

# Fingerprint and Retina Recognition Based Biometric Voting System

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**Abstract:** Today the Indian elections are done with the help of Electronic Voting Machines. Electronic Voting System consists of electronic data which is recorded and then processed securely. Electronic Voting System is a very good method. Also, it has poor security mechanisms. Fingerprint and Retina Recognition Based voting system mainly focuses on finger and retina security mechanisms. Every human being has uniqueness like Irish, eye-retina, fingerprints, etc. Retina security is the most powerful vulnerability checking mechanism for security purposes. This mechanism is used in Fingerprint and Retina Recognition Based Biometric Voting System and it provides greater security features than Electronic Voting Machines.

## I. INTRODUCTION

Fingerprint and Retina Recognition Based Biometric voting system is a fast and easy way of conducting elections. The objective behind the development of this system is to simplify the process of organizing elections and implement better security over the auditing process.

Biometric systems try to exchange knowledge with the feature of an individual, e.g. fingerprint, retina. This system restricts a voter from logging into his/her voting account more than once during elections. Once any particular voter is authenticated by the system, a secure panel will be established and then he/she will

be able to cast the vote. Fingerprint and Retina Recognition Based Biometric voting system is implemented in characteristics of biological behaviors and converted into digital data. Comparing digital data to check details in the voting process is implemented by means of biometric reference data. Each user's data is kept secret and is too difficult to share.

## II. EASE OF USE

### 2.1 Components of the System

We propose a client-server web-enabled software architecture for the Fingerprint and Retina Recognition Based Biometric voting system. On the client side, we have a fingerprint and retina scanner, a GUI that accepts the voter's fingerprint or retina, provides an interface to vote and display confirmation, status, and error messages. The GUI will only act on events from the server and provide feedback to the voter without any extra processing. Servers are placed at remote locations from the poll booths. They are used for carrying out all the processing work such as image processing, transferring data between the client and the database, generating statistics, sending messages to voters. There is a central database which contains all the biometric data of every candidate and voter. These databases make it possible to allow voting from anywhere provided that the voter is within electoral circuits.

### 2.2 Authentication and Verification of the Voter

In order to authenticate a person, we require entering the fingerprint only one time. The system

will process the one time finger image generate a template of the finger based on processing results and store the template. For matching purpose, user enters the finger through optical sensor and system will generate a template of the finger and compare it with templates of the finger stored in database. For 1 to 1 matching, system will compare the recent finger with specific template designated in the Module; for 1 to N matching, or searching, system will search the whole finger database for the matching finger. In both scenario's, system will return the matching result, success or failure. If system will return the matching result is failed at that time we require to take persons retina image and generate a template of the retina image based on processing results and store the template. Matching will be done same as the fingerprint. Consequently system will return the matching result, success or failure.

### 2.3 Generating Reports

Whenever a voter casts a vote in favor of the candidate of choice, the vote count of that candidate gets incremented in the local database. The votes from all the local databases are summed up to get the final figure that the candidate has received. Thus this system provides instantaneous results and prevents unnecessary use of manpower and wastage of time. Since this is an electronic system and uses digital data it has several advantages. Statistics can be generated from the obtained data for e.g. we could answer how many people have voted from a certain region, how many females voted, comparisons from previous years, etc. all that was not possible from traditional voting methods not even from EVMs. It would provide important insights into the election results and help improve the system even further.

## III. SECURITY MEASURES

To implement security in Fingerprint and Retina Recognition Based Biometric Voting System the following security factors implements security.

### 3.1 Fingerprint Security

Biometrics is the science and technology of measuring and analyzing biological data. In this system we have used fingerprint for the purpose of voter identification or authentication. The fingerprint of every individual is unique, hence it helps in maximizing the accuracy. A database is containing the fingerprint of all the voters. Illegal votes and repetition of votes is checked in this system.

### 3.2 Retina Security

Retina based voting security system provides high security that is Retina is one of the most secure biometric features because of its implementation is a part of human eye and unique one of human beings Retina-based identification and recognition systems have uniqueness and stability properties because pattern of retina's vessels is unique and stable. Various technologies are implemented in Biometric security methods but identifying process is so difficult in each method. Human retina's blood vessels do not change throughout human life. It may rarely change because of any issues in human beings like operation in eye. Moreover, retina has not contacted with environment unlike the other biometrics such as finger print; nevertheless, it is protected from external changes.

### 3.3 comparative Analysis

Fingerprint recognition is popular security feature that is implemented in small scale biometric devices. It is the easiest implementation but in large scale secure system its uniqueness is slightly changed because of noisy data effects. Retina based voting security system provides high security in large scale systems because of its uniqueness. Its only drawback is retina scanners are expensive.

Features	Retina based reorganization	Finger print recognition
Accuracy rate	High accuracy	Mid level accuracy
False match	Less false match	High false match
Stable ratio	High stability	Low stability
Image accessibility	High	High
Maintenance	Low maintenance	High maintenance
Speed	Very high speed	Moderate speed
Access Method	Direct Access	Different Finger access

TABLE I. COMPARITIVE ANALYSIS

## VI. CONCLUSION

In this paper, we have proposed an Fingerprint and Retina Recognition Based Biometric Voting System which is better and faster than previous systems. The new system prevents access to illegal voters, provides ease of use, transparency and maintains integrity of the voting process. The system also, prevents multiple votes by the same person and checks eligibility of the voter. It also, allows a person

to vote from anywhere provided that the voter is within electoral limits.

## VII. LIMITATIONS

Fingerprint and Retina Recognition Based Biometric Voting System have many advantages over conventional systems but it still has some issues.. India's majority population is rural and illiterate. Also, there is shortage of power and inadequate network between cities and villages which further adds to the problems. This system requires good bandwidth and high speed internet connection for operating, but it is still a distant reality in many cities in India. However, conditions are improving with the onset of education in rural areas and with increasing urban population this project may soon become a reality.

## VIII. REFERENCES

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