

# Implementation aspects of Bio-Metric system in Electronic Voting Machine by using embedded security and big data approach

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**Abstract-** India is one of the countries which introduced the Electronic voting machine for Parliamentary and Assembly polls successfully. But in every poll election the Election Commission is facing so much of troubles and various type of issues has been faced throughout the election. The most familiar issues which is faced by the Election Commission is No proper conformation regarding the acknowledgment of casting the votes, duplication or illegal casting of votes, Missing of outsiders people vote who belong to native constituency . In this paper all this issues has been handled and overcome with the perfect solutions the main advantage of this solution is handling of big data by using Bio-Metric system in EVM. The study is begin with handling and proper management of big data's in General elections, hence all this activities will be meet through the trendy technologies like Bio-Metric systems, Optical Scanning systems and etc.. The main goal of this paper is to avoid the duplication casting of votes and to capture the missing voter's vote who cannot cast in their own native.

**Key words:** *Electronic Voting System; Illegal Votes; Big data; Bio-Metric system; Iris Recognition; Fingerprint;*

## I. INTRODUCTION

As the modern communications and Internet, today are almost accessible electronically, the computer technology users, brings the increasing need for electronic services and their security. Usages of new technology in the voting process improve the elections in natural. This new technology refers to electronic voting systems where the election data is recorded, Stored and processed primarily as digital

information. In the past, usually, information security was used mostly in military and government sectors. But now need for this type of security is growing in everyday usage. In computing, eservices and information security it is necessary to ensure that data, communications or documents (electronic or physical) are enough secure and privacy enabled. Advances in cryptographic techniques allow pretty good privacy on Vote's. The main course of this project is to give more secured functionalities on people's vote. This can be done by implementing the Bio-Metric systems in general elections. Providing the acknowledgment's on vote's which is caste in the polls, preventing the illegal votes in election, improving the voter's voting Procedure by using big data approach, capturing the outsiders votes who missing the election in their native all this activities will be clearly meted by using these Bio-Metric systems. The main added advantage of this concept is providing the touch screen voting machine for casting their vote by using the thumb impression and retina scanning impressions on the same machine itself. Hence it gives perfect secured possibilities of casting their own votes with provided unique details, this unique details will be generated to every citizen of their nations by using this touch screen techniques we can easily view the entire candidate name list in a single machine and too we can easily handle .The unique ID and Voter's ID verifications for casting their people own vote's with the two step verifications and conformations on Casted Vote's as

an acknowledgment for casting. The Unique ID should be a nationalized number it should provide to all the citizens of the nation. The secured phases of voter's verifications can be handled by using the Facial reorganization, Iris Scanning and polling Big data processing using Cryptography technique with RC4 algorithm all this activities will be stored with the particular unique ID and this ID will be synchronized with the Finger print thumb image which is stored recently and once the entry has been made the data's will be separately stored in every unique ID.

**Note:** *The term outsiders means to a person who is having a vote in his own native area but due to his work issues or some other personnel reason he can't made it on the Election Day .Hence he will be called as "Outsiders"*

## **II. Working of Bio-Metric Systems in EVM**

In every election the Voter's and the Candidates are having so many issues on casting their own vote's and getting the legal vote's from the people ,to eradicate this issues we can use the Bio-Metric systems in voting machines and implementing the Big data approach on polling the outsiders people vote who are belonged to their natives but they were located somewhere temporarily due to personnel issues to cast this peoples vote's in polling we can make use of Bio-Metric system in general elections . Because it helps to secure the voter's data and the details of the voter's will be easily handled through this big data approach. The outsiders vote is going to be major issues in future generations due to development in city's hence to overcome these issues we can cast this outsiders vote in a particular area where they located. To cast this outsiders vote we proposing certain constraints & exception steps to follow:

*Step 1:-* The outsider should apply to Election Commission for casting their vote in the election after announcement of election date for a particular period.

*Step 2:-* The poll for the outsider's should be located in a different various spots with the different poll servers for the classification of votes according to their division, areas and parties.

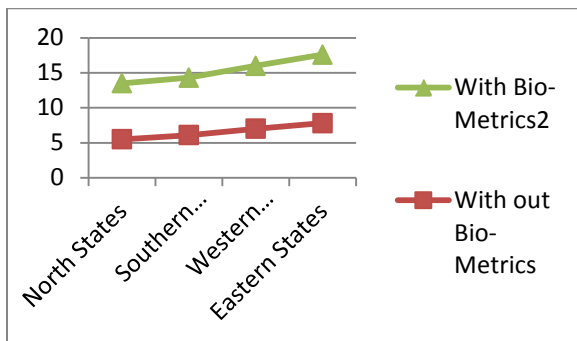
*Step 3:-* Once the request is made the Election officer should verify the reasons and reply the acknowledgment ticket for casting the vote to outsider should be sent in mail and in SMS too. The acknowledgement ticket will be generated with the automatic random selection Alpha-Numeric characters as a first part and the second part of the number will be the voter's Unique ID number. This number will be named as SEV-Number (**Spot Election Verification Number**).

*Step 4:-* After this process the outsider vote will be in a disabled status, till the election date it will be in a disabled vote in all the EVM servers. After it the outsider vote will be enabled only on the election date at before one hour of the election timing only. Till that the request information and the polling vote of the outsider will be in a disabled status. Hence it will be a best way of avoiding the duplication or illegal stealing of a person's vote.

*Step 5:-* Once the voter received that acknowledgement ticket he/she has to carry that ticket to election both on election date. When the person made the entry into the polling booth the SEV number has to be informed to the poll election officer and the SEV number will be entered in the system which has already stored their data in the global data

base hence it will directly fetched voter's data like requisition for casting their vote in different location. Once the SEV number is entered the request form details will be verified by the election poll officer then the voters ID number will be entered for the voting process then the acceptance on casting the vote for the voter will be given. After this the finger impression & Iris scanning process will be taken for the voter for the final conformation on casting his/her vote will be agreed.

Our general voting percentage of the whole nation is 70%-75% normally. If the proposed idea has been implemented means then the voting percentage will be hiked to 90%-98% completely with perfect accuracy ratios.



### III. Prevention methods on duplication vote records

The Bio-metric systems will be castoff the prevention of duplication votes in voting machine database and illegal voter's vote will be also terminated through the finger impression and Iris scanning methods because once a person is casted his/her own vote in a poll booth then their vote status on the EVM server will be disabled till next election. Though there will be 100 % of vote security records and termination of duplicate votes in the Voting machine servers. These Bio-Metric system methods will be the best advantage measures on casting the votes in General elections.

### IV. Advanced technologies on voting machines

The existing voting machine is having only manual security measures and authentication process to overcome this issues we are introducing a new technologies on voting machines with Touch screen technology. This touch screens will help to constrained the candidates list into a single screen because now a days for a single area there are so much of candidates has been participated for the election for this there has to be more number of voting machines to be places for all the candidate list hence to reduce this more voting machines we can make use of touch screen voting machines. Even these touch screen voting machines can be more secured and authenticated technology because once the finger impression has been finished with the polling officer means then the same finger impression should be touched in the touch screen display on the voting machine hence it gives two step verification and more authenticated voting process. Once the finger impression is sensed in the voting machine then the vote will be casted according to the touch in the voting machine hence the vote was casted in the polling database. After finishing the voting the voted persons vote will be disabled till next election.

#### A. Existing system and features of Electronic voting machines & there procedures

The existing procedure and features of the voting machines in elections will be followed with some ancient techniques like using electoral stain (Voting Ink), Electronic voting machines with the manual ballot button operations, manual conformation of voters data, insufficient authentications/verification on voters details missing of native peoples votes who were temporarily relocated for jobs and other reasons and Non conformations or unavailability of acknowledgment for casting the voter's vote. Hence

we can decrease the election expenses by deputing minimum number of election officers

### ***B. Proposed system and features of Electronic voting machines & there procedures***

The proposed concepts for polling the vote will be proposed with several designs and using the latest technologies in voting machines

- There should be a compulsory unique ID to be provided for all the citizens in the nation.
- The voter ID should be also provided with the perfect details of the voter.
- There is a pre-registration is available for the new concept on voting procedures

\* The voter should be registered his/her name and other details with the finger impression and iris scanning should be enumerated with the election commission data base.

\* And now the voter should be give the manual conformation about his/her information's which was updated recently in the Election Commission data base.

- Registration process completed successfully.
- Now if a person who belongs to a particular area who cannot able to cast their vote in his/her own native area due not work issues and personnel issues. This peoples vote was un-casted for the past year's elections to overcome this we are proposing outsiders voting booth procedures which were well explained in the above areas of the paper.

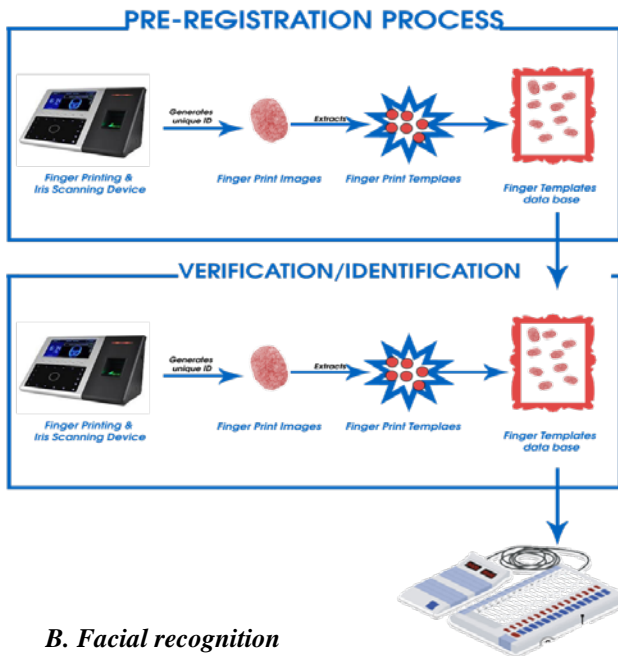
- Introducing the touch screens into the voting machines will be one of the best and accurate casting processes on voting.
- Hence it gives a proper authenticated vote record there will be no duplication of voter's records in this voting servers.

### **A. Fingerprint Recognition**

Fingerprint recognition or fingerprint authentication refers to the automated method of verifying a match between two

Human fingerprints. Fingerprints are one of many forms of biometrics used to identify individuals and verify their identity. A fingerprint looks at the patterns found on a fingertip. There are a variety of approaches to fingerprint verification. Some emulate the traditional police method of matching pattern; others use straight minutiae matching devices and still others are a bit more unique, including things like moiré fringe patterns and ultrasonic. A greater variety of fingerprint devices are available than for any other biometric. Fingerprint verification may be a good choice for this touch sensing voting systems, where you can give users adequate explanation and training, and where the system operates in a controlled environment. It is not surprising that the workstation access application area seems to be based almost exclusively on fingerprints, due to the relatively low cost, small size, and ease of integration of fingerprint authentication devices that will be implemented is shown in Fig.1.

Fig. 1. Finger Print Enrolment and Verification



### B. Facial recognition

Iris recognition systems have the same block Diagram as any other biometric modality see fig. 2). After capturing an image of the eye, the iris is located and segmented to extract its features; these features are then compared to a previously stored template. This section describes each of these blocks in detail, providing information on the approaches found in previous publications. Two different strategies are followed in offline Biometric authentication systems: 1) the token provides the biometric template and 2) the token performs the verification tasks and supplies the result, avoiding external access to the user's personal template. This paper recommends the second strategy for security and privacy motivations. Thus, different architecture approaches to build personal tokens will be described. These tokens are designed as tamper-proof devices, maintaining not only internal data security, but also a secure communications channel with the external world.

### C. Iris Acquisition

Contrary to popular belief, iris biometrics systems do not use laser-scans to capture the image of the human eye. Instead, an infrared photo or video camera is used at a set distance to capture a high quality image of the iris. Working in the infrared range provides many advantages when compared to the visible range: iris ridges, nerves, and crypts are more evident the border between the iris and the pupil is more pronounced; and users are not exposed to annoying flashes. Currently, most of the work performed in this area has been dedicated to improving user-system interaction by developing cameras where the focusing system is automatic, such that users are not required to remain steady at a fixed point in front of the camera.

### CONCLUSION

Electronic voting systems have many advantages over the traditional way of voting. Some of these advantages are lesser Cost, faster tabulation of results, improved accessibility, greater accuracy, and lower risk of human and mechanical errors. It is very difficult to design ideal Bio-Metric Voting system which can allow security and privacy on the high level with no compromise. Future enhancements focused to design a system which can be easy to use and will provide security and privacy of votes on acceptable level by concentrating the authentication and processing section. These advanced techniques and Big data approach will helps the people to cast their vote independently with full security and much more comfort for the outsiders. The main goal of this paper is to develop the Electronic voting machine features by introducing the embedded security services and managing the heavy data's of voter's parallel.

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