E-VOTING: CONFIDENTIALITY AND TRANSPARENCY WITH PUBLIC BLOCKCHAIN USING FACE RECOGNITION

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ABSTRACT:

It's early days for the study of electronic voting systems. We are focusing on this area because of its novelty and the scarcity of existing options for dealing with the challenges of electronic voting. In recent years, e-Government has also gained in popularity. If fundamental citizen services like voting are not digitized, however, such a system will be impossible to implement. "Electronic voting is one of the most important public sectors that blockchain technology has the potential to revolutionize." The introduction of electronic voting brings with it a slew of new problems that must be solved. One of them is making sure the elections are secure, which means they need to have at least the same level of security as good old-fashioned paper ballots. As a result, we've resolved to establish foolproof voting procedures so that no one can fraudulently influence the outcome of an election. Blockchain has received a lot of attention as a secure internet technology in recent years. Our electronic voting platform is governed by blockchain technology. Its primary benefit is that voters can cast their ballots without having to put their faith in a governing body. We have a framework in place where this authority cannot alter the outcome of elections. Loss of transparency in the running of the system, leading to a lack of trust in voters, is another difficulty with electronic voting. Blockchain technology provides a transparent and decentralized solution to this issue by making all data and associated activities, such as the management of this data, accessible to all parties. When compared to the traditional e-voting platform that does not use blockchain technology, this solution is much superior in terms of security.

Keywords:4leg 3 phase inverter, PI controller, NPC inverter**.**

1. INTRODUCTION:

Electoral processes of various kinds have existed since. Paper ballots are the most used voting method worldwide. Just in the past decade have people started using electronic voting systems, and the security issues that come with them have yet to be resolved. Security, legitimacy, transparency, dependability, and usefulness are the primary concerns with electronic voting techniques. It's possible that Estonia's work in this area represents the cutting edge. However, there are now just a handful of blockchain-based options. As well as providing a solution to these issues, blockchain technology also introduces benefits like immutability and decentralization. The primary issues with blockchain-based e-voting technology are their exclusive emphasis or a lack of testing and comparability. In this work, we provide a general-purpose electronic voting platform built on the blockchain. Blockchain technology makes full use of this, allowing for the management of all internal operations. Once voting has begun, the platform acts in a completely decentralized and autonomous manner, making it impossible for anybody to influence the outcome. Our system has been tried and proven across three distinct blockchains. According to the findings, there is very little difference in performance between public and private blockchains. The revolutionary aspects of our solution are the use of blockchain technology for the decentralized administration of an electronic voting platform, the complete openness of the voting process, and the homomorphic encryption that guarantees the security and privacy of the voters.

Literature survey:

"Voting Process with Block-chain Technology: Auditable Block-chain Voting System,"

Electronic voting takes many forms and uses many different strategies across the globe. There are advantages and disadvantages to each. Lack of auditing skills and system verification procedures is a major issue that affects many people. Technology based on the blockchain, which has lately received a lot of attention, may provide a solution to this problem. Auditable Blockchain Voting System (ABVS) is presented in this article, including the procedures and features of a monitored, blockchain-based online voting system that can be verified and audited. ABVS is able to do this by using blockchain technology and a voter-verified paper audit trail.

"Bitcoin: A Peer-to-Peer Electronic Cash System,"

Direct internet payments may be made from one person to another without going through a bank if there were a peer-to-peer form of electronic currency. If a trustworthy third party is still needed to avoid double-spending, then digital signatures are just a partial answer. We suggest a peer-to-peer network as a means of resolving the double-spending issue. The network creates an immutable record of all past transactions by hashing them into a never-ending chain of hash-based proof-of-work. The longest chain is not just evidence that the events were seen in order, but also that it originated from a very powerful computer. Those who do not work together to attack the network will be able to construct the longest chain and so outrun those who do. Minimal structure is needed for the network. While nodes are free to quit and rejoin the network at anytime, they must accept the longest proof-of-work chain as evidence of what occurred during their absence.

"A Smart Contract for Boardroom Voting with Maximum Voter Privacy,"

We provide the first use of the Blockchain to construct a fully decentralised, self-counting, and anonymous internet voting mechanism. Open Vote Network is an Ethereum smart contract designed for use in corporate elections. This is the first practical implementation of a Blockchain e-voting protocol, and it guarantees voter anonymity and independence from a central authority. Instead, the Open Vote Network is a self-tallying protocol in which the privacy of each voter's vote is within their control and can only be compromised by a complete collusion including all other voters. The consensus process that ensures the safety of the Ethereum blockchain is also used to enforce the protocol's implementation. To prove the implementation works, we ran tests on Ethereum's official test network. We also give a computational and monetary breakdown of how much it will cost to carry out.

"Efficient Fully Homomorphic Encryption from (Standard) LWE,"

Using just the (typical) learning-with-errors (LWE) assumption, we provide a completely homomorphic encryption technique. Our technique is secure because we use established findings on LWE, which show that "short vector problems" on arbitrary lattices are hard in the worst case. Our structure has two advantages over others like it: For one, we provide a novel re-linearization approach that enables us to demonstrate that LWE may serve as the basis for "somewhat homomorphic" encryption. In contrast, every scheme before this one was based on assumptions of complexity about ideals in different rings. Two) We break with the "squashing paradigm" of all prior literature. The ciphertexts and decryption difficulty of our approach are both decreased thanks to a novel dimension-modulus reduction technique that we present. Because our approach yields such brief ciphertexts, we use it to develop an asymptotically efficient LWE-based single-server private information retrieval (PIR) protocol. Our protocol's communication complexity (under the public-key model) is k • polylog(k) + log |DB| bits per 1-bit query (here, A; is a security parameter).

2. EXISTING SYSTEM

Electoral processes of various kinds have existed since paper ballots are the most used voting method worldwide. Electronic voting techniques have gained popularity in the recent decade, but their underlying problems have not been resolved. Security, legitimacy, transparency, dependability, and usefulness are the primary concerns with electronic voting techniques. It's possible that Estonia's work in this area represents the cutting edge. However, there are now just a handful of blockchain-based options. As well as providing a solution to these issues, blockchain technology also introduces benefits like immutability and decentralization. The primary issues with blockchain-based e-voting technology are their exclusive emphasis or a lack of testing and comparability.

3. PROPOSED SYSTEM:

We introduce a general-purpose electronic voting platform built on the blockchain. Blockchain technology makes full use of this, allowing for the management of all internal operations. Once voting has begun, the platform acts in a completely decentralized and autonomous manner, making it impossible for anybody to influence the outcome. Voter privacy is protected by homomorphic encryption, yet all data is publicly available. Our system has been tried and proven across three distinct blockchains. According to the findings, there is very little difference in performance between public and private blockchains. The revolutionary aspects of our solution are the use of blockchain technology for the decentralized administration of an electronic voting platform, the complete openness of the voting process, and the homomorphic encryption that guarantees the security and privacy of the voters.

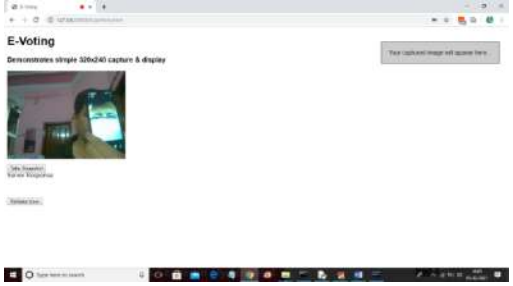
MODULES:

Admin module: This user may access party information and vote totals, and is responsible for adding new party and candidate data. In order to access the system as the administrator, enter the username "admin" and the password "admin" in the appropriate fields.

User Module: The user will need to create a username to act as his ID inside the app, and then submit a picture of his face taken via webcam in order to complete the registration process. Users who have registered may next go to the login page, where their IDs will be verified; after logging in successfully, they will be sent to the voting module, which will carry out the following actions:

1. A user will first log in to his computer's camera, and then a picture will be taken.
2. The programme will first use OpenCV to recognize the user's face, followed by CNN to forecast the user's identity; if the user's identity matches the one predicted by CNN, the application will provide a list of all the candidates up for vote.
3. Users who have not yet voted may do so by clicking the appropriate link next to the appropriate political party or candidate's name.
4. The programme will collect information about the voter and the candidate, encrypt it, and then store it on the blockchain when the vote is cast.

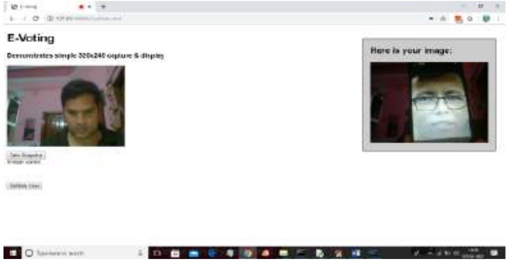
In above screen user can click on ‘Cast Your Vote’ link to get below webcam screen



E-Voting

Demonstrates simple 320x240 capture & display

In above screen webcam is running and then by showing person face we need to click on ‘Take Snapshot’ button to capture his face

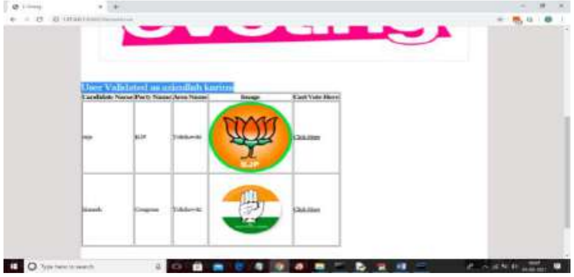


E-Voting

Demonstrates simple 320x240 capture & display

Here is your image:

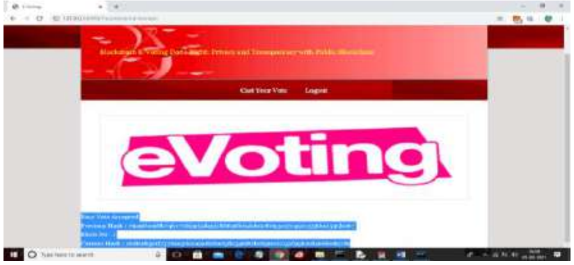
In above screen person faces is capture and now click on ‘Validate User’ button to validate user.



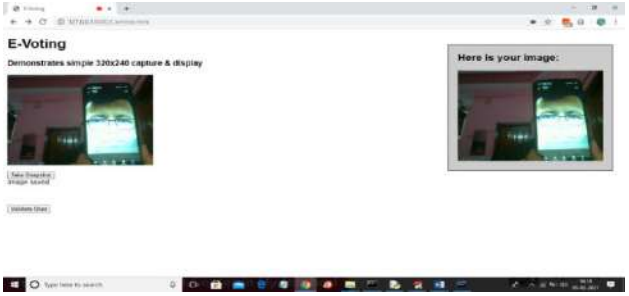
User Validated as azizullah karimi

Candidate Name	Party Name	Area Name	Image	Cast Vote Here
[illegible]	BJP	[illegible]		Click Here
[illegible]	Congress	[illegible]		Click Here

In above screen in blue color you can see user is identified as ‘azizullahkarimi’ and then displaying list of candidates and now user can click on ‘Click Here’ option to cast his vote and to get below screen



In above screen as this is the first vote so block will be added to Blockchain with block No as 1 and we can see Blockchain created a chain of blocks with previous and current hash code validation. Now try again with same user to cast vote.

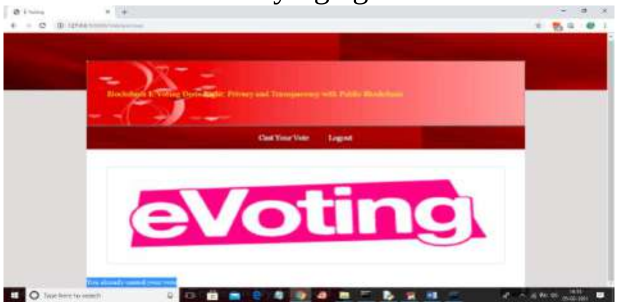


E-Voting

Demonstrates simple 320x240 capture & display

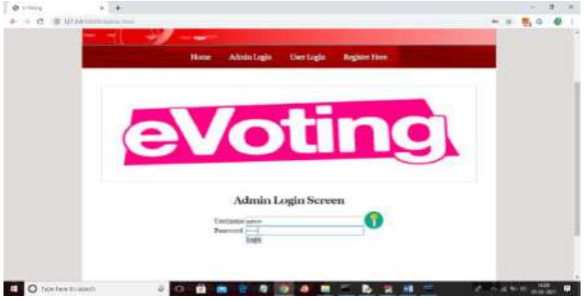
Here is your image:

In above screen same user trying again and below is the result



Blockchain E-Voting Done Right: Privacy and Transparency with Public Blockchain

In above screen if same user try again then will get message as ‘You already casted you vote’ and now logout and login as ‘admin’ to get vote count

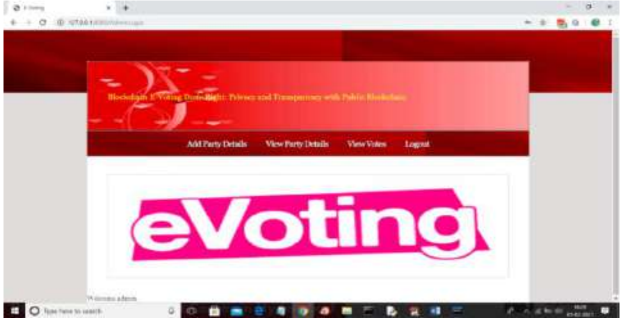


Admin Login Screen

Username admin

Password

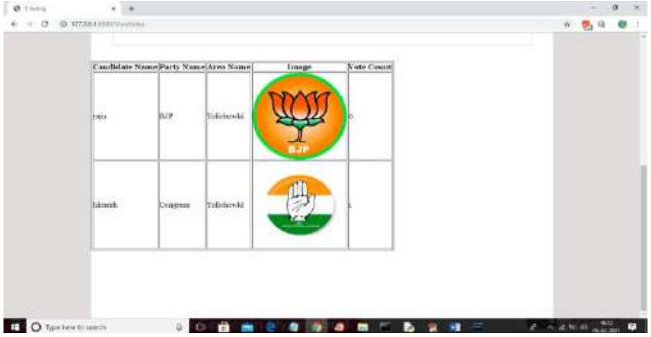
In above screen login as admin and after login will get below screen



Blockchain E-Voting Done Right: Privacy and Transparency with Public Blockchain

Welcome admin

In above screen admin can click on ‘View Votes’ link to get below screen



Candidate Name	Party Name	Area Name	Image	Vote Count
raju	BJP	Tolichowki		0
Mahesh	Congress	Tolichowki		1

In above screen admin can view all vote counts.

5. CONCLUSION:

Public blockchain provides greater benefits in such an election system owing to the availability of data and that anybody can see them in real time, even if we can detect tiny variances in network delays. However, as a private blockchain may only be used in the locations sanctioned by its central authority, its speedier transaction times come at the expense of the system's overall trustworthiness. According to the data in the table, the median time for adding a single new user to a blockchain is 6.04 seconds, while the average time for adding a single new user to a blockchain is 6.04 seconds for both Hyper ledger Composer and Ganache, and 17.75 seconds for Ethereum Ropsten (median 17.93 s). The consensus method and the duration between blocks both have a role in these estimates.

REFERENCES:

[1] N. Kshetri and J. Voas, “Blockchain-Enabled E-Voting,” IEEE Software, vol. 35, pp. 95-99, jul 2018.

[2] M. Pawlak, J. Guziur, and A. Poniszewska-Maranda, “Voting Processwith Blockchain Technology: Auditable Blockchain Voting System,” inLecture Notes on Data Engineering and Communications Technologies, pp. 233-244, Springer, Cham, 2019.

[3] B. Singhal, G. Dhameja, and P. S. Panda, “How Blockchain Works,” in Beginning Blockchain, pp. 31-148, Berkeley, CA: Apress, 2018.

[4] Agora, “Agora Whitepaper,” 2018.

[5] R. Perper, “Sierra Leone is the first country to use blockchain duringan election - Business Insider,” 2018.

[6] S. Nakamoto, “Bitcoin: A Peer-to-Peer Electronic Cash System,” tech.rep., 2008.

[7] G. Wood et al., “Ethereum: A secure decentralized generalized transaction ledger,” Ethereum project yellow paper, vol. 151, pp. 1-32, 2014.

[8] S. Landers, “Netvote: A Decentralized Voting Platform – Netvote Project Medium,” 2018.

[9] P. McCorry, S. F. Shahandashti, and F. Hao, “A Smart Contract for Boardroom Voting with Maximum Voter Privacy,” in Lecture Notes in Computer Science, ch. FCDS, pp. 357-375, Springer, Cham, 2017.

[10] Z. Brakerski and V. Vaikuntanathan, “Efficient Fully Homomorphic Encryption from (Standard) LWE,”SIAM Journal on Computing, vol. 43,pp. 831-871, jan 2014.

[11] O. Goldreich and Y. Oren, “Definitions and properties of zero knowledge proof systems,” Journal of Cryptology, vol. 7, no. 1, pp. 1-32, 1994.