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Smart Election Voting System Using Blockchain

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ABSTRACT: In the digital era where hacking and bypassing a system is easy, tampering of data is always possible leading to bad situations. Blockchain is used to store data which is near impossible to change or tamper with as it is very secure in nature. Voting as a process in any nation is an essential event and if votes get miscalculated by any external source it will be harmful. To avoid such kinds of situations and making it more comfortable blockchain technology comes in acknowledgment. This paper proposes a decentralized national e-voting system based on blockchain technology. It includes an admin panel to schedule the voting, manage candidates and declare the results. The web application will provide the users with an interface to enter their Name, Mobile No. and a Live photo of themselves at the time of voting. The eligibility of the voter will be checked at the time they enter their User-Id. Eligible voter's phone numbers will be verified via One Time Password (OTP). After voter verification, individual voters will be considered eligible for voting. During voting, voters will be monitored through a webcam/front camera. The votes will be stored in a blockchain and any tampering would be detected easily. The address and the corresponding constituency will be checked in the backend. Voting results will be declared on a specified date and will be handled by the admin. The results will be displayed graphically with various options.

I. INTRODUCTION

In the digital era where hacking and bypassing a system is very easy, tampering of data is can always leads towards the bad situations. Blockchain is used to store data which is near impossible to change or tamper with as it is very secure in nature. Voting is an very important process in any respective field like political election, Local community leader, college president, school president any many more which are the essential event and if votes get miscalculated by any external source it will be harmful. Our project proposes a decentralized Smart election voting system using blockchain technology. It includes an admin panel to schedule the voting, manage candidates and declare the results. The web application will provide the users with an interface to enter their Name, Mobile No. and a Live photo of themselves at the time of voting. The eligibility of the voter will be checked at the time they enter their User Id. Eligible voter's phone numbers will be verified via One Time Password (OTP). After voter verification, individual voters will be considered eligible for voting. During voting, voters will be monitored through a webcam/front camera. The votes will be stored in a blockchain and any tampering would be detected easily. Voters will be able to vote securely. The registration will be done by user entering their data and by giving their facial authentication. Each voter will get login with unique id to give vote. After voting is done, the results will be declared on the same day in the given period of time as set by admin.

II. BACKGROUND

There are lot of practices are made to introduce the variations in electronic and online voting systems where different techniques and methodologies are used. Some of them guarantees the confidentiality and security to the system at some extent, still the voting information and process need to be control and manage with advanced systems that will ensures and guarantees the security and privacy of voter's and voter's information.
The systems that are developed to caste the vote by means of digital approach using online portals and electronic devices use various encryption and decryption techniques to guarantee the secure data transaction.
Homomorphic encryption is a well-known powerful technique with many useful applications. Recently, it has been applied to the design of online voting system. The voting system based on this encryption uses the exponential ElGama cryptosystem. Before submission, the contents of each cast ballot are encrypted using the exponential ElGamal

encryption. The additive homomorphism property of this crypto system makes it possible to tally encrypted ballots directly without decrypting them.

However, numbers of techniques are present to convert the data in coded format to prevent from manipulation while transferring to the network. One drawback can be discussed h that after the correct data have been stored in the database t and security is required at substantial level. Centralized storage is inconvenient if the data is esteemed because unauthored access and attack by hackers will challenge the system in terms of reliability.

III. LITERATURE REVIEW

IN [1] Highly proposed system includes Web application, Event Management Server, Smart C tracts, registration contract and voting contract.

IN [2] Verifiability: The ledger is decentralized, replicated a distributed over multiple locations, District Node a Bootnode , Geth.

IN [3] The administration of smart contracts, the quorum framework, Exoni Trusted Third Party (TTP), and the multichain framework.

IN [4] Authentication, Anonymity, Accuracy, and Verifiability are all included in the proposed system.

IN [5] They present technology used in the voting system I payment scheme, which offers anonymity of transaction a trait not seen in blockchain protocols to date.

IN [6] this proposed system Generalized e-voting system using blockchain is prop with SHA encryption of voter information. The v block is added to the selected candidate's blockchain

IN [7] The blockchain-based e-voting scheme is public, distributed, and decentralized. It can record votes from voters across many mobile devices and computers. The blockchain-based e-voting scheme allows the voters to audit and verify the votes inexpensively

IN [8] this survey Using blockchains to provide secure and reliable internet voting protocols.

IN [9] In they propose a potential new E-voting protocol that utilizes the blockchain as a transparent ballot box.

IV. PROPOSED SYSTEM

The Local Voting System has a lot of history of fake voting   and double voting where people use to still the voting machine system and vote as much as they want. In Local Voting System Booth Capturing can take place by political pressure, which effects on actual voting result. A lot of instances happen where the voting numbers get manipulated. People are used to the regular voting system, But, as technology goes forward, people should be able to keep up to pace of new technology such as blockchain which makes it way more secure to vote in today's world.

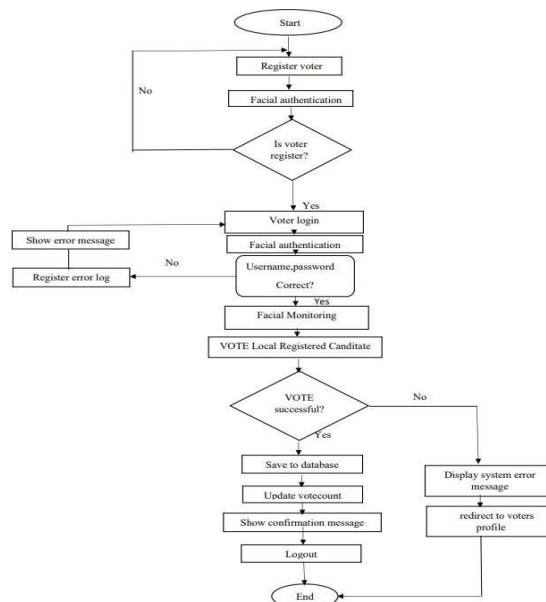## V. PROPOSED METHODOLOGY

Fig. 1. Flow chart how the whole process works

As we can see in Fig. 1, It start with the option of voter registration as well as candidate registration the following step registration is facial authentication after facial authentication it will check whether the voter is register or not if not then it will directly send back to the first step from registration of voter.

After successful registration it will forward to the login process voter will login in the login process it contains face authentication username and password if both of this match it will place forward if face authentication as well as user id and password didn't match it will show an error, error of register login error and it will directly take to the voter login step.

And if the face authentication and username password is correct it will place forward after that face monitoring will be done by the webcam of the desktop voting process as the first monitoring start so the register can vote for the local candidate.

After the voting is the vote is successful the vote will be saved in the database and update the vote count and show the confirmation of the message on the desktop **VOTING IS SUCCESSFULLY DONE.** If the vote is unsuccessful, it will display system error message on the desktop and it will redirect to voter's profile. So that Candidate need to again Login and follow the face authentication process and other following steps.
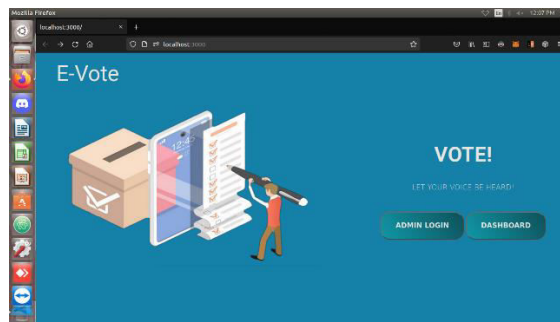
VI. IMPLEMENTATION AND RESULTS

Fig. 6.1 Login Page

As we go through the first page in Fig. 6.1, we can see that we have two options of admin login and dashboard.
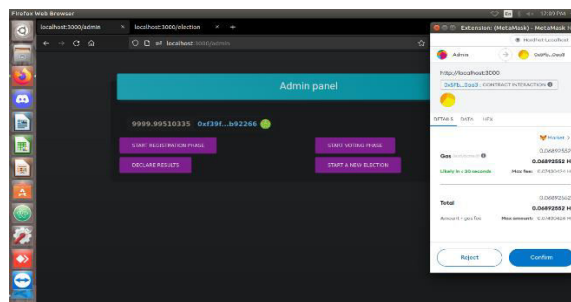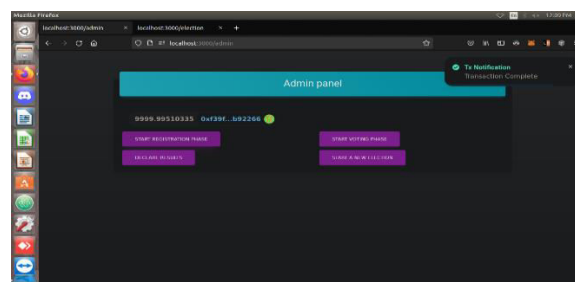

Fig. 6.2 Admin Panel

Fig. 6.3 Admin Panel

In Fig. 6.2 admin panel page there is the option of Connect Wallet, **"Start registration phase, Declare result, Start voting phase, Start a new election"** are the options available for admin. In Fig. 6.2 after the admin selects any option above then the Metamask ask for the transaction and then it shows the notification that the transaction is completed successfully as show in the Fig. 6.3
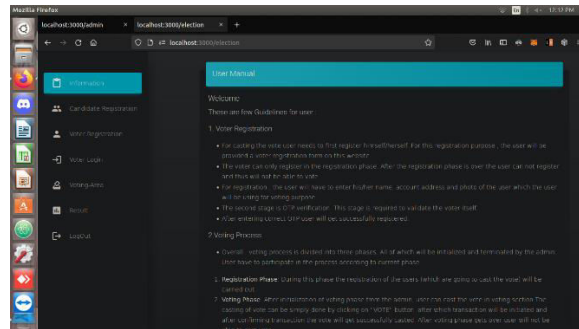

Fig.6.4 Dashboard

In Fig. 6.4 as shows the information about the application. It shows various options such as USER MANUAL and the process to use the application, as well as we can see the options of CANDIDATE REGISTRATION, VOTER REGISTRATION, VOTING AREA, RESULTS and LOGOUT.
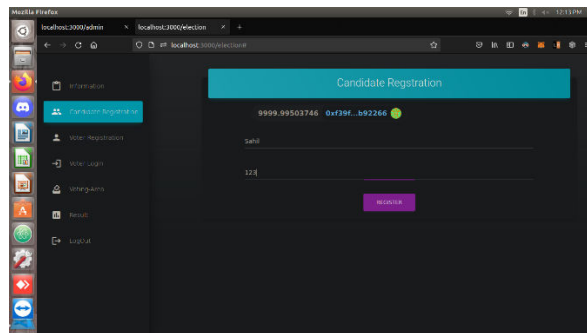
Fig. 6.5 Candidate ID

In Fig 6.5 After the admin allows for the registration phase, candidate gets to register their name and unique id by using there Ethereum Id as shown in Fig. 6.5**.**
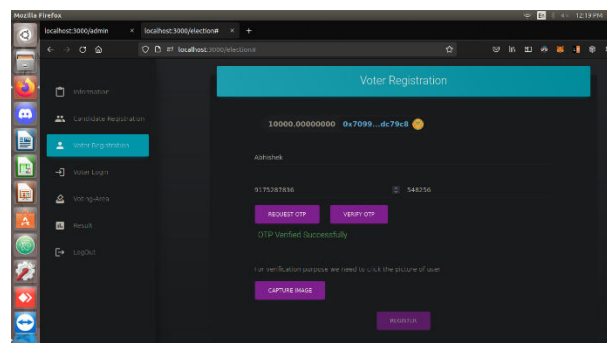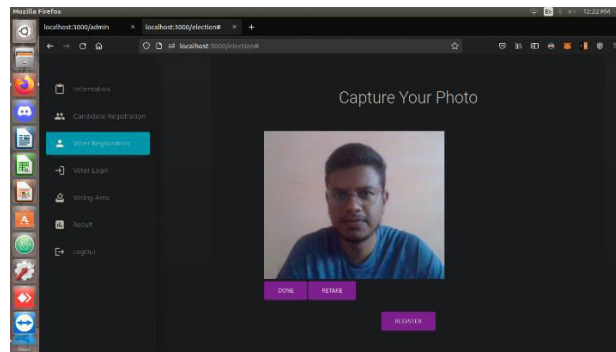

Fig. 6.6 Voters ID

Fig. 6.7 Voters ID

In Fig. 6.7 After the candidate registration is done, Voters get to register their name for voting the candidate they want, they need to write their name, mobile number for OTP and Facial Registration in Fig.6.7 while registering as a voter shown in the Fig. 6.6.
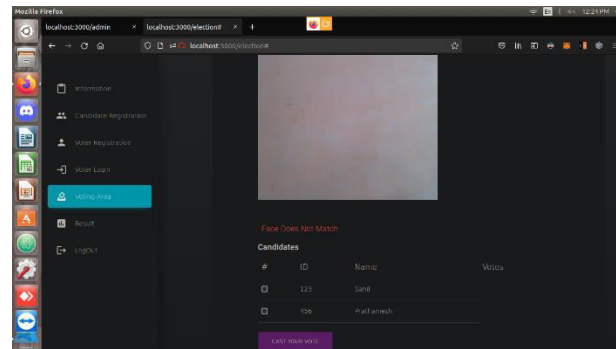

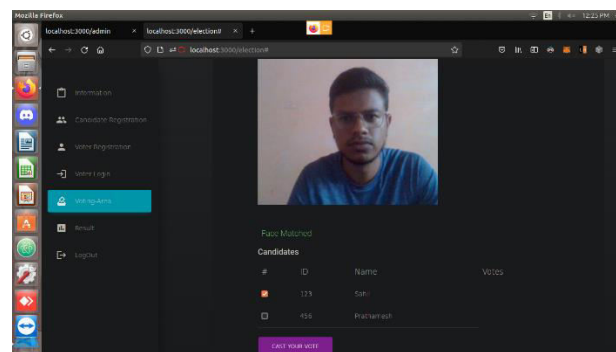**Fig. 6.8 Voting Area**

Fig. 6.9 Voting Area

In Fig. 6.9 After the registration is done admin starts the voting phase and then the voter gets to vote by going in the voting area, and then he/she has to go to the phase of facial authentication where the camera will check if you are the person who registered or not, if it is unable to recognize you then you wouldn't be able to vote as shown in Fig. 6.8, But if your face matches then it will let you vote as shown in Fig. 6.9.

In Fig. 6.10 After the voting is done, admin will stop the voting phase and declare the result, which everyone will be able to see as shown in Fig. 6.10.
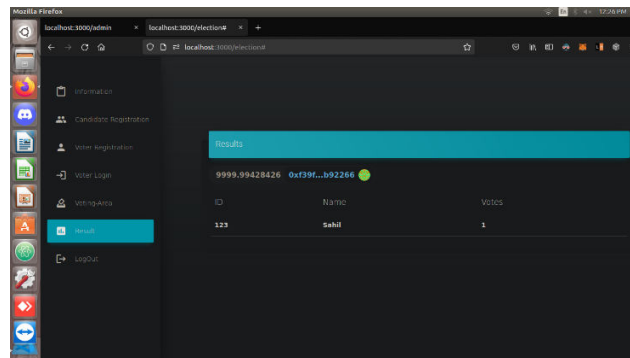
Fig. 5.10 Final Result Page

VII. CONCLUSIONS

Voting is a very important part of any field such as politics, electing local community leader, school president, college president and so on. For which there is a traditional process of voting, and there are lot of loopholes in traditional process, that are really easy to exploit. With this system, we aim to eliminate the shortcomings of the traditional ballot system and provide the citizens of India an easy and secure access to voting. Our system would also help to conserve paper, indirectly saving trees which is the need of the hour as it is used in huge amounts in traditional voting. With the technology available today, we aim to strive for a brighter future for voting.

Acknowledgement :

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