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Smart Electronic Voting Machine System

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***Abstract*: The heart of democracy is voting. The heart of voting is trust that every vote is recorded and accounted with accuracy and impartiality. The accuracy and impartiality are counted in high rate with biometric system. Among these biometric signs, fingerprint has been researched the longest period of your time, and shows the foremost promising future in real-world applications. Due to their uniqueness and consistency over time, fingerprints are used for identification over time. This project aims to present a new voting system utilized fingerprint. The system uses fingerprint for voter identification as we know that the fingerprint of every human being has a unique and different pattern. Thus, it would have a position over the present-day voting systems. As a pre-poll procedure, a database consisting of the fingerprint of all the eligible voters in an exceedingly constituency is created. During elections, the fingerprint of a voter is entered as input to the system. This can be then compared with the available records in the database. If the particular fingerprint matches with anyone within the available record, access to cast a vote is granted. On the other hand in case the fingerprint doesn't match with the records of the database or in case of repetition, access to cast a vote is denied or the vote gets rejected. All the voting machines are connected through a network, which data transfer takes place to the main host. The result is instantaneous and counting is completed finally at the main host itself. The general cost for conducting elections gets reduced so does the maintenance cost of the systems.**

***Keywords*: Vote, Biometric, Fingerprint, Electronic voting.**

1. Introduction

Election is a process of building a democracy with in the country. Like traditional elections, voters visit their voting terminal and prove that they are allowed to vote there by presenting their identity card. The voter is usually given a token that enables them to approach a voting terminal so vote for their candidates of choice. In that system voter availability is compulsory, we face many problems like Booth capturing, long queue ahead of voting booths, voting booths are apart for voters, and senior citizens/staff faces major issues, which decreases voting percentage. Is the drawback of electronic voting system? It is observed that there are so many problems related to conduction of elections like percentage of voting is at the most 60% in most of the cases, rigging within the elections and fake voters. To rise the efficiency and accuracy of voting procedures. Large number of computerized voting systems were developed to support collecting and counting the votes.

So online electronic voting system is the solution for this drawback voter will be voting the candidate for everywhere from specified Election Day and date. Online electronic voting system security is main concern. In online electronic voting process maintain the strict privacy and uprightness of the vote casted and authentication before the voter is cast their votes. In online electronic voting votes casting transference is also considered. And votes are calculated automatically after election time is released and automatically sort the votes. In online electronics voting system, only authenticated user is voting for candidate. Only authorize person can give their vote. Person will be authorizing by some methods which will be personal identification number (PIN), secrete message or user identity proof. All authenticated data will be collocated by user. All authentications are verified by main database then allow for that voter. Authentication is verified by biometric identification process.

2. Existing voting systems

A. Electronic Voting machines

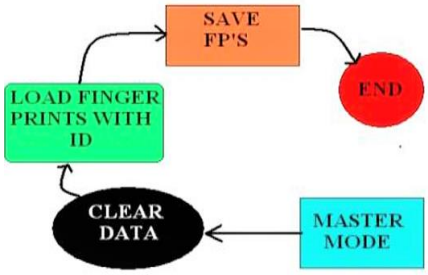
India has an outdated method of conducting elections using Electronic Voting Machines, which is prone to fraud and it is tedious to handle the voting machines. Most of the EVMs are foreign manufactured, which means the secret codes that control the EVMs are in foreign hands and that can be used to influence the election results. EVMs which are used in India do not have any mechanism by which the voter can verify their identity before casting votes, due to which fake voters can cast numerous fake votes. EVMs can be tampered during manufacturing in such a case it can manipulate the actual voting. Remote votes cannot be casted using conventional EVMs. EVMs are very costly, and Government has to spend a lot money for conducting public elections. Citizens will be in queue to fulfil their Right to Vote, which in turn result in huge loss for the nation. After elections government has to maintain these machines with full security till counting process. Counting is again a tedious process for government. Many countries namely Germany, Netherland, Italy, France have banned EVMs. Indian EVMs are manufactured in Japan but Japan is using ballot system.

B. Voter-verified paper audit trail (VVPAT)

In recent elections, various opposition parties have alleged faulty EVMs after they did not defeat the incumbent. After rulings of Delhi High Court, the Supreme Court of India in 2011 directed the Election Commission to include a written record as additionally to assist confirm the reliable operation of EVMs. The Election Commission developed EVMs with voter-verified paper audit trail (VVPAT) system between 2012 and 2013. The system was tried on a pilot basis within the 2014 Indian general election. EVMs and accompanying Voter (VVPAT) are now used in every assembly and general election in India and a small percentage of the VVPATs are verified. On 9 April 2019, Supreme Court of India ordered the Election Commission of India to use VVPAT paper trail system in every assembly constituency but verify only about 2% of the EVMs i.e., 5 polling stations per constituency before certifying the final results. The Election Commission of India has acted under this order and deployed VVPAT verification for 20,625 EVMs in the 2019 Indian general election.

3. Implementation

1. The first step for the implementation of proposed system is REGISTRATION.

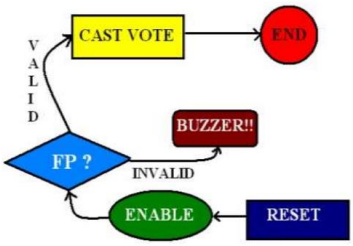


Procedure of registration: In this step firstly, the admin will create a database. In this diagram we refer admin with the master mode. The database created by admin consists of unique identification number, user name, password, mobile number, date of birth, photo, thumb image, address. The admin will load fingerprint of each individual with his/her personal information

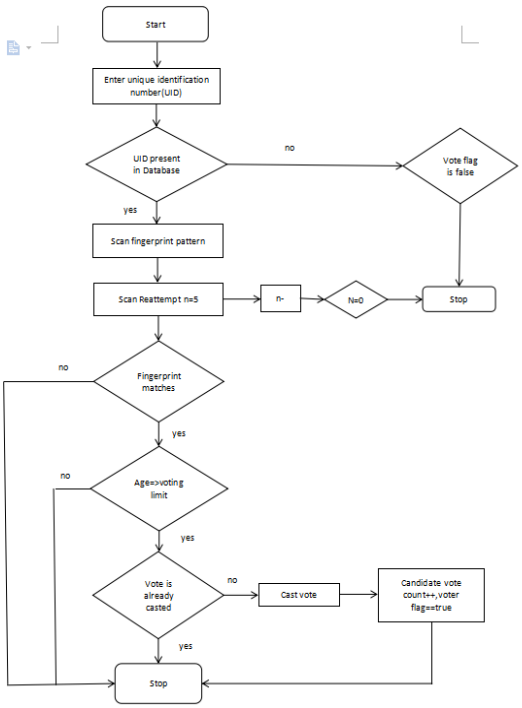
Once all the information is been stored in database the admin ends the registration.

- Only the admin has the access to database.
- Admin is responsible for controlling the actions needed to be taken for particular election
- This action includes updating the mobile application information according to elections that are been conducted for various purpose. This information consists of location updating, candidate updating, updating date and time, exceeding time.

2. The second step is casting a vote



- On the day of election, Admin will enable the mobile application before the time allotted for particular election.
- Each mobile application user will first login to application using his/her unique identification number and password.



If the login and password is matched with the data in database, then the next step will be finger print authentication.

- If the fingerprint of user matches with the fingerprint image which is stored in database, then the user will be directed to a page where the user can cast the vote to whom user wants to cast the vote.
- If the user fails to match the finger print with the fingerprint which is stored in database due to any reason, then there is another option to cast a vote i.e. using one-time password which will be received on user registered mobile number only.

3. Whenever a user cast a vote the user information will be stored in database and in case when user again try to cast a vote with mobile application or manually using electronic

voting machine, each time the database will be scanned and if it is found that the user has already voted then the buzzer will be activated and a message will be displayed on user mobile phone or electronic voting machine.

4. The data base is working in synchronization with mobile application as well as electronic voting machine
5. Because of this user will not be able to do fake voting.

4. Applications

The proposed system can be used at various university level election, college level election etc. This system can be also used in the committee board election.

5. Implementation challenges

The proposed system requires a stable internet connection, but there are many rural areas in India where there is no network at all. This system requires a smart phone with fingerprint scanner. As we are dealing with the huge amount of data, we must have to ensure that Data stored can't be hacked or hijacked by anyone. There are still few illiterates in our country; they may face difficulties by the advancement of the voting system.

6. Future work

- For storing fingerprint images, the external memory can be provided then later it can be accessing the fingerprint images.
- To make it user friendly the audio output can be used for illiterate voters.
- In future, making the voting system online this advanced system will be referred.
- Authentication using retina can also be implemented in future.

7. Conclusion

The proposed voting system had many advantages over the traditional method of voting. This system affords additional security by allowing voter to vote only once by imparting unique identification along with biometric information. This system avoids fraudulent voting and illegal practices during the elections which is the key issue in the traditional voting system. This system provides transparency in the counting process. The advantages of this system are economic, faster tabulation of results, improved accessibility, greater accuracy, and lower risk of human and mechanical errors. Database consisting of the details like age, biometric of the people should be updated every time before election. Information about the casted vote can be sent to the voter through the messaging system.

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