Digital Voting System using Blockchain Technology

S.Kayalvili, P.Keerthana, P.Manickam, G.Archana
Department of CSE,
Velalar College of Engineering and Technology,Erode
kayalvilis@gmail.com,kavimeenakshi1916@gmail.com,manickparamu@gmail.com,archanagopalan98@gmail.com

Abstract – **Traditional voting systems should be computerized to cut back the vote counting time, to supply evidence that a vote is being correctly accounted, to cut back fraud, remove errors in filling out ballots, to enhance system usability for people with special needs. E-voting increasingly replacing traditional paper based systems. This raises several security issues, providing democratic principles depend upon the electoral process's integrity. An electronic voting system must make sure the voter's authenticity, anonymity. It must also ensure audit ability in an exceedingly software or hardware environment that would malfunction. During this System the fingerprints of all voters and details are stored before the election. The voters must register their fingerprints on the day of election through online. This can be compared with the already stored prints. If both matches their votes are be taken in to the account and if not their vote will be discarded. So, nobody one can vote for others this can reduce the illegal votes. User can view all the nominees in their district with their corresponding party symbols. They can also view what percentage votes are registered before they are visiting register their votes, this might be useful to understand the leading result.**

Keywords – **E-Voting, Blockchain, Fingerprint.**

I. INTRODUCTION

Electronic voting systems are the topic of active research for many years, with the goal to reduce the value of running an election, while ensuring the protection , privacy and compliance requirements. Replacing the standard pen and paper scheme with a new election system has the potential to limit fraud while making the voting process traceable and verifiable. Block chain may be a distributed, immutable, incontrovertible, public ledger. This new technology has three main features:

1. Immutability: Any proposed "new block" to the ledger must reference the previous version of the ledger. This creates an immutable chain, which is where the block chain gets its name from, and prevents tampering with the integrity of the previous entries.

2. Verifiability: The ledger is decentralized, replicated and distributed over multiple locations. This ensures high availability and provides third-party verifiability as all nodes maintain the consensus version of the ledger.

3. Distributed Consensus: A distributed consensus protocol to see who can append the subsequent new transaction to the ledger. A majority of the network nodes must reach a consensus before any new proposed block of entries becomes a permanent part of the ledger. These features are partly achieved through advanced cryptography, providing a security level greater than any previously known record-

keeping system. Block chain technology is therefore considered by many, including us, to posses a considerable potential as a tool for implementing a brand new modern voting process. This project evaluates the use of block chain as a service to implement an electronic voting (e-voting) system. The project first provides an outline of block chain and smart contract technology and its respective feasibility as a service for implementing an e-voting system. A. Design considerations After evaluating both existing e-voting systems and also the requirements for such systems to be effectively built in a national election, the subsequent list of requirements is built for a viable e-voting system:

- An election system mustn't enable coerced voting.
- An election system should allow a way of secure authentication via an biometric authentication verification service.
- An election system mustn't allow traceability from votes to respective voters.
- An election system should provide transparency, within the type of a verifiable assurance to every voter that their vote was counted, correctly, and without risking the voter's privacy.
- An election system should prevent any third party from tampering with any vote.
- An election system mustn't afford any single entity control over tallying votes and determining the results of an election.
- An election system should only allow eligible individuals to pick out an election.

II. EXISTING SYSTEM

1. Security involving communications and networks isn't as simple because it might first appear to the novice. The requirements for security services a can be given self-explanatory one word labels: confidentiality, authentication, no repudiation, integrity. But the mechanisms want to meet those requirements can be quite complex and understanding them may involve rather subtle reasoning.

2. In developing a specific security mechanism or algorithm one should always consider potential countermeasures. In many cases, countermeasures are designed by watching at the matter in a exceedingly completely different way.

Because of point 2, the procedures want to provide particular services are often counterintuitive: It is not obvious form the statement of a specific requirement that such elaborate measures are needed.
It is only when the various

3. countermeasures are considered that the measures used add up.

4. Having designed various security mechanisms, it's necessary to choose where to use them. This is often both in terms of physical placement and in a exceedingly logical sense.

5. Security mechanisms usually involve more than a specific algorithm or protocol. They usually also require that participants be in possession of some secret information (e.g. an encryption key), which raises questions on the creation, distribution, and protection of that secret information. There is also a reliance on communications protocols whose behaviors may complicate the task of developing the protective mechanism. For example, if the right functioning of the protection mechanism requires setting time limits of the closing dates of a message form sender to receiver, they may protocol or networks security service and mechanism can be seemed.

III. PROPOSED SYSTEM

The project is to implement the electoral system using finger print image authentication. In this, fingerprints are be going to be used for substantiation and to watch the presence of a someone. There will be a central data repository with all finger print scan where mapping are going to be made for verification to vote for the actual ID number. Fingerprints are processed through the image data comparison system. The fingerprints are submitted by uploading and converted as byte array which is checked with voter finger print image already present in the database.

1. The security is more in the proposed system.

2. Remote voting is feasible than military people or government officials can easily access the system.
3. Consolidated reports are viewed whenever required.
4. Easy to use options are provided within the web contnet and giving input is fast.
5. All the voter registration details, login details and vote details are saved as hash keys and saved in database for proof of concept.

IV. IMPLEMENTATION

This project helps to keep up the main points details of the Candidates, Voters details, Votes and zone details are fully fledged security. Unauthorized persons cannot access the information. In voter creation, usually voter are going to be given a password. But during this data processor, the password still as finger print image is given. The images are going to be converted in to byte array and saved in database. The proposed system has the ability with uploading the finger print image of voters during voting process and security is best than the earlier system. This project succeeds the voting process problems especially when the voters are out of their zone like as military people.
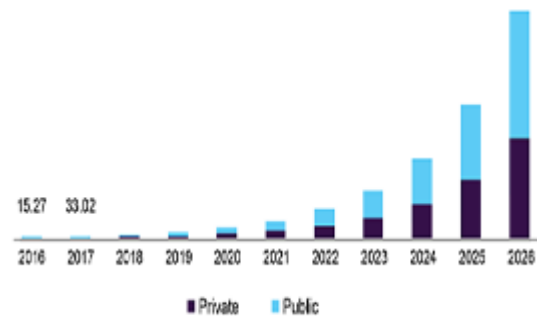

Fig.1. Rate of increasing Blockchain Technology in voting process.

This web application contains the following modules,
- Admin Module
- Voter Module
- Voting Module

1. Admin Module:
This is a module is utilized by the admin to enter into the modules. The Admin enters into the project by giving their username and password.

2. Voting Module
This module is employed for candidate and party addition and election date fixing.

3. Party Addition
The administrator adds new party details like as party id and name. If the party name is already exists then it wont be added. In addition to, all the party names are displayed below in an exceedingly grid in order that the administrator might not enter duplicate names.

4. Zone Addition

The administrator adds new zone details like as zone id and name. If the party zone is already exists then it wont be added. Additionally all the zone names are displayed below in a grid in order to the administrator may not enter duplicate names.

5. Candidate Addition

The administrator adds new candidate details like as Candidate id, name, address, phone, gender, age, finger print image, number of attempts and income. If the candidate is already exists then it won't be added.

In addition, all the candidate names are displayed below in an exceedingly grid.
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6. Candidate/Zone Allotment

The administrator adds zone details for each Candidate using this module. The zone id, candidate id and party id are selected. In addition, all the main details are displayed below in a grid.

7. Election Date Fixing

The administrator adds election date using this module. In addition, all the previous election dates are displayed below in a grid.

8. Voter Addition

The administrator adds new voter details like voter id, name, address, phone, gender, age, father name, mother name, occupation, finger print image and income. If the voter is already exists then it cannot be added. additionally, all the voter names are displayed below in a very grid.

9. View Result

The administrator view the vote count got by all candidates within the election. The grid view control is given allow paging and permit sorting option so ten records per page is also viewed and any column is also sorted and displayed.

10. Voter Module

This module is used for the enrollment of new voter and login to the voting phase. It is available only in the date of election.

11. Voter Login

Through this module, the voter logins using voter id and password.

12. View Parties

The voter views all the party names using this module.

13. View Candidates

The voter views all candidates details like name, zone which he belongs, the address and other details using the grid view control.
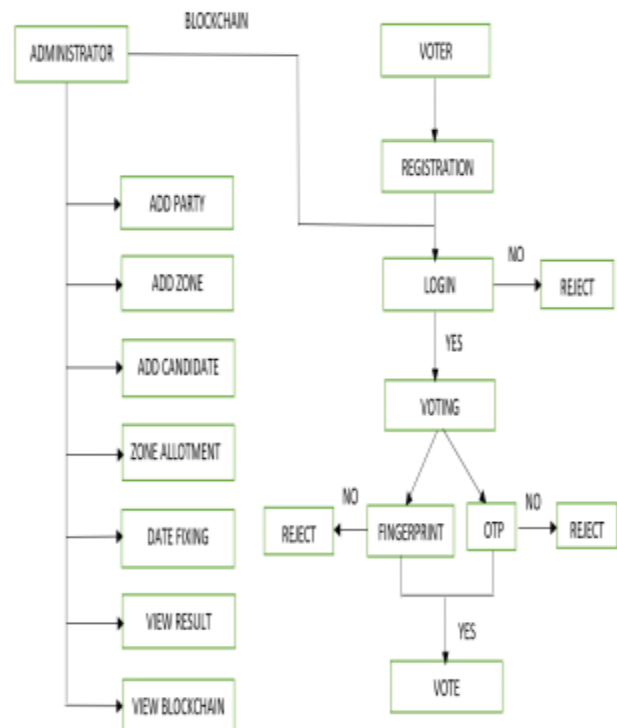
V. SYSTEM FLOW DIAGRAM

Fig.2.Wok flow diagram

VI. CONCLUSION

The new system eliminates the difficulties in the existing system. It is developed in a user-friendly manner. The system is very fast and any transaction can be viewed or retaken at any level. Error messages are given at each level of input of individual stages. This software is very particular in reducing the work and achieving the accuracy. It will reduce time be avoids redundancy of data.The user can easily understand the details available from the report. This software will support for the future development.The software is menu driven. Simplicity and the hallmark of this project.

1. Very large date can be stored and also can be retrieved very easily.
2. Speed and accuracy is maintained in the votes with finger prints.
3. Data is entered in formatted manner.
- The report can be taken in any format.
- Modification and maintenance can be made very easily.

VII. FUTURE WORK

The modifications in voters detail can be made in case of wrong entry. Total counting of candidates can be displayed while voting.In addition to one way encryption we can use double encryption.

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