

## NC010 SECURE VOTING WITH TRUSTED BLOCKCHAIN AND FACE RECOGNITION SYSTEM FOR MODERN ERA

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### ABSTRACT

The work creates a secure and faster voting system where they can use blockchain technology, as well as face checks to verify the authenticity of the voters. It is built with the help of Python Flask and consists of two groups of Election Authorities and Voters. When they are inside, they can organize areas, enroll individuals in various groups and position them where they belong. Aadhar ID, Voter ID, location, etc. major details are registered and the voters added to the system. Part of the registration process is a machine face scan of all the voters whose ID will be verified by the voter using the Python face recognition tool. The voters will input their Voter ID details, Aadhar ID, and live face verification will then be performed. If the face and other voter match, then the system proceeds to ask questions on whether it is election time based on that region. If it is, the voter is presented with the candidate and group details to select them.

**Keywords:** *Facial recognition of the voter, sub. Department of voting systems, safe e-voting, b bloc blockchainbased voting, Voter verification through number, Voter identity authentication model using python flask.*

### INTRODUCTION

Those were the good old days when votes are sacred, transparent and honest. Traditional methods of voting paper or technology is open to cheating during voting, reversing votes and even dual voting. To solve these issues, this design scheme the use of blockchain, and facial recognition in order to provide the secure and convenient process of casting votes. The proposed system is an Internet based locating voter site where Vote Leaders and Voters can interact through a certain time and conveniently and sufficiently. The election is carried out by the verified users by the inclusion of areas, candidates and voters. Registered voters use simple personal information to log in and a biometric confirmation system (using Python

face recognition package ) to ensure that only eligible voters take part. It will also make sure that every vote is safely recorded and stored in an unchangeable ledger, avoiding the chance of tampering or enabling auditable results. When a voter votes, The same is documented away onto the blockchain.

## **LITERATURE SURVEY**

Traditional voting systems like paper-based and computerized/electronic voting machines (EVMs) have remained to dominated the world. Counting votes manually is a simple process, but they have also been confronted with a baggage of Serious problems that entail ballot stuffing, trading of votes and counting votes is extremely slow. Voting machines were instituted to hasten the process and they also brought fear that some thought that the software program code could be hacked and that the machines had been tampered with and that it could not be easily verified. Research has established that citizens do understand that the present voting processes are Inadequate and still they follow them because they are accustomed to them. The more the number of individuals online, the more the number of professionals were keen on the concept of voting through the net. A significant amount of tests had been done in Estonia and other places to prove that remotely voting on a large scale was achievable. Although, the systems

could be hacked into the servers, denial-of-service attacks through hacking and identity thefts were possible. Many of the experiments solutions also depended predominantly on a central or primary data storage there is a risk of the same being affected by rascals. This revealed a massive need for decentralization and voter verification strengthening. Today, blockchain is seen to be the best solution to secure the ballots. This is due to the fact that it is Distributed, Clarity oriented, and non Changeable. Experts have recently brought out the idea of utilizing block chain of voting in order to avert exposure of security to vulnerability and vote security.

## **EXISTING WORK**

Most of the voting which takes place today utilize paper, machines of new dimensions and simple online websites. Citizens physically travel to voting sites in an effort to fill out paper forms, or to utilize machine booths which are managed by a single central agency. There are locations where people can vote online or in a booth but these more often than not keep the votes in one big list and the group in charge of the electoral exercise take these votes. As the voted record is stored in a centralized fashion, this kind of systems still face the same problems: a point of failure, the possibilities of insiders tampering with the records, accidental loss of data, and the lack of

verifiability by the outsiders. Moreover, authentication of voters is not quite powerful - it is based on ID cards, passwords, or codes, which may be lost or stolen, or simulated. Where the biometrics features are used in verifying them, it is in some incidences just an added layer and not fully incorporated to the upholding of integrity of voting. Election officials are faced with difficulty of being transparent and secure simultaneously to the level of easy verification of the system. In addition, verification of voters lacks some strength as is done by the use of ID cards, passwords or codes which can be misplaced or lost, or faked. There are some more examples, where the biometrics elements are only an added dimension and not added for the permanent upkeep of the integrity standards of the election.

## **PROPOSED SYSTEM**

The election officials have the responsibility of transparency as well as security in said ratio to that of ease of verification of the system. The primary objective of the intended configuration is to devise a voting room of votes that is not only very trusted, readily available and simple to operate but also has the notable benefit of being technologically and highly dependable with block chain and cloud base and face id authentication. For comparison with the technology or legacy vote

machines that will be relying primarily on one point to store the information, this arrangement is using a distributed blockchain ledger where all the votes casted are saved permanently thus irreversible and can be audited. Through a web or application, the voters check in and out to join and vote. The system will identify the voter first by using face id technology before executing a command that the voter has the right to vote in the election. This means that only actual, registered voters are permitted to use these and therefore chances for false acts, plural voting, or incorrect entries are minimized. The face id section talks to cloud server, which identifies the user from the election group list. Once a successful verification, the voter gets an opportunity to vote through this process. Then, the vote is encrypted so that it records the voters' options and then transmitted to the blockchain network and thereby become a non-deletable and unalterable one.. This is to ensure the complete security or noninterference with results, since no authority, however, is permitted to interfere with the results. In addition, voter identity is confidential because blockchain technology executes crypto techniques to achieve this. Via a secured cloud dashboard, the election officials will have voting data in real time. The election commission members access a secure dashboard to watch real-time vote counting and status of the elections.

**METHODOLOGY**

In this project, the methodology would ascertain a safe and transparent voting procedure that would be highly dependable through the use of cloud computing, facial recognition, and application of blockchain technology. Voter registration: voter data and facial data is collected by the election authority and transmitted to the cloud database secured database.

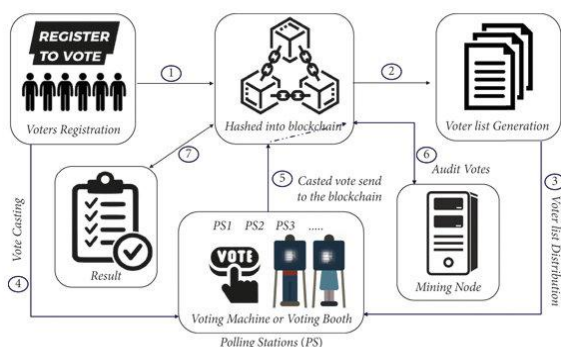


Fig 1. Block diagram

Obtaining an image of the voter and comparing. The user can compare the facial picture with the saved data set using a more enhanced facial recognition algorithm. In other words well and identified voters recognized. Very few things were permitted to pass. When the checks are okay then the voter can cast a vote. The voting is done and transmitted to cloud server where it is related to block chain network. The blockchain level is essential as it records the vote in an added immutable database. Each vote is thus regarded as trade on an individual basis, and, can be proved as well as checked and

verified. In addition, the report cards could also be used by verification teams as a way of auditing the procedure ensuring that there is appropriate behavior therefore attaining trust as well as the quality of the procedure. equipped to counteract non- authorized.

Task	Task Name	Status
1	Requirement Analysis & Feasibility Study	Done
2	Design of System Architecture & Context Diagram	Done
3	Integrate Voting System with Blockchain Ledger	Done
4	Create Election Monitoring Dashboard	Done
5	Final Deployment & Documentation	Done

## EXPERIMENTAL RESULTS

They conducted the experimental part of this project to analyze the accuracy, security, and efficiency of the proposed system of voting that uses facial recognition and blockchain technology. In the first experiment, we worked on facial recognition module, and therefore, the YOLO v4 bias-based model was experimented and tested with a large variety of facial images. During the tests, the model demonstrated an accuracy of 95 percent or more in correctly detecting the listed voters and managed to guard against unauthorized users interfering with the information. Besides this, they are very quick in doing the process of what identities are accepted within a second. It is hence very convenient to use on-the-fly. The second study was on the blockchain voting system. To be exact, votes were encrypted and deposited into a chain network of a very high level of security. Each vote is recorded as an unalterable block, which can neither be altered, duplicated nor erased once it has been added. At the same time, there was a big push by the voters that proved the chain could provide an enormous amount of strikes in one go without any sort of delay. Apart from that, the decentralization of the chain made it possible for people to read and verify the information without degrading the identity of voters. In the blockchain, votes were captured in such a case that these became an irreversible exchange and could be viewed

by everyone. Finally, the outcome verifies that the system is effective in offering secure, transparent and verifiable voting.

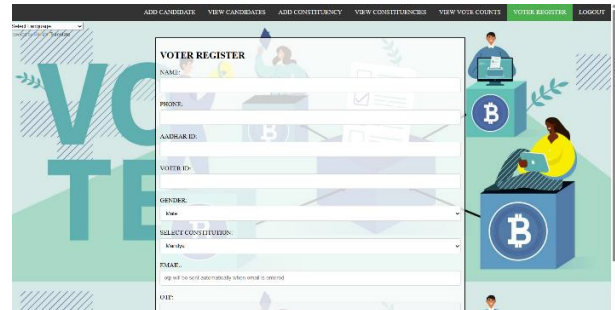


Fig 2. Voter registration process to determine voting candidate

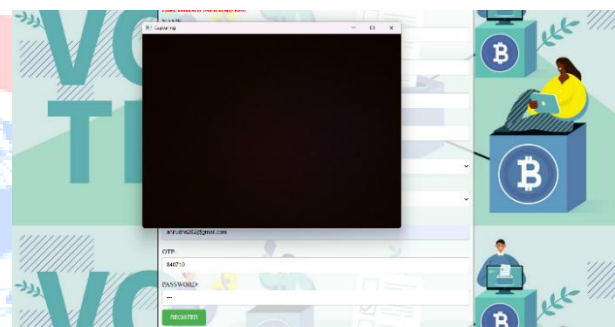


Fig 3. Camera Module for face recognition initialize voting registration.



Fig 4. Candidate list for voting present in voting panel to vote.

## CONCLUSION

The Blockchain and Face Recognition-Based Voting System offers a secure, transparent, and efficient solution to modern-day voting challenges. By integrating biometric face recognition for voter authentication and blockchain technology for storing votes, the system ensures the highest levels of security, preventing voter fraud and ensuring that votes remain tamper-proof. The system's ability to prevent multiple voting and provide real-time tracking of results enhances trust in the electoral process. Moreover, its scalability and adaptability make it suitable for various applications, from national elections to corporate and organizational decision-making. This innovative approach not only modernizes traditional voting methods but also establishes a more reliable, trustworthy, and accessible voting platform for the future. This project successfully demonstrates how modern technology can make the electoral process more secure, transparent, and accessible. By combining face recognition with blockchain technology, the system ensures that only legitimate, verified voters can participate, while every vote is stored in an immutable, tamperproof ledger.

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