



VOTING SYSTEM USING BLOCK-CHAIN TECHNOLOGY

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ABSTRACT

Voting system using blockchain aims at providing the facility to cast vote from anywhere. It has the workability to allow casting of vote from any remote location. The election is held in full confidentiality that security is maintained in such a manner that voter can vote only if he logs into the system by entering the correct username and password. Voter will get the username and secret password to cast his vote. The voter will log into the system using his unique ID, they will then give his/her vote which will be stored into block-chain. Internet voting focuses on security, privacy, and secrecy issues, as well as challenges for stakeholder involvement and observation of the process. A new approach is proposed for voting system to prevent manipulation of the votes. Block chain overcomes the drawbacks of the previous voting system. It increases the security by not allowing the hacker to affect the rest of the nodes in the block chain. Voters can effectively submit their vote without revealing their identity or political preferences to the public. Counting votes becomes easy for the official since only one vote can be casted by each voter. no fake accounts can be created by anyone.

Keywords-*Voting, Block-Chain, Database.*

INTRODUCTION

As a technology, blockchain is quickly becoming unrivaled. block chain was very famous for the technology that created it, bitcoin. In recent years, however, it has quickly become a star on its own. With the rise of the bitcoin, the awareness of the importance of blockchain technology also grew. Developers who recognized the importance of blockchain are now behind discovering new ideas. most of them are finding out that block chain has the ability to improve the old systems. Enterprising observers saw the technology's potential as bitcoin offers a very secure and transparent way of cryptocurrency. recently the same people have realized that block chain is not only useful for currency but also can be used before any kind data transmission that can make it secure. the voting system with block chain is very useful because it makes the voting secure. Out of necessity, modern voting systems are largely stuck in the last century, and those that want to vote must leave their homes and submit paper ballots to a local authority. the digital ballot box represents a cost-effective and smart way to overcome the problems of the current voting system. the voters will use their tokens to cast vote from their device which are then logged into a and used to reliably verify the outcome of the election. There are often no manipulation, recording errors, or tampering. More than voting, however, this technique are going to be useful simply for creating decisions in an environment where resources, and authority, is shared. It will also encourage participation. The use cases of voting system using block chain are many. Its ability to interact and manage a constituency is crucial to the future of society, not just to supply a transparent outcome but to encourage all people to participate in their communities. Currently, the technology remains in its infancy, but it matures alongside the young voters it'll at some point help, and appears to be a key a part of our collective future. Blockchain is paving the way for an immediate democracy, where people can decide the course of policy themselves, rather than believe representatives to try to it for them. While the principles of a political election

may need to be changed to form way for such a transparent system, blockchain is additionally ideal for informing business decisions, guiding general meetings, polling, censuses and more. A blockchain-based voting application doesn't concern itself with the safety of its internet connection, because any hacker with access to the terminal won't be ready to affect other nodes. Voters can effectively submit their vote without revealing their identity or political preferences to the general public. Officials can count votes with absolute certainty, knowing that every ID are often attributed to at least one vote, no fakes are often created, which tampering is impossible. In the initial stage candidate will fill the registration page and later admin will verify the candidate is valid or not and then adds them into the final candidate list. After that the voters will register the form and create an email id as well as password for them. The admin then verifies them and also send a block chain public address after that voters will be added to the voters list. Later on the day of voting the admin will turn on the voting panel and the voters will authenticate themselves with the email id and password provided to them at the time of registration, also they will login to the block chain system with the help of private key given to them at the time of verification. Once logged in the voters are accessible to the voting panel and they will select a candidate from the candidate list and choose one for voting. Once voted all the votes, candidates name and voters name are stored securely in the block chain records. The block chain stores this records in the form of blocks which are immutable so that once stored votes cannot be altered and hence fraud risks are reduced accordingly. Block chain only stores textual data such as no of votes, winner among the candidate and rest of the registration details of voters and candidates are stored on the server.

LITERATURE REVIEW

1. Bin Yu, Joseph Liu, Amin Sakzad, Surya Nepal, Ron Steinfeld, Paul Rimba , Man Ho Au. "Platform-independent Secure Block-chain-Based Voting System" 2018. Cryptographic techniques are employed to ensure the security of voting systems in order to increase its wide adoption. However, in such electronic voting systems, the public bulletin board that is hosted by the third party for publishing and auditing the voting results should be trusted by all participants. Recently a number of blockchain-based solutions have been proposed to address this issue. However, these systems are impractical to use due to the limitations on the voter and candidate numbers supported, and their security framework, which highly depends on the underlying blockchain protocol and suffers from potential attacks (e.g., for abstention attacks). To deal with two aforementioned issues, we propose a practical platform-independent secure and verifiable voting system that can be deployed on any blockchain that supports an execution of a smart contract. Verifiability is inherently provided by the underlying blockchain platform, whereas cryptographic techniques like pailier encryption, proof-of-knowledge, and linkable ring signature are employed to provide a framework for system security and user-privacy that are independent from the security and privacy features of th

2. Sagar Shah, Qaish Kanchivala, Huaiqlan Mi." Block Chain Voting System",2017

Large sections of society today do not trust their government. This makes the election a very important event in a modern democracy. The issue with the current ballot system is that it can be easily manipulated by power hungry organizations. The proposed system looks to eliminate the aspect of trust from an election to make it more secure and transparent. The system uses existing technology such as a client server architecture integrated with a blockchain system to ensure aspects such as transparency, security and auditability are achieved without sacrificing privacy for voters. The cost of building the system is substantially less as compared to the cost of

running a ballot based system. There are substantial social benefits to using the system as well such an easier and quicker voting process which will lead to higher voter turnout. This system can be implemented for a larger number of countries as the internet penetration in the world increases. We might definitely see a future where every country has implemented a system similar to ours.

3. Rifa Hanifatunnisa, Budi Rahardjo. "Blockchain Based E-Voting Recording System Design" IEEE 2017.

Increasingly digital technology in the present helped many people lives. Unlike the electoral system, there are many conventional uses of paper in its implementation. The aspect of security and transparency is a threat from still widespread election with the conventional system (offline). General elections still use a centralized system, there is one organization that manages it. Some of the problems that can occur in traditional electoral systems is with an organization that has full control over the database and system, it is possible to tamper with the database of considerable opportunities. Blockchain technology is one of solutions, because it embraces a decentralized system and the entire database are owned by many users. Blockchain itself has been used in the Bitcoin system known as the decentralized Bank system. By adopting blockchain in the distribution of databases on e-voting systems can reduce one of the cheating sources of database manipulation. This research discusses the recording of voting result using blockchain algorithm from every place of election. Unlike Bitcoin with its Proof of Work, this thesis proposed a method based on a predetermined turn on the system for each node in the built of blockchain.

PROPOSED SYSTEM

The use cases for blockchain voting software are many and diverse. Its ability to engage and manage a constituency is crucial to the future of society, not just to produce a transparent outcome but to encourage all people to participate in their communities. Currently, the technology is still in its infancy, but it matures alongside the young voters it will one day help, and looks to be a key part of our collective future. Blockchain is paving the way for a direct democracy, where people can decide the course of policy themselves, rather than rely on representatives to do it for them. While the rules of a political election may have to be changed to make way for such a transparent system, blockchain is also ideal for informing business decisions, guiding general meetings, polling, censuses and more. A blockchain-based voting application does not concern itself with the security of its internet connection, because any hacker with access to the terminal will not be able to affect other nodes. Voters can effectively submit their vote without revealing their identity or political preferences to the public. Officials can count votes with absolute certainty, knowing that each ID can be attributed to one vote, no fakes can be created, and that tampering is impossible.

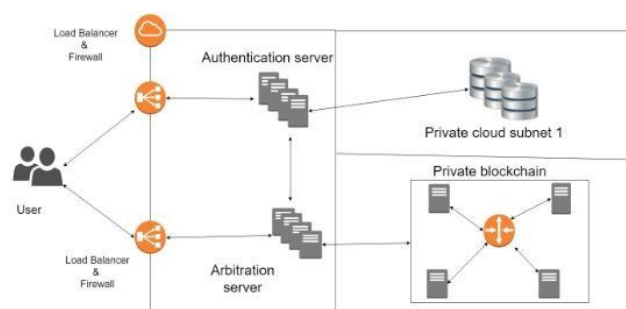


Fig. 1 Block diagram of voting system

SYSTEM ARCHITECTURE

III. REQUIREMENT ANALYSIS

The setup is installed on a computer that includes some hardware and software components.

A. Software:

We have used various technologies in the implementation of this system. Such as Ganache with truffle framework , MongoDB for database so that our entire data can be stored in it including from Voter details to Candidate list. Also we have used Angular JS for implementing pages and Node js accordingly.

B. Hardware:

There should be a minimum of 4 GB of Ram along with 100 mb of physical memory available in the system. Either side it is developed in various programming languages so no IOT or hardware is connected to it.

APPLICATIONS

1..Electronic Voting Machine:

Depending on the particular implementation, e-voting may use standalone electronic voting machines (also called EVM) or computers connected to the Internet. It may encompass a range of Internet services, from basic transmission of tabulated results to full-function online voting through common connectable household devices.

2.Voter Intent:

Electronic voting machines are able to provide immediate feedback to the voter detecting such possible problems as under voting and over voting which may result in a spoiled ballot. This immediate feedback can be helpful in successfully determining voter intent.

3.Electronic Ballots:

Electronic voting systems may use electronic ballot to store votes in computer memory. Systems which use them exclusively are called DRE voting systems. When electronic ballots are used there is no risk of exhausting the supply of ballots. Additionally, these electronic ballots remove the need for printing of paper ballots, a significant cost.

IMPLEMENTATION DETAILS

Home page

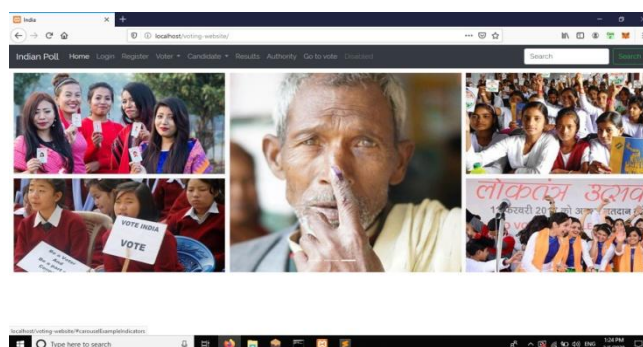


Fig 1. Home page

This is the homepage of our system. On the voting day all the voters can login from this page.

2. Party list

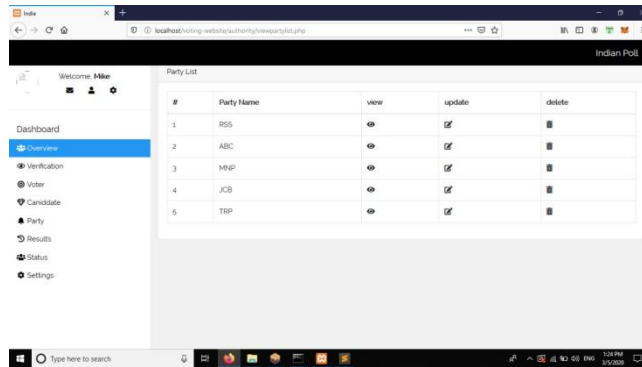


Fig 2. Party list

This is the party list which can display all parties that can participate in in election.

3.Candidate registration form

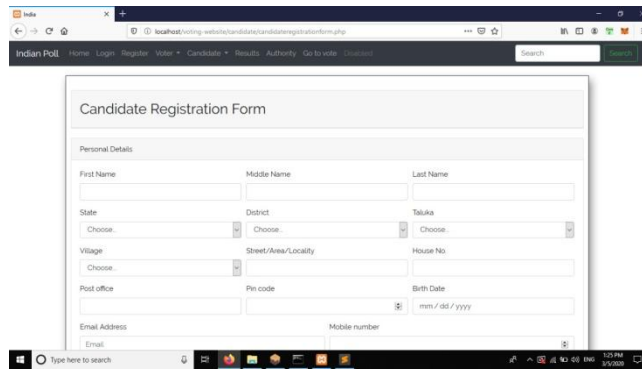


Fig 3. Candidate registration form

The above figure is candidate registration form where all interested candidates will register for the election.

4. Voter registration form

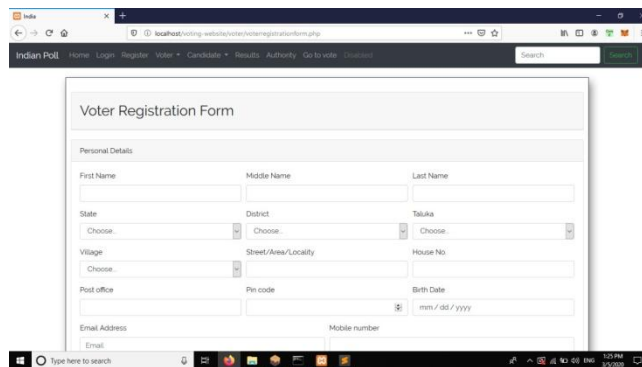
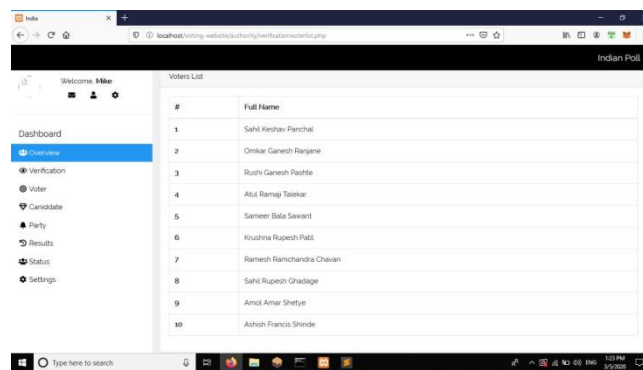


Fig 4. Voter Registration form

The above figure is Voter registration form where all eligible candidates will have to register first for the election.

5. Voters list



#	Full Name
1	Sahil Keshav Panchal
2	Onkar Ganesh Ranjane
3	Rushi Ganesh Pashte
4	Abul Ramaj Talekar
5	Sameer Bala Sawant
6	Krushna Rupesh Patil
7	Ramesh Ramchandra Chavan
8	Sahil Rupesh Ghadage
9	Amol Amar Shetye
10	Ashish Francis Shende

Fig 5. Voters list

This is the output of voters list which will display all registered voters

6. Election Results

Election Results

#	Name	Votes
1	Manoj Mayur Pawar	0
2	Sanket Sakharan Shelar	0
3	Ravi Shantaram Bhosale	1
4	Rakesh Mayur Tiwari	2

Fig 6. Election result

Here the result of the election are displayed.

CONCLUSION

Voting plays an important role for any democratic country like India. If this proposed system is implemented, then the voter does not have to go to the voting center. This system is very useful for those peoples who are living in another country also for the peoples who are physically disabled and for the people who are busy in their schedule. Since block-chain technology is used, the votes can't be manipulated and therefore corruption can be avoided. Proposed online voting system is very effective and it will be useful for voters and organization in many ways and it will reduce the cost and time.

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