# E-Voting System with Face Recognition and Aadhar

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**Abstract:** *An Election is a method of selection of individuals to hold the public office in democracy. Ballot is basically a piece of paper that is used to cast vote during election. In ballot paper voting system each voter uses a ballot paper which is not shared and basically it is a paper printed with the name and symbols of the candidates. The Electronic Voting Machine is basically a memory recorder which records the vote casted by the voters. In this paper, main advantages of E-voting systems for country are highlighted. For constructing E-voting systems, all countries need to do great attention to Verification and Validation requirements. In this research, E-voting scheme with face recognition using deep learning technique is proposed. The process of casting vote is accomplished by blockchain technology and blind signature mechanism. The main objective of the proposed scheme is to explore the positive effects of security and safety in online voting system.*

**Keywords:** *E-voting CNN, Security Mechanism, Deep Learning.*

## I. INTRODUCTION

Voting is a method for a group, such as a meeting or an electorate, in order to make collective decision or express an opinion usually following discussions, debates or election campaigns in smaller organizations, voting can occur in different ways. Formally via ballot to elect others for example within a workplace, to elect members of political associations or to choose roles for others. Informally voting could occur as a spoken agreement or as a verbal gesture like a raised hand or electronically. In a democracy, a government is chosen by voting in an election a way for an electorate to elect, i.e., choose, among several candidates for rule.[1] However, more than likely, elections will be between two opposing parties. These two will be the most established and the most popular. For example, in the US the

competition is between the Republicans and the Democrats. In an indirect democracy voting is the method by which the person elected (in charge) represents their policies and party, whilst making decisions, with regards to other authorities. For example, in the UK the prime minister has to make decisions with regards to the House of Commons and House of Lords. Direct democracy, is the complete opposite, the person elected, has more independent control and does not need to get policies passed throughout the government.
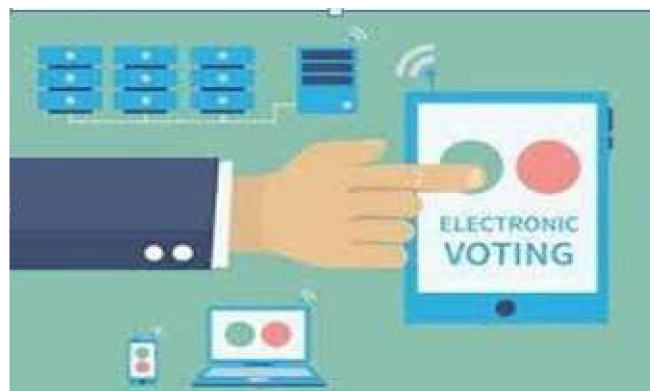


**Figure 1:** Example Figure

Figure1.1 Electronic Voting is the standard means of conducting lections using Electronic Voting machines, sometimes called "EVMs in India. They were introduced in Indian elections between 1998 and 2001, in a phased manner. Prior to the introduction of electronic voting, India used paper ballots and manual counting. In retrospect, a majority vote is

when the mass of individual's vote for the same person. However, whilst each individual''s choice for or against, does count, a lot of countries use geographic measures to decide who wins. For example, in the UK the person with the most constituencies win, but they may not always have the most individual votes. Other countries who have liberal democracies, may use a secret ballot, hoping to prevent individuals from becoming influenced by other people and to protect their political privacy. The objective for secret ballots, is to try and get the most authentic outcome. A reasoning behind why this way of voting may capture a better result, is mainly to do with social influence.

## II. LITERATURE REVIEW

**Smart and Secure Voting Machine Using Biometrics [1]:** There is a big total of populations who are appropriate to vote are called as voters, in India to identify each voter, a unique number is provided with the voter id. Besides, for verification purposes, biometrics traits can be used. A fingerprint is unique to each human being, which provides much better protection than any secret keywords or passes keys. Thus, the biometric concept can provide a better protected system for polling. In EVM there is no module that can confirm if the citizen''s vote cast or not. So, the paper is proposed to include an SMS module and GSM module to confirm the vote cast by the voter is registered via a confirmation message to the registered mobile phone. This will improve the consistency and proficiency of the system. The proposed system has a double verification for a more secure system. This system uses a cloud database; hence it will be more efficient than the existing system. There is additional GPS in the system, this will prevent the system from theft if the system is stolen it can be located easily and immediately through satellites. Through GSM, we can get a confirmation message about to which candidate the vote got registered to, this way the elector can verify that the voter is pitched to his favorite''s candidate.

**Arduino Based Secure Electronic Voting System with IoT [2]:** Internet of Things (IOT) is the network of integrated physical devices that are set with connectors, actuator and communication media that allow them to send and receive data over the internet [1]. This technology is simplifying the lives of people and making everything easier day by day in every walk.

## III. METHODOLOGY

Electronic Voting Machine (also known as EVM) is voting using electronic means to either aid or take care of the chores of casting and counting votes EVM is designed with two units: the control unit and the balloting unit. These units are joined together by a cable. The control unit of the EVM is kept with the presiding officer or the polling officer. The balloting unit is kept within the voting compartment for electors to cast their votes. This is done to ensure that the polling officer verifies your identity. With the EVM, instead of issuing a ballot paper, the polling officer will press the Ballot Button which enables the voter to cast their vote. A list of candidate's names and/or symbols will be available on the machine with a blue button next to it. The voter can press the button next to the candidate's name they wish to vote for.
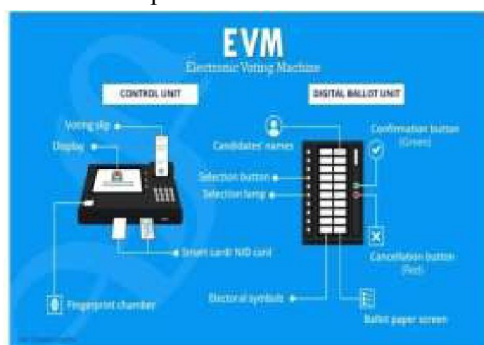


**Figure 2:** E-Voting Machine

Fig 2. represents Electronic Voting Machine (EVM) it consists of two parts Control unit and Digital Ballot unit. The current electronic voting machines in India are the M3 version with VVPAT capability, the older versions being M1 and M2. They are built and encoded with once-write software (read-only masked memory) at the state-owned and high security premises of the Bharat Electronics Limited and the Electronics Corporation of India Limited. The inventory of

election EVMs is securely tracked by the Election Commission of India on a real-time basis with EVM Tracking Software (ETS). This system tracks its digital verification identity and physical presence. The M3 EVMs has embedded hardware and software that enables only a particular control unit to work with a particular voting unit issued by the Election Commission, as another layer of tamper- proofing. Additional means of tamper proofing the machines include several layers of seals. Indian EVMs are stand-alone non-networked machines.

## IV. EXISTING SYSTEM

Voting is complex process which required high transparency. We have proposed Arduino microcontroller based secure electronic voting system for universities. This system used Pub Nub cloud computing platform for security and analysis. This an advanced and robust system, in which all the data related to voting is stored in the form of digital information in cloud which makes it fully secure from traditional ballot paper-based voting. A prototype was implemented to show the working and performance of system. This system will surely ensure a more secure and safer method of voting for elections in universities. Our future plans are to amplify the research of fingerprint voting system to multi-biometric voting system in which we will integrate facial recognition, retina scan and iris scan technology. This paper described, an electronic Voting system for credibility openness reliability and functionality challenges.

## V. PROPOSED SYSTEM

E-voting system helps the user to cast the vote without visiting the polling booth. We have two voting types I-Voting and SMS-Voting where as I-Voting (Internet Voting) is done remotely via internet. SMS-Voting is done by sending SMS to the Election Department. In the first step the registration process is done by the voters through an application. Then in the second step the application will start its process. Here we use already existed database or centralized database, which contains voter's information with linked mobile number. Server sends the OTP (One-Time Password) to the voter's registered mobile number. Then voter enters that OTP, then database again verifies that entered OTP by voter and if it is correct that means he/she is a valid user. Face recognition will have done here if the data matches with database it will go to next step.

After the Face recognition candidate's list will appears. This list contains the candidate name and in front of that name the button named Vote is provided. Voter should have to press that button then only the voting is done and the voting procedure is completed.

### ADVANTAGES OF PROPOSED SYSTEM:

**1. Secured**

We identify three critical responsibilities in our proposed system: voting publisher, key authority and voting. These three roles may represent a firm, an organization, or a user. The publisher of roles for voting and key powers might be grouped into a single job because they can be the same organization. Depending on the vote, the voter attends the elections. The voting is configured and put in the smart contract by the voting publisher. Before the smart contract is published, the voting publisher must have all cypher keys. The voting publisher and the key authority have to work closely together. All the keys to a voting and voting publication are created and distributed by the main authority. The channel distribution must be secured and must not be exposed to third parties.

## VI. IMPLEMENTATION

A]. The blockchain component represents the entire data storage architecture and operates voting. The blockchain may be developed using public blockchain technologies, such as Ethereum or a private blockchain, for instance Hyperledger. The advantages of the public blockchain are that it provides all transaction and block information to all users and this is why it has better trust than the private blockchain. This trust is in the context of a regular user who is not state-of-the-art and wants to view all information. The private blockchain can provide the same level of trust, but it has to be shown by data by an organization. It does not limit what blockchain should be used in the proposed architecture. Both blockchain types can provide the same amount of trust. The platform chosen is the organizational decision to create elections.
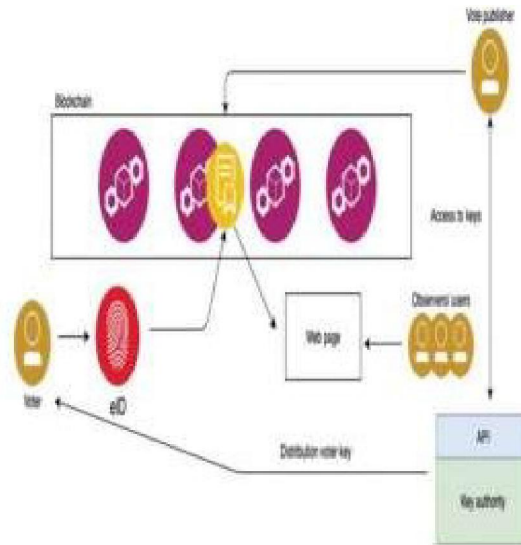
**Figure 3:** System Architecture

**B]. Units Voting security is based on** blockchainand a smart contract is carried out that belongs to the Blockchain processing system. After a configuration, the intelligent contract is released to the blockchain network. Contains times, candidates or other properties in the configuration. The candidate must not be a person; he symbolizes anything that is the purpose of the electoral process. The published intelligent agreement cannot be edited or altered to make the vote transparent. A list of users who are qualified to vote can be found on this smart contract. A key distribution must be followed by the access list that is made by the major authority.



Admin: this user is responsible for adding new party and candidate information, seeing party information and voting numbers. Admin system login by using 'Admin' username and 'Admin' password. User Module: This user must register with the app by using the name of their user as their ID and then upload a face photo via a camera. You can go to the log-in after registering which validated user ID and go to the cast vote module that runs following functionality after successful registration. First user is connected and the picture captured in his PC webcam With the OpenCV application, faces are detected and CNN application predicts the user identity, then the application displays all voting candidacies if user identification matches CNN predicted face. If you don't vote, you can vote to your wishes by clicking on the link next to the name of your party. When applying for votes, the voter and the candidate details will be collected and then the data will be crypted and stored in Blockchain. Below is the code of Blockchain's storage.

## VII. EXPERIMENTAL RESULTS



**Figure 4:** Home Screen



**Figure** 5: Admin login



**Figure** 6: Add party candidate



**Figure** 7: View Party Details



**Figure** 8: User screen

**Figure** 9: Verification Page
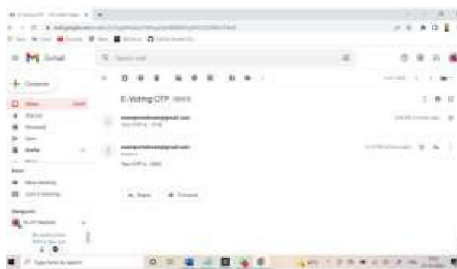


**Figure** 10: OTP validation screen



**Figure** 11: Mail OTP of e-voting

## VIII. CONCLUSION

Many issues with electronic voting can be solved using block chain technology, which makes electronic voting more cost-effective, pleasant, and safe than any other network. Over time, research has highlighted specific problems, such as the need for further work on block chain-based electronic voting and that block chain-based electronic voting schemes have significant technical challenges.

- Technology is a Scalability and Processing Overheads.
- It has great potential to decrease organizational costs and increase voter turnout.
- It eliminates the need to print ballot papers or open polling stations.
- Voters can vote from wherever there is an Internet connection.

This system has a double verification for more secure system. It has already data stored in it we may use that stored data or we can add extra another data also for the citizen identification to cast their vote. Through GSM, we can get a confirmation message about to which candidate the vote got registered to this way the elector can verify that the voter is pitched to his favourite candidate. It is very useful to physical handicapped people, people who are living in other places and no need to stand in queues to give their vote.

## FUTURE SCOPE

Voting is a constitutional right that we are privileged to have. We take it for granted, but the constitution has given us the right to elect who we want, and the right to make the change. Another thing to be noted is that there may be many people who generally tend to think that a single vote doesn't matter. But we often forget that every single vote can bring about a big change. In some cases, it is seen that a single vote can make a big difference between a capable and strong leader and a weak one. So, it is stressful to vote every time. Facial recognition is expected to become even more prominent over the next few years because of the advantages it offers over traditional surveillance techniques like biometrics. The technology can achieve highly accurate matches at long range, match multiple visitors simultaneously in high-traffic areas, provide real-time matching against databases, and maintain high accuracy despite hats, hoodies, glasses, and so on. Further research in the field can look into the following issues:

- We can add any other devices for better performance.
- The system can be improved by using other technologies also.
- Overcoming the problems of biometric voting system.
- We can develop through retina scan and iris scan technology.

We know today voice assistant is playing a vital role so we can develop through voice also.

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