"Survey on Online E-voting System Using Blockchain Technology"

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ABSTRACT

We present in this paper, An Online E-voting System Using Blockchain Technology, The fundamental right of every country is the freedom to vote. The voting process is recorded, saved, stored and processed digitally in an electronic voting system (e-Voting), which improves the task of administering the vote compared to traditional paper-based methods. Blockchain offers new opportunities to create new types of digital services. Although research on the subject is still in its infancy, it has mainly focused on technical and legal issues rather than exploiting this innovative idea and developing improved digital services. Blockchain-enabled electronic voting (BEV) can reduce voter fraud and increase voter turnout. Qualified voters vote anonymously using a computer or smart phone. BEVs use personal identifiers and tamper-proof encryption keys. The electronic credit service is becoming an important part of the information environment. It can be relied upon to build more complex systems, especially e-voting systems, to reliably perform basic services such as e-signatures and e-authentication.

Keywords: *Ethereum, blockchain, transactions, voters, online voting systems and smart contracts.*

1. INTRODUCTION

Voting is essential in any democracy. Voting and choosing representatives is the right of every citizen. To protect this right of citizens, the holding of fair elections is a basic need of any country. In a democracy, every vote counts. But many citizens will not vote on election day. Because they may be out of town or the electoral center is too far away. Some citizens don't go because the election results were unfair and they feel their votes don't count. In the current voting system, voting is either done on electronic voting machines or you write your opinion on paper. Replacing the current voting system is necessary to end voter fraud and make the voting and counting process more transparent. In addition, we need a system that provides more security for the voting process. A system that allows us to vote from anywhere in the world. Most of us prefer our online lives. We are more dependent on social media and spend most of our time on social media. We conduct most of our business online. So why can't we vote and choose our representatives with just a few taps on the screen? Why can't there be a system where we can vote online from anywhere? Many governments and organizations use online voting systems to increase accessibility and the number of voters in the voting process. Compared to other technologies, blockchain technology provides greater security for data. This is why the use of blockchain technology in electronic voting systems can provide greater security, transparency and scalability. An electronic voting system using blockchain can solve all the problems of traditional voting systems. Blockchain uses a peer-to-peer network system. Blockchain is a chain of blocks that contains all user information through distributed ledger technology. Blockchain offers several properties due to its distributed ledger technology. Blockchain is a decentralized computing and information sharing platform, which allows multiple domains of authority to distrust each other, but cooperate and co-operate with each other in a certain decision-making process. The blockchain only uses add and add strategies. We cannot delete existing data in the blockchain. Compared to other technologies, blockchain technology provides greater security for data. The use of blockchain technology in electronic voting systems provides greater security, transparency and scalability.

2. LITERATURE SURVEY

[1] Online Voting: Voting System Using Blockchain: Vaibhav Anasune, Pradeep Choudhari,MadhuraKelapure and Pranali Shirke Prasad Halgaonkar,"Online Voting: Voting System Using B-chain",2019,article gives a short review on various methodologies that are used in current voting. The paper will help to build a system that will face the present and upcoming challenges and will remove drawbacks from these previous architectures.

[2] Blockchain-Based E-Voting System:Friðrik Þ. Hjálmarsson , Gunnlaugur K . Hreiðarsson, "Blockchain-Based E-Voting System", 2018, School of Computer Science Reykjavik University, Iceland, this paper evaluates the potential of distributed ledger technologies through the description of a case study, namely the process of an election and implementing a blockchain-based application which improves the security and decreases the cost of hosting a nationwide election.

[3]BlockchainBased E-Voting Recording System Design:RifaHanifatunnisa and Budi Rahardjo,2017,"Blockchain Based E-Voting Recording System Design",this recording system occurs when the vote is over.Blockchain technology can be one solution to solve the problems that often occur in the electoral system. The use of hash values in recording the votingresults of each polling station linked to each other makes this recording system more secure and the use of digital signatures makes the system more reliable. The use of the sequence proposed in the blockchain creation process in this system considers that in an electoral system not required for mining as in the Bitcoin system because the voter data and numbers are clear and are not allowed to select more than once, the proposed sequence ensures that all nodes which is legally connected and can avoid collision in transportation.

[4] Votereum: An Ethereum-based E-voting system: Linh Vo-Cao-Thuy, Khoi Cao-Minh, Chuong Dang-Le-Bao and Tuan A. Nguyen, 2019, "Votereum: An Ethereum-based E-voting system",University of Information Technology Vietnam National University HCMC, Vietnam, it reviews the requirements and then propose Votereum, an Electronic voting system that utilizes the blockchain technology. The proposed system is empowered by Ethereum platform, including one server manages the entire system and the other handles all blockchain-related requests.
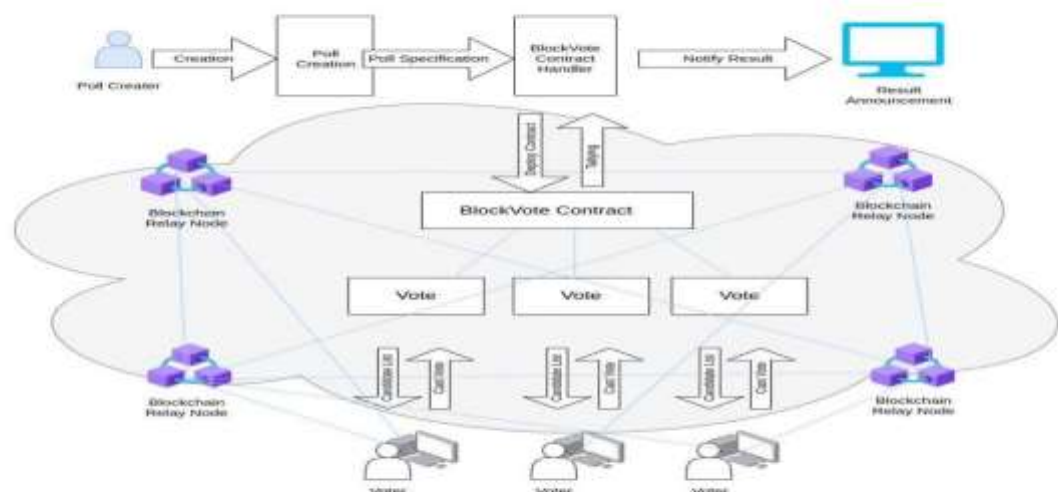
3. PROPOSED SYSTEM

Fig 1: - System Architecture

Our architecture is called BlockVOTE. This section presents an overview of the architecture, the data model, the algorithms and all associated formal definitions. The details of our proposed implementation are shown later in the next section. The architecture of BlockVOTE is shown in Figure 1. Our architecture is designed based on the smart contract capabilities of the blockchain. For clarity, we explain our step-by-step architecture in terms of the three main steps in any speech process, which are (i) Poll Creation, (ii) voting, and (iii) Result Tallying. The details are as follows.

A. Poll Creation: Before creating a poll, a list of candidates must first be prepared. Internal candidate selection processes (for example, verifying each candidate's profile during a political election) may vary for each organization. This process is not in our architecture because it is considered outside the scope of the system.

B. Voting: After the poll creator uses Poll Creation module and Block VOTE Contract Handler module to create a new Block VOTE contract, voters can invoke the vote functionality of the contract to cast a vote. In short, a voter casts a vote by passing, (i) a contract to be voted, (ii) an ID of a candidate that a voter wants, and (iii) their own cryptographic hash identity, to the vote function.

C. Result Tallying: The result tallying is a process that is done when the poll deadline has been reached. The tallying process is modelled as a smart contractbased function that is executed automatically by the Block VOTE Contract Handler module when a poll deadline is reached.

4. COMPARISION IN METHODOLOGY

Sr.No.	Parameter	Traditional Voting System	Electronic Voting System	Online E-Voting System Using Blockchain Technology
1	Time Consuming	YES	NO	NO
2	Fewer Efforts	NO	YES	YES
3	More Efficient	NO	YES	YES
4	Process Overhead	YES	NO	NO
5	Votes Tempering	YES	YES	NO
6	Trustworthy System	NO	NO	YES
7	Secure System	NO	NO	YES
8	Privacy Preservation	NO	NO	YES
9	Votes Transparency	NO	NO	YES
10	Immutability & Verifiability	NO	NO	YES
11	Trust on Third Party	YES	YES	NO
12	Accurate Votes Counting	No	YES	YES

Table 1: Comparative study

Table 1 shows the comparison of Online E-Voting System Using Blockchain Technology with the traditional voting process and Electronic Voting Systems.

From the above chart, we can depict that Online E-Voting System Using Blockchain Technology is more reliable than traditional voting system and Electronic Voting System because the paper-based voting process can be cumbersome and time taking. E-Voting not only speeds up the whole process but reduces the complications, providing comforts for the voters, electorate, and the administrators. It also diminishes the chances of mistakes. Still, there are certain conditions in which votes can be tempered, security and privacy can be threatened but blockchain-based online E-Voting systems are surpassing both of them in terms of privacy-preserving, anonymity, and security of votes.

5. FUTURE SCOPE

This implementation has been put through its paces on a virtual client. It may be tested in the future on the Ethereum test net with many accounts. The possibility of a blockchain-based online voting System for large-scale elections should be investigated in future research. The System may be used for a specific use case, and measurements can be made to see if the calculations are accurate. For greater speed and security, synchronization and consensus methods can be debated and improved.

6. CONCLUSION

In this project, we introduce a blockchain-based electronic voting system that uses smart contracts to enable secure and cost-effective elections while ensuring the privacy of voters. Blockchain technology offers a new opportunity to overcome limitations and barriers to the adoption of e-voting systems, ensure election security and integrity, and lay the foundation for transparency. By using Ethereum's private blockchain, hundreds of transactions can be sent to the blockchain per second, and the uses aspects of smart contracts to reduce the load on the blockchain.

7. REFERENCES

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