BIOMETRIC SECRITY SYSTEM FOR VOTING PLATFORM

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ABSTRACT

The Biometric Security System offers a range of features and benefits, including enhanced voter authentication to prevent impersonation and voter fraud, efficient scalability to accommodate large electorates, and accessibility for all citizens, including those with disabilities. Furthermore, it encourages voter trust by providing clear information on data usage and security, along with comprehensive privacy safeguards.

Biometric security systems for voting platforms leverage unique physiological or behavioural traits, such as fingerprints, facial features, iris patterns, voice, and others, to verify the identity of voters.

PROBLEM STATEMENT

The electoral process faces a range of critical challenges that threaten the integrity and fairness of elections. Traditional methods of voter identification, such as ID cards and paper-based voter lists, are susceptible to voter impersonation and fraudulent voting. Without biometric authentication, it is difficult to reliably confirm the identity of voters, leaving the system vulnerable to exploitation by those seeking to undermine the democratic process. Without robust identity verification, the potential for individuals to vote multiple times remains a significant concern. This could distort election outcomes and erode public trust in the electoral system.

OUR SOLUTION:

Using a biometric security system for a voting platform offers numerous solutions to address the challenges associated with electoral integrity, security, and accessibility. It combines the robustness of biometric authentication with the immutability of blockchain. Voters' biometric data, such as fingerprints or facial recognition, is securely stored on the blockchain, ensuring their unique identity. The use of blockchain guarantees data integrity, transparency, and resistance to tampering, addressing concerns about data security and fraud in voting systems. Biometric systems can be designed to accommodate voters with disabilities, ensuring that no eligible voter is excluded from the democratic process.

SCOPE OF THE PROJECT

Blockchain

Blockchain is a distributed and decentralized digital ledger technology that records a chronological and immutable chain of transactions across a network of computers. Each set of transactions, known as a "block," is linked to the previous one, forming a chain.

Identify all stakeholders involved, including government agencies, election commissions, technology providers, voters, and legal authorities. Ensure strict adherence to relevant laws and regulations governing biometric data, privacy, and elections. Develop a legal framework for data handling and security.

Steps taken to complete the project:

Step 1:

- Open the Zip file and download the zip file. Extract all zip files

Step 2 :

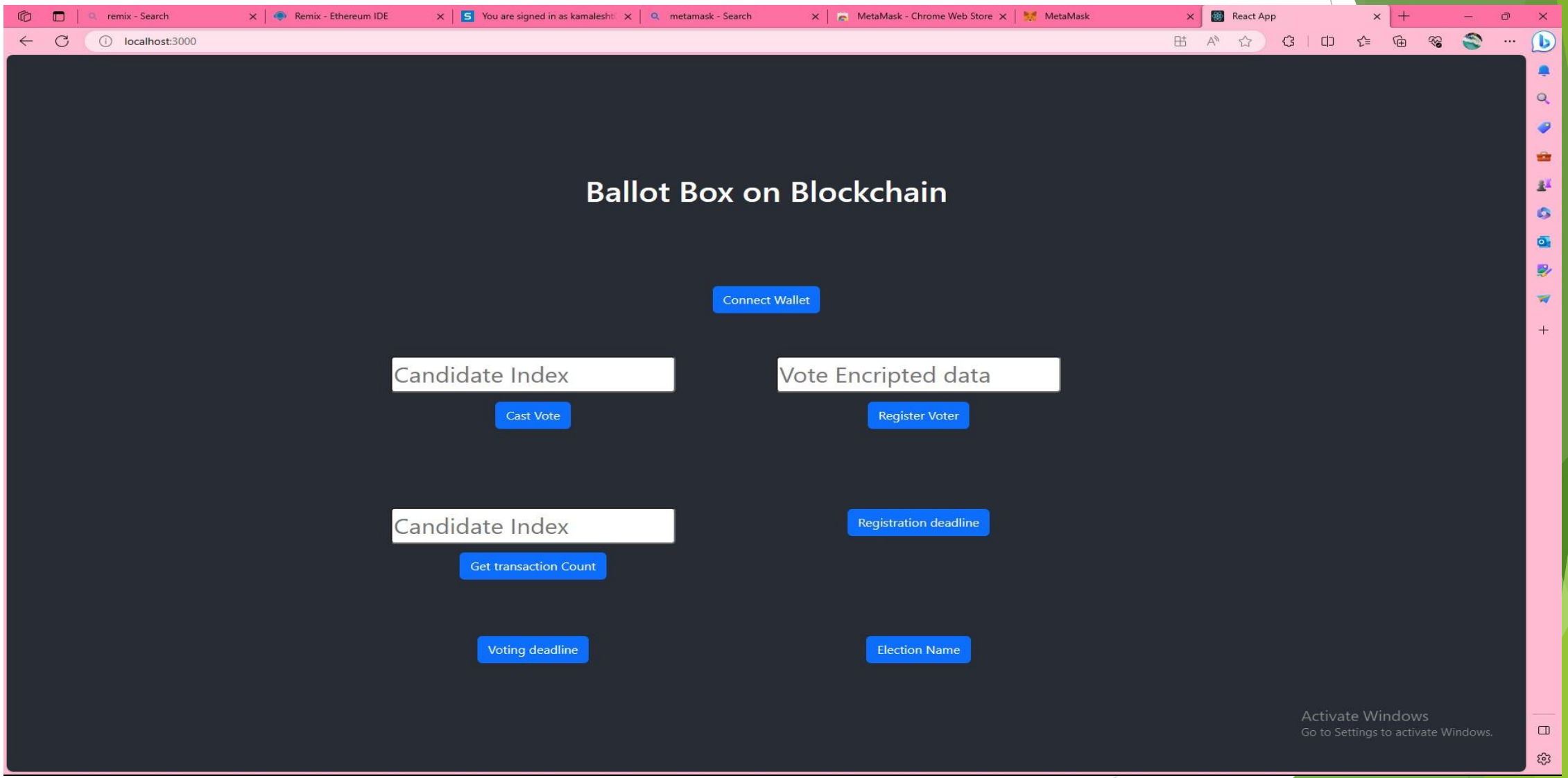
- 1.Open vs code in the left top select open folder. Select extracted file and open .
- 2. Select the project name.sol file and copy the code.
- 3. Open the remix ide platform and create a new file by giving the name of project name.sol and paste the code which you copied from vs code.
- 4. Click on solidity compiler and click compile the project name.sol
- 5. Deploy the smart contract by clicking on the deploy and run transaction.
- 6. select injected provider - MetaMask. In environment
- 7. Click on deploy. Automatically MetaMask will open and give confirmation. You will get a pop up click on ok.

- 8. In the Deployed contract you can see one address copy the address.
- 9. Open vs code and search for the connector.js. In contract.js you can paste the address at the bottom of the code. In export const address.
- 10. Save the code.

Step 3:

- open file explorer
- 1. Open the extracted file and click on the folder.
- 2. Open src, and search for utiles.
- 3. You can see the frontend files. Select all the things at the top in the search bar by clicking alt+ A. Search for cmd
- 4. Open cmd enter commands npm install , npm bootstrap and npm start .
- 5. It will install all the packages and after completing it will open {LOCALHOST IP ADDRESS} copy the address and open it to chrome so you can see the frontend of your project.

OUTPUT


remix - Search
Remix - Ethereum IDE
You are signed in as kamalesht
metamask - Search
MetaMask - Chrome Web Store
MetaMask
React App
localhost:3000
Ballot Box on Blockchain
Connect Wallet
Candidate Index
Cast Vote
Vote Encripted data
Register Voter
Candidate Index
Get transaction Count
Registration deadline
Voting deadline
Election Name
Activate Windows
Go to Settings to activate Windows.

CONCLUSION

A biometric security system for a voting platform holds great promise for enhancing the integrity and trustworthiness of the electoral process. Biometric authentication can simplify the voting process, making it more accessible and efficient for eligible voters, reducing wait times and administrative burdens. By reducing the risk of voter fraud, a biometric system can enhance the overall credibility of the electoral system and protect the sanctity of the democratic process. Biometric data can prevent individuals from voting multiple times, further safeguarding the fairness of elections. Biometric systems must be designed with the utmost security to prevent unauthorized access, hacking, or tampering. Legal frameworks and ethical guidelines must be established to regulate the collection, storage, and use of biometric data for voting. Ensuring that all eligible voters can participate, including those who may not have access to the required biometric devices, is crucial.

FUTURE WORK

The challenge of developing biometric security systems is not only security but also protecting the secrecy of the ballot, a bedrock principle of free and fair elections. Currently there is “no known technology that can guarantee the secrecy, security, and verifiability of a marked ballot transmitted over the Internet”.

Advanced AI and machine learning algorithms can improve the accuracy of biometric matching, reducing false positives and false negatives. Developments in biometric technology may enable more secure remote voting options, allowing voters to cast their ballots from anywhere in the world while maintaining a high level of security.

THANK YOU !!