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A TRANSPARENT APPROACH TO E-VOTING WITH BLOCKCHAIN

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ABSTRACT

Ever then, there have been several voting methods. Paper ballots are the most often used form globally. Unsolved issues with electronic voting techniques have just recently gained popularity in the last decade. Concerns with trustworthiness, openness, dependability, and usability are the most common with electronic voting systems. When it comes to this area, Estonia was an early adopter and may be thought of as cutting edge. But blockchain-based solutions are still in their infancy. In addition to delivering solutions to the aforementioned issues, blockchain technology also offers benefits like immutability and decentralisation. Limitations in testing and comparison, as well as a singular emphasis, are the key issues with blockchain-based e-voting technology. This article introduces a framework for electronic voting that is built on the blockchain and can be used for many types of elections. Blockchain makes full use of it, and all procedures are able to be managed inside it. The platform acts completely autonomously and decentrally when the voting process begins, making it impossible to influence the outcome. Voters' identities are protected by homomorphic encryption, but the data are completely visible. Three separate blockchains have been used to test and compare our approach. Based on the findings, it is clear that there is minimal performance difference between public and private blockchains. Our solution's main selling point is its use of blockchain technology to decentralise the administration of electronic voting platforms. This will allow for complete transparency throughout the process while also protecting voters' privacy and security using homomorphic encryption.

I. INTRODUCTION

The topic of e-voting systems is still at an early stage of development. We have chosen this domain not only for its recency but also because there are not many solutions that address problems of e-voting. Nowadays, popularity grows also in the development of e-

Government. However, such a system is not feasible if basic services for citizens such as elections do not become electronic. "E-voting is one of the key public sectors that can be transformed by blockchain technology" [1]. Hand by hand with e-voting come also new challenges, which need to be addressed. One of them is e.g. securing the elections, which needs to be at least as safe as the classic voting systems with ballots. That is why we have decided to create safe elections in which voters do not have to worry about someone abusing the electoral system. In recent years blockchain is often mentioned as an example of secure technology used in an online environment. Our evoting system uses blockchain to manage all election processes. Its main advantage is that there is no need for confidence in the centralized authority that created the elections. This authority cannot affect the election results in our system. Another challenge in e-voting is the lack of transparency in the functioning of the system, leading to a lack of confidence in voters [2]. This problem is solved by blockchain in a way of total transparency that allows everyone to see the stored data and processes such as how are these data handled. In the field of security, this technology is more suitable in every way than the classic e-voting platform without blockchain.

II. LITERATURE SURVEY

1.Blockchain-enabled e-voting,N. Kshetri and J. Voas,Blockchain-enabled e-voting (BEV) could reduce voter fraud and increase voter access. Eligible voters cast a ballot anonymously using a computer or smartphone. BEV uses an encrypted key and tamper-proof personal IDs. This article highlights some BEV implementations and the approach's potential benefits and challenges.

2.Voting Processwith Blockchain Technology: Auditable Blockchain Voting System,M. Pawlak, J. Guziur, and A. Poniszewska-Mara nda,There are various methods and approaches to electronic voting all around the world. Each is connected with different benefits and issues. One of the most important and prevalent problems is lack of auditing capabilities and system verification methods. Blockchain technology, which recently gained a lot of attention, can provide a solution to this issue. This paper presents Auditable Blockchain Voting System (ABVS), which describes e-voting processes and components of a supervised internet voting system that is audit and verification capable. ABVS achieves this through utilization of blockchain technology and voter-verified paper audit trail.

3. A Smart Contract forBoardroom Voting with Maximum Voter Privacy,P. McCorry, S. F. Shahandashti, and F. Hao,,We present the first implementation of a decentralised and self-tallying internet voting protocol with maximum voter privacy using the Blockchain. The Open Vote Network is suitable for boardroom elections and is written as a smart contract for Ethereum. Unlike previously proposed Blockchain e-voting protocols, this is the first implementation that does not rely on any trusted authority to compute the tally or to protect the voter's privacy. Instead, the Open Vote Network is a selftallying protocol, and each voter is in control of the privacy of their own vote such that it can only be breached by a full collusion involving all other voters. The execution of the protocol is enforced using the consensus mechanism that also secures the Ethereum blockchain. We tested the implementation on Ethereum's official test network to demonstrate its feasibility. Also, we provide a financial and computational breakdown of its execution cost.

4. Definitions and properties of zeroknowledgeproof systems, O. Goldreich and Y. Oren,In this paper we investigate some properties of zero-knowledge proofs, a notion introduced by Goldwasser, Micali, and Rackoff. We introduce and classify two definitions of zero-knowledge: auxiliary-input zero-knowledge and blackbox-simulation zero-knowledge. We explain why auxiliary-input zero-knowledge is a definition more suitable for cryptographic applications than the original [GMR1] definition. In particular, we show that any protocol solely composed of subprotocols which are auxiliary-input zero-knowledge is itself auxiliary-input zero-knowledge. We show that blackbox-simulation zero-knowledge implies auxiliary-input zero-knowledge (which in turn implies the [GMR1] definition). We argue that all known zero-knowledge proofs are in fact blackbox-simulation zero-knowledge (i.e., we proved zero-knowledge using blackbox-simulation of the verifier). As a result, all known zero-knowledge proof systems are shown to be auxiliary-input zero-knowledge and can be used for cryptographic applications such as those in [GMW2]. We demonstrate the triviality of certain classes of zero-knowledge proof systems, in the sense that only languages in BPP

have zero-knowledge proofs of these classes. In particular, we show that any language having a Las Vegas zero-knowledge proof system necessarily belongs to RP. We show that randomness of both the verifier and the prover, and nontriviality of the interaction are essential properties of (nontrivial) auxiliary-input zero-knowledge proofs.

III. EXISTING SYSTEM:

In recent years blockchain is often mentioned as an example of secure technology used in an online environment. Our e-voting system uses blockchain to manage all election processes. Its main advantage is that there is no need for confidence in the centralized authority that created the elections. This authority cannot affect the election results in our system. Another challenge in e-voting is the lack of transparency in the functioning of the system, leading to a lack of confidence in voters.

Disadvantages of existing system:

1.It is a manual procees.

IV.PROPOSED SYSTEM:

The proposed blockchain voting system considers all requirements for voting and is designed generally for any elections e.g. president, student parliament, etc. The system allows more round elections and preferably uses a public blockchain. The public blockchain can be replaced by other types of blockchain but the stored data (votes) have to be easily verified by any user. The user represents any observer who is interested in the blockchain voting. In our proposed system we identify three main roles: vote publisher; key authority; and voter. These three roles can represent an organization, a company, or a user. The roles vote publisher and key authority can be grouped to one role due to that they can be the same organization or person. The voter attends the elections depending on vote configuration. The configuration of the votes is performed by the vote publisher and is included in the smart contract. The vote publisher has to know all cipher keys before publishing the smart contract. The close collaboration between the vote publisher and the key authority is required. The key authority creates and distributes all cipher keys to a voter and vote publisher. The distributing channel has to be secured and should not be vulnerable to any 3rd party.

Advantages of proposed system:

1. We can vote through automatic process.it is easy to vote.

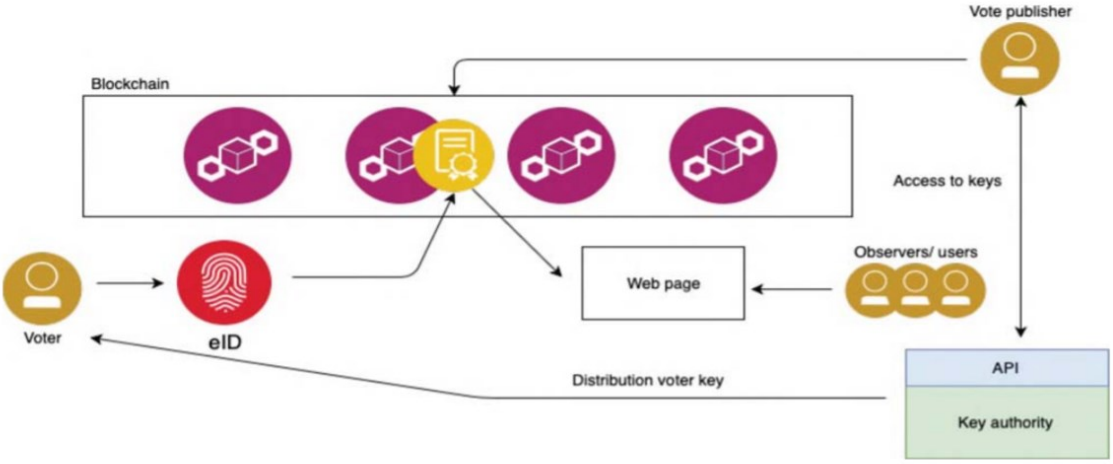


Fig. 1. High-Level architecture

V.IMPLEMENTATION

MODULES:

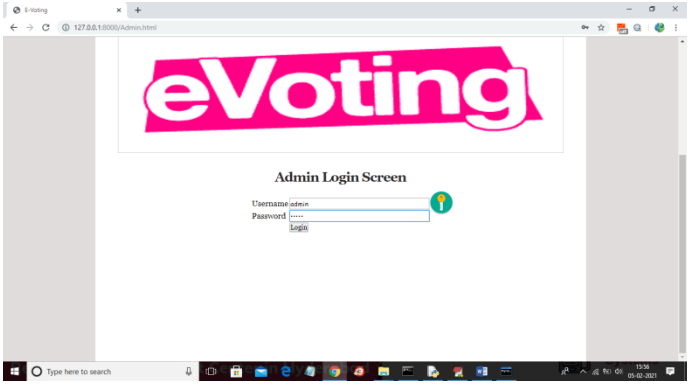
1. Admin
2. User

MODULES DESCRIPTION:

In this project we are using public python Blockchain API's to store and manage voting data as Blockchain provides secure and tamper proof of data storage and to implement this project we have designed following modules.

Admin module: this user responsible to add new party and candidate details and can view party details and vote count. Admin login to system by using username as 'admin' and password as 'admin'.

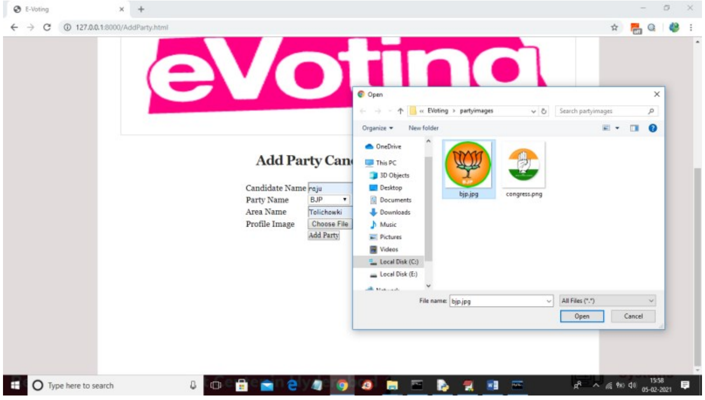
User Module: this user has to signup with the application by using username as his ID and then upload his face photo which capture from webcam. After registering user can go for login which validate user id and after successful login user can go for cast vote module which execute following functionality


127.0.0.1:8000/Admin.html

eVoting

Admin Login Screen

Username admin
Password •••••
Login

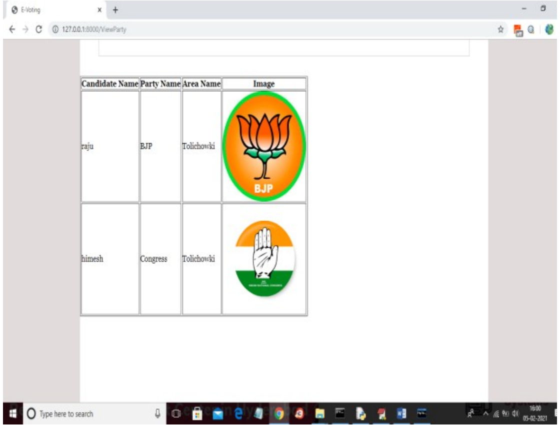

127.0.0.1:8000/AddParty.html

eVoting

Add Party Can

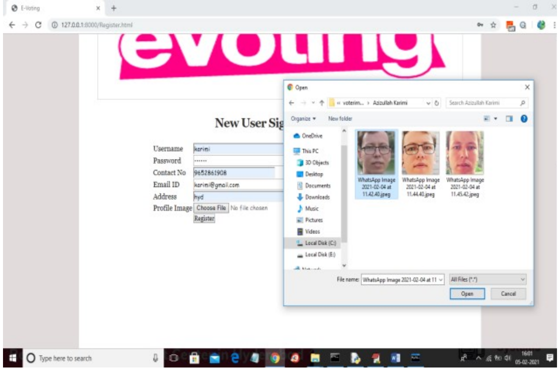
Candidate Name raju
Party Name BJP
Area Name Tolichowki
Profile Image Choose File
Add Party

Open
bjp.jpg
congress.png
File name: bjp.jpg
All Files (*.*)
Open
Cancel



Candidate Name	Party Name	Area Name	Image
raju	BJP	Tolichowki	BJP
himesh	Congress	Tolichowki	

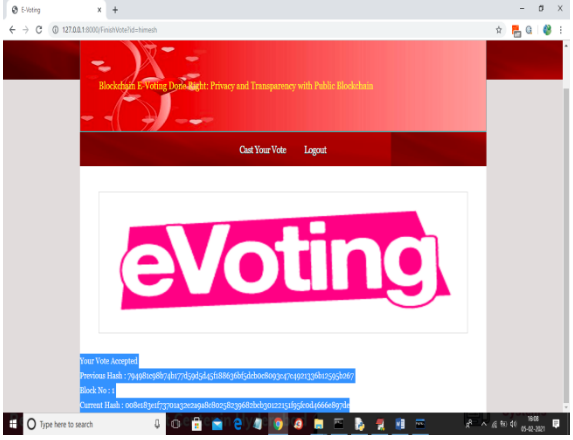
displaying add added party details and now click on ‘Logout’ link to logout as admin and then add new user



New User Sig

Username karimi
Password ······
Contact No 9652861908
Email ID karimi@gmail.com
Address hyd
Profile Image Choose File No file chosen
Register

In above screen adding new user and then selecting his face photo taken from webcam and then click on ‘Register’ button to complete signup process. Here you have given images taken from phone but we need to capture from webcam for dataset as quality of webcam image and phone image vary and then problem comes in prediction.



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

Your Vote Accepted
Previous Hash : 794981c98b74b177d59d5d45f188636bf5dcb0c8093c47c4921336b12595b267
Block No : 1
Current Hash : 008e183e1f73701a32e2a9a8c80258239682bcb3012215195fe0d4666e897de

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

VI. CONCLUSION:

Due to its transparent data and the fact that everyone can see them in real time, public blockchain offers more benefits in such an election system than private blockchain, even if there are small variances in network latency. A private blockchain may be somewhat quicker, but its partial centralization—it only operates where the authority wants it to—destroys the system's legitimacy. According to the data in the table, the typical timings to add a single voice are as follows: 9.0 s for Ethereum Ropsten, 6.05 s for Hyperledger Composer, and 6.34 s for Ganache. The consensus method and block time both have an impact on these timeframes.

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