SECURE DIGITAL VOTING SYSTEM USING BLOCKCHAIN TECHNOLOGY

E. Mamatha, K. Supriya, S. Ashwitha, K. Anvitha

Under the esteemed guidance of
Ms M. Sudha Rani
Assistant Professor

Bachelor of Technology
Department of Information Technology
**BVRIT HYDERABAD College of Engineering for Women**

May 11, 2024

AGENDA

Introduction

- Traditional voting process often require extensive manual work, and higher risk of frauds in election process.

- A digital voting system using blockchain offers a secure, transparent, immutable, decentralized and efficient way to conduct elections.
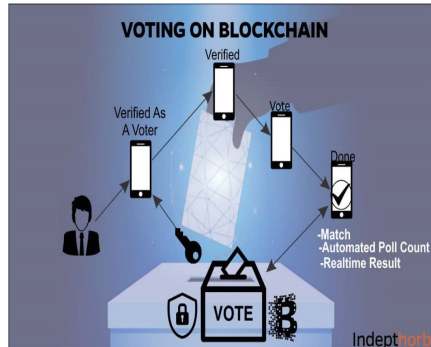
Existing system

- Mostly used all over the world are Paper Ballots. Electronic voting systems are being popular in last decade and are still unsolved.

- The main disadvantages of this existing system are security, reliability, third party integration and double voting.
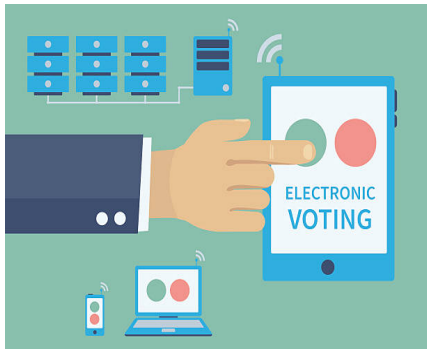
Problem statement

- Online voting system requires advancements in voting process and cryptographic algorithms to create a secure and transparent voting system.

- The ultimate goal is to ensure the integrity of the electoral process and establish a highly secure, transparent, and efficient digital voting system using blockchain technology.

Literature Survey

S. No	Title of the paper	Author(s)	Description
1	MyVote-Blockchain Based Online Voting System	Dr. Sonali Ridhorkar, Monal Wanjari, Shamsul Ansari, Pankaj Sonwane - 2023	In first paper they have used the smart contract to control the voting process, face detection system for avoiding the risk of fake voters and cryptograpic algorithm like SHA-256 to provide security.
2	Online Voting System Using Blockchain Technology	Farzana Khareem, Muhammad Safeer, Nadhiya Shafeeq, Shanavas KS, L i j a Joy - 2022	In this paper they have used the MD5 hashing algorithm for providing the security and they have used biometric verification for avoiding the risk of fraud votes and a decentralized ledger for avoiding third part verification.

Literature Survey

| S. No	Title of the paper	Author(s)	Description
3	E-VOTING SYSTEMS USING BLOCKCHAIN: A SYSTEMATIC REVIEW AND FUTURE RESEARCH DIRECTION	Dhiraj Amrutkar, Gaurav Dongare, Sayog Sonune, Dr-Archana Chaudhari - 2021	They have used smart contract for ethereum platform and the Asymmetric key cryptography to protect against attacks and Digital signatures are used to validate votes and authentication using a unique voter ID.
4	Implementation of Secure Voting System using Blockchain	Dipali Pawar, Pooja Sarode, Shilpa Santpure, Poonam Thore, Prof. Pravin Nimbalkar - 2020	They have used the cryptographic algorithms like SHA-3, DSS algorithm will provide security and cost-effective election. Encryption is used in the system.No votes are tampered in the system.This leads to achieve transparency.

Literature Survey

S. No	Title of the paper	Author(s)	Description
5	Recognition of identical twins using fusion of various facial feature extractors	Ayman Afaneh, Fatemeh Noroozi, Önsen Toygar - 2020	They have used a biometric system using feature-level fusion and PCA, HOG, and LBP feature extractors to distinguish identical twins. Results demonstrate, achieving significantly lower equal error rates under various conditions, and outperforming other methods in non-twin identification scenarios.

Proposed system

- Implementing blockchain technology to create tamper-resistant, transparent and decentralized secure digital voting system.

- The system maintains transparency through real-time vote counts, offering a reliable and tamper-proof approach to voting.

- SHA-256 Hashing algorithm is used for providing security.

Architecture
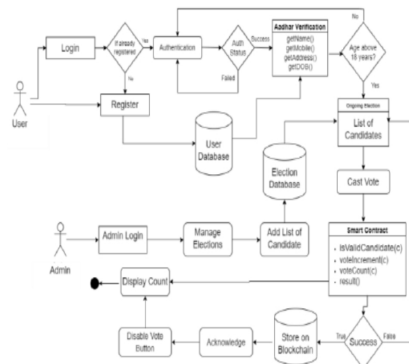
Source: www.researchgate.net

Tools and Technology

- **Blockchain Technology:** Secure, transparent digital ledger for verifying transactions.

- **Solidity:** High-level language and develop smart contract.

- **Ganache:** Ganache used for Ethereum development and testing.

- **Metamask:** Cryptocurrency wallet and gateway to blockchain applications.

- **Firebase:** A platform used to create iOS, Android, web applications.

- **Face-API:** Used for face detection, authentication and recognition.

Feasibility Study

- Register the user with the credentials and face capture into the database.

- Login to the site and use Face-API to detect the face.

- Cast the vote.

Societal impact

- Goal 9: Industry, Innovation increases transparency and contributes efficiency in electoral process.

- Online voting can encourage more people to participate in elections, potentially increasing voter turnout and make it easier for citizens who are geographically distant.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

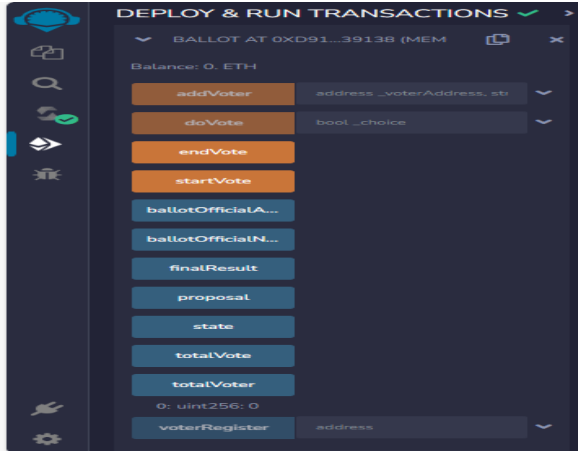# Results & Discussion
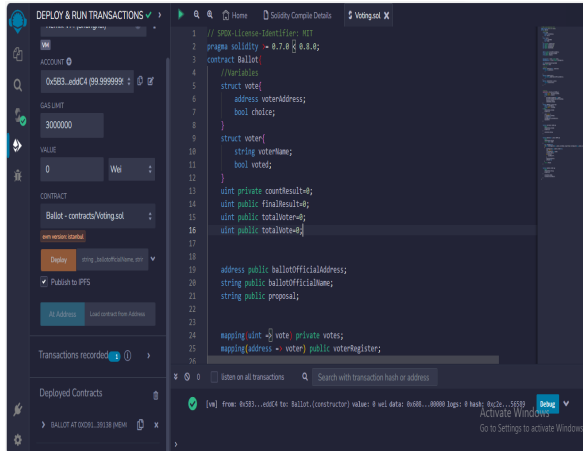
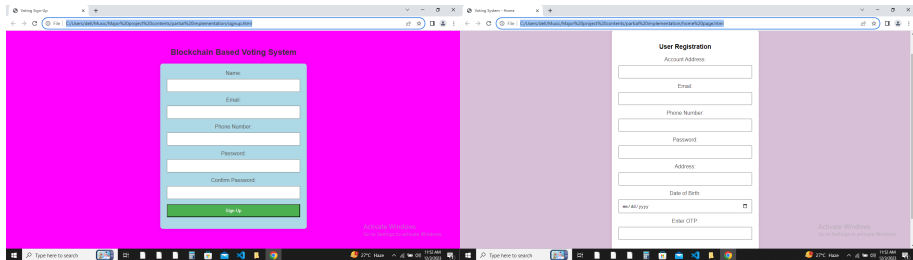Figure: Solidity Source Code
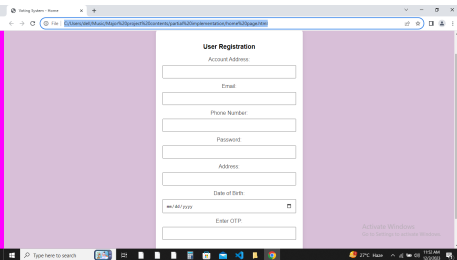
Figure: Solidity Output

Figure: Voters Signup Page.
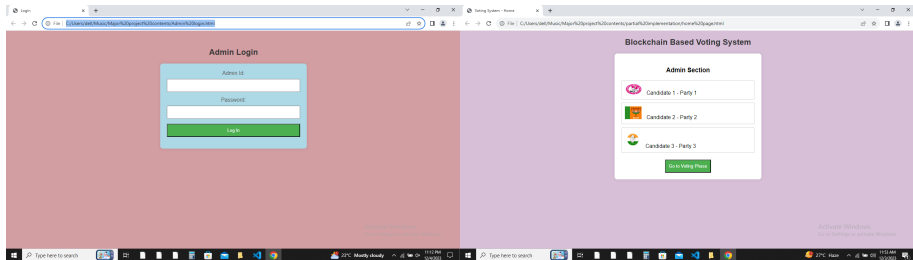

Figure: Voters Registration Page.
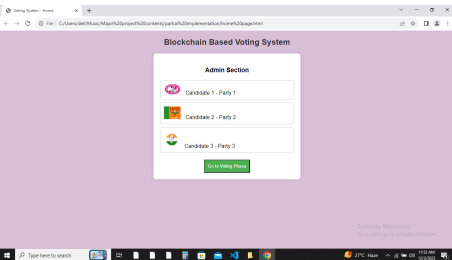
Figure: Admin login Page.

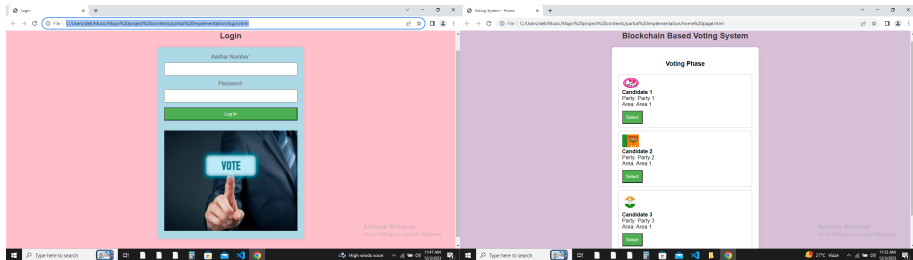

Figure: Party details.

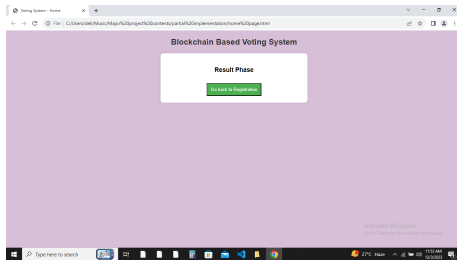Figure: Casting Vote.

Figure: Voters Results.

Figure: Result Phase.

References

- Dr. Sonali Ridhorkar, Monal Wanjari, Shamsul Ansari, Pankaj Sonwane "MyVote-Blockchain Based Online Voting System", in International Research Journal of Innovations in Engineering and Technology (IRJIET) – Volume 7, Issue 4, pp 268-274, April-2023 .
  DOI : https://doi.org/10.47001/IRJIET/2023.704041
  https://www.researchgate.net/publication/370692053

- Farzana Khareem, Muhammad Safeer, Nadhiya Shafeeq, Shanavas KS, Li j a Joy "Online Voting System Using Blockchain Technology", in International Journal of Computer Science Trends and Technology (IJCST) – Volume 10 Issue 3, May-Jun 2022.
  DOI : https://doi.org/10.56452/7-2 550
  http://www.ijcstjournal.org/volume-10/issue-3/IJCST-V10I3P34.pdf

References

- Dhiraj Amrutkar, Gaurav Dongare, Sayog Sonune, Dr-Archana Chaudhari "E-VOTING SYSTEMS USING BLOCKCHAIN: A SYSTEMATIC REVIEW AND FUTURE RESEARCH DIRECTION", in EPRA International Journal of Research and Development (IJRD), Volume : 6 , Issue : 5, May 2021.
DOI : 10.36713/epra7157
https://www.researchgate.net/publication/351967946

- Dipali Pawar, Pooja Sarode, Shilpa Santpure, Poonam Thore "Implementation of Secure Voting System using Blockchain", in INTERNATIONAL JOURNAL OF ENGINEERING RESEARCH TECHNOLOGY (IJERT), Volume : 9, Issue : 6, June-2020.
DOI : IJERTV9IS060974
https://www.ijert.org/research/implementation-of-secure-voting-system-using-blockchain-IJERTV9IS060974.pdf

Thank you