

E-Voting System for Election using Fingerprint and Aadhar Number

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Abstract - An online voting system for Indian election is proposed for the first time in this paper. The proposed model has a greater security in the sense that voter high security password is confirmed before the vote is accepted in the main database of Election Commission of India. The additional feature of the model is that the voter can confirm if his/her vote has gone to correct candidate/party. The problem of voting is still critical in terms of safety and security. This project deals with the design and development of a web-based voting system using fingerprint and aadhar card in order to provide a high performance with high security to the voting system. Also we use web technology to make the voting system more practical. This will increase the voting percentage in India and reduces the cost of voting process. By using aadhaar card identification it provides enough security which reduces the false votes.

Key Words: Biometric fingerprint, Aadhar card, Voting System, Authentication.

1. INTRODUCTION

Voting schemes have evolved from counting hands in early days to systems that include paper, punch card mechanical lever and optical-scan machines. An electronic voting system which is used nowadays provide some characteristic different from the traditional voting technique, and also it provides improved features of voting system over traditional voting system such as accuracy, convenience, flexibility, privacy, verifiability and mobility. These devices have been praised for their simple design, ease of use and reliability. However it has been found that EVMs are not tamper proof and are easily hackable. Moreover this attacks, hardware as well as software, go without any detection but are quite simple to implement.

Biometrics system is used to identify humans uniquely based on their physical or behavioural characteristics. Biometric systems are mainly based on fingerprints, facial features, handwriting, hand geometry, voice and our project, the Iris recognition. Biometrics system first captures a sample of the feature. These extracted features are then transformed into biometrics template. The

biometrics template is a normalized, efficient and highly discriminating representation of the feature, which can then be objectively compared with other templates in order to determine identity. A good biometrics template is characterized by the use of a feature that is - Highly Unique: A biometrics template should be unique. This allows a person to be uniquely identified with minimum failures. Stability: Biometrics feature of the person should remain same or change very little so that the enrolled template in database still will be match-able. The probability of damage and abrasion to this failure should be minimal. Easily Captured: Biometric system should be able to extract the biometric feature effectively and efficiently. Hence, the features should be externally visible.

Besides reliable e-Voting technologies, there is a dire need for international standards to govern the technology, the software reliability and accuracy, the processes and algorithms deployed within the technology, and the verification of all hardware, software and protocols involved. Such standards will eventually allow elections to proceed in any part of the world without the need for monitoring bodies. Existing Voter Registration System The problems of the existing manual system of voting, include among others the following:

- A. **Expensive and Time consuming:** The process of collecting data and entering this data into the database takes too much time and is expensive to conduct, for example, time and money is spent in printing data capture forms, in preparing registration stations together with human resources, and there after advertising the days set for registration process including sensitizing voters on the need for registration, as well as time spent on entering this data to the database.
- B. **Too much paper work:** The process involves too much paper work and paper storage which is difficult as papers become bulky with the population size.

- C. **Errors during data entry:** Errors are part of all human beings; it is very unlikely for humans to be 100 percent efficient in data entry.
- D. **Loss of registration forms:** Some times, registration forms get lost after being filled in with voters' details, in most cases these are difficult to follow-up and therefore many remain unregistered even though they are voting age nationals and interested in exercising their right to vote.
- E. **Short time provided to view the voter register:** This is a very big problem since not all people have free time during the given short period of time to check and update the voter register. Above all, a number of voters end up being locked out from voting. Hence there is great desire to reduce official procedure in the current voter registration process if the general electoral process is to improve.

discharge or ballot paper may lose its quality. Proper care has to be taken in maintaining these ballots to protect them from humidity, sunlight and other factors, which affect the ballot papers. Once the ballot is corrupted, we cannot recover the original data. After the election process, it takes more time and effort for counting the votes manually by checking each ballot paper. Paper is an Inflammable material accidentally I may catch fire in case all record will be lost and cannot be recovered and hence government has to spend extra money for conducting re-elections. Bogus ballots can be made and in-numerous fake votes can be casted. Physically disabled peoples were facing difficulties in casting their votes, in those cases they need others help, but privacy while casting votes is vomited.

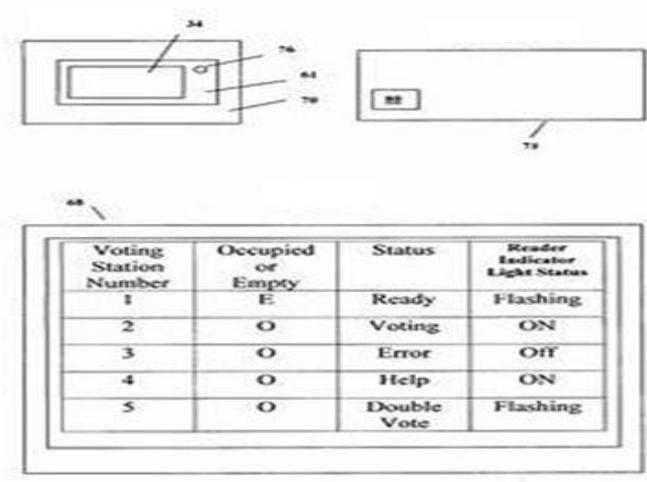


Figure 1: Sample Ballot Voting System

Essentially, a biometric system follows two characteristic traits: identification and verification. The former involves identifying a person from all biometric measurements collected in a database. The question that this process seeks to answer is: "who is this?" It, therefore, involves a one-compared-to-many match. Verification involves authenticating a person's claimed identity from his/her previously enrolled pattern. "Is this who he claims to be?" is the question that this process seeks to answer. This involves a one-to-one match [6, 7]. Verifying the identity of a person against a given biometric measure involves five phases that the system needs to go through. At the beginning, input data is read from the person through the reading sensors. Collected data is, then, sent across a network to some central database hosting a biometric system. The system will, then, perform identity matching using standardized and/or custom matching techniques.

2. RELATED WORK

The main modules of Online voting system are :

1. **Administration module:** It refers to the system administrator who controls the entire voting system. Administrator is responsible for storing the information of the new voter; modify any voter's information, deleting any voter's information and also some operations related to candidate information. Administrator can see the results of the election process also.
2. **Server module:** Server is a computer network that stores application programs and data files accessed by the clients in the network. Database is maintained in server computer and all the main codes related our project is stored in this server computer.
3. **Client module:** A computer program is used to contact and obtain data from a program on the server computer linked in the network. In our project the voter can cast the vote in the client computer and vote count of the particular candidate is updated in the server computer. **The Olden Era of Paper Ballot Voting System**

Paper Ballots were used in India before 1997 for conducting the public elections. Even though this method gives uninterrupted voting, Votes captured in ballots can be stored for a very short period as the ink used in voting my

3. SYSTEM OVERVIEW

A. Architecture of Voting System:

The architecture of the system, shown in Figure 2, is based upon the functionality provided to different users by the system.

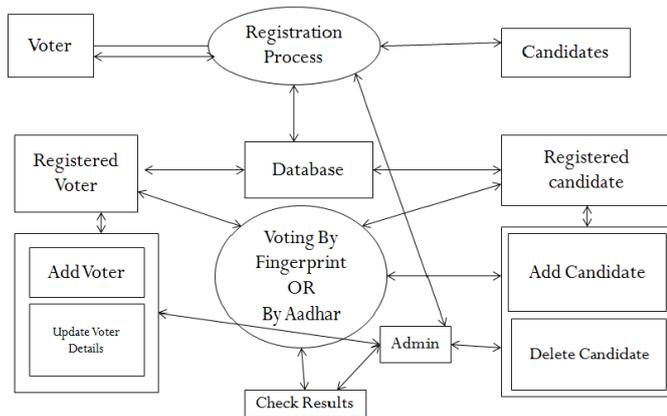


Figure 2: Architecture of the system

It contains two database government aadhaar card database and our database. We will retrieve each voter's details from government aadhaar card database and store it in our database. Admin controls all the events like enrolment, update, and deletion of candidate and at last announces the result. In the Online voting system, there are four modules.

1. Voter Registration
2. Authentication
3. Vote Casting and Recording
4. Vote Counting

1. Voter Registration: In voter registration phases, voter will provide personal information and fingerprint which is biometric information after registration user is allowed to the vote at the time of election.

2. Authentication: At the time of voting, voter has to passed through authentication phase if he is authentic voter then he will be allowed to vote. At the time voting voter first login and his credential is checked by the system to verify if voter is authentic or not.

3. Vote recording and Casting module: After successful authentication a ballot is displayed. Then voter cast their vote by selecting the one of the candidate.

4. Vote Counting: After voting time finished no one is allowed to vote. Vote is counted by the system and result is displayed

B. Flow Chart

The actual flow of the proposed system are shown in the following flowchart Figure 3.

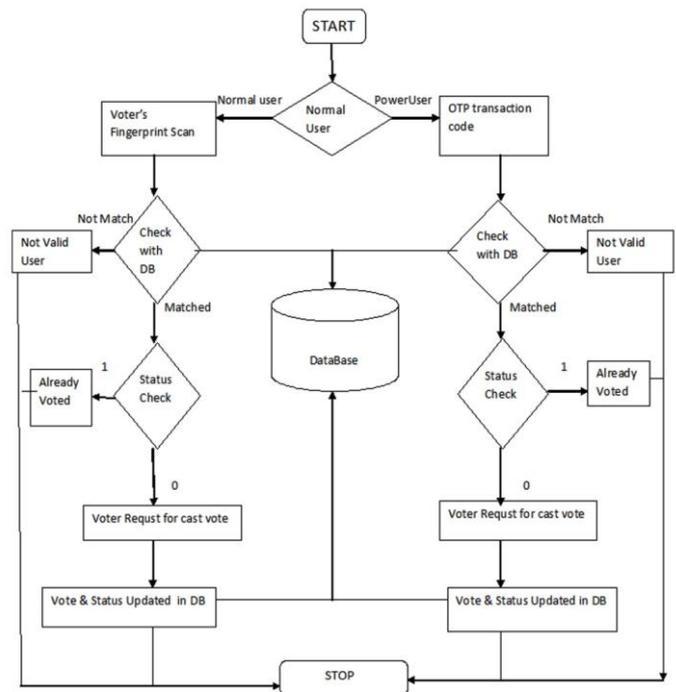


Figure 3: Voting Process Flow Chart

This shows step by step representation of voting process. There are two types of voter's normal user and power user. If he/she is a normal user a, onetime transaction code is sent to voter's mobile phone or email. Once any individual passes the authenticity criteria, he/she will be logged into his/her voting account. Then the status is checked, if status is 0 then voter is allowed to cast his/her vote. If status is 1 then voter has already voted and he/she is not allowed to vote again. Then the vote and status is updated in database. If voter is a power user his/her fingerprint is checked with our database. If it matches then their status is checked and further process will be same as the normal user. This completes the voting process.

4. CONCLUSION

The main aspect behind OVS based on Fingerprint and Adhar is that it enabled us to bring out the new ideas that were sustained within us for many for many days. This project offers the voters to cast easily through internet. Vote counting is also made easy by the OVS based on Fingerprint and Adhar since it's just a matter of querying the database. OVS based on Fingerprint and Adhar is used by a number of countries today. Developing a good system is critical to the

success of the system to prevent system failures and to gain wide acceptance as the best method available.

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