, Ömer Özgür Tanrıöver, "A Manipulation Prevention Model for Blockchain-Based E-Voting Systems", *Security and Communication Networks*, vol. 2021, Article ID 6673691, 16 pages, 2021. <https://doi.org/10.1155/2021/6673691>
- [10] Cosmin-Iulian, I., Iftene, A., & Gifu, D. (2021). A Large-Scale E-voting System Based on Blockchain. In E. Insfran, F. González, S. Abrahão, M. Fernández, C. Barry, H. Linger, M. Lang, & C. Schneider (Eds.), *Information Systems Development: Crossing Boundaries between Development and Operations (DevOps) in Information Systems (ISD2021 Proceedings)*. Valencia, Spain: Universitat Politècnica de València.