# Review on Fingerprint based biometric voting machine

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***Abstract*- In the days of election, it is extremely challenging for the government to hold free and fair elections across the nation. To ensure that there are no riots during the elections, millions of rupees have been invested in this. However, it has become commonplace for certain forces to engage in vote-rigging these days, which could ultimately result in a result that differs from the real decision made by the electorate. In order to prevent vote-rigging and to improve the process' accuracy and speed, this study presents a novel voting method that uses biometrics. Since each person's fingerprints are unique, we use fingerprint sensors in our system for authentication. so that the personal information is immediately identifiable. This indicates that this voting mechanism is superior to the ones in use today. Voters' fingerprints will be fed into the system as input during elections. Subsequently, we will assess this information against our database. We will provide access to the user so they can cast a vote if their info is in our database. However, we will reject this vote as well as those from repeat users if the record does not match our database.**
**We'll notify the local police of this alert as well. Since every machine is network connected, all data will be stored on our servers. The vote results will be produced in statistical form on the admin portal.**

***Keywords*: Arduino UNO, IOT, biometric sensor.**

## INTRODUCTION

Biometric technologies are used to measure and analyse personal traits. A person's fingerprints, speech patterns, hand measurements, irises, and other characteristics can all be used to identify and verify their identity. These characteristics, or biometrics, are intrinsically tied to an individual and are not easily lost, transferred, stolen, or compromised. With two key benefits, these qualities can be used to uniquely identify an individual and replace or improve conventional security measures: people do not need to memorize passwords or codes, and personal biometrics are difficult to steal. As passwords and pins are easily cracked, biometrics offer an additional layer of security that is more secure. Integrate with public security programs and systems; biometric authentication is growing in popularity. We suggest a voting system where voters cast their ballots using biometric fingerprints during elections.
The system logs votes based on fingerprints that have been recorded. It's a graphical user interface designed to boost output and streamline corporate procedures. Fingerprint authentication is the automated process of comparing two human fingerprints to see if they are same.

### Research 1: First-Past-The-Post (FPTP)

The Point of Origin The most fundamental type of plurality/majority system is the Post system. The names of the nominated candidates are shown to the voter, who may choose to vote for just one of them. Voters are given the option to select from two or more political parties.
First Past the Post (FPTP) voting systems are used in the UK and other historically British-influenced nations. Simply put, the candidate with the most votes wins in a first-past-the-post election. A candidate may theoretically win with two votes if all other candidates received just one. Modifications to this rule give rise to the Block Vote, Two-Round System, or Single Non-Transferable Vote, which are further elaborated under the corresponding sections. Nonetheless, Nepal employed a variant that may be categorized as FPTP in the early 1990s. Because so many voters are illiterate, candidates ran under party emblems rather than as individuals. Voters select between parties instead than between candidates. If they so choose, candidates for public office may run in more than one district. After winning two or more seats, a candidate must choose which district to represent. There were partial elections to fill the vacant seats.

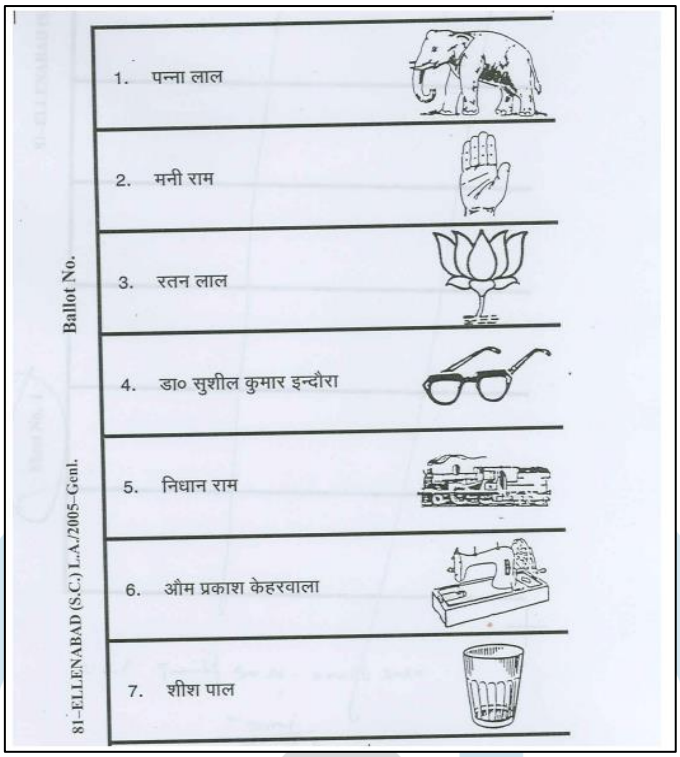


**Fig.1 First-Past-the-Post**

**Research 2: Ballot Paper**

This method works by having each voter check or mark the box next to the one they wish to vote for. A certain candidate from each political party will be chosen by this method. The selection of candidates is easy. Compared to FPTP, it is far more secure.

A voting instrument in an election is called a ballot. For covert voting, it might be a little ball or a piece of paper. Voter decisions were first recorded in Italy in the sixteenth century using a small ball (see blackballing).

Every voter casts a single ballot; they are not combined. In the most basic elections, a ballot can be a plain piece of paper on which each voter writes the name of a candidate; however, pre-printed ballots are used in governmental elections to protect the secrecy of the votes. Voters at voting sites deposit their ballot in a box.

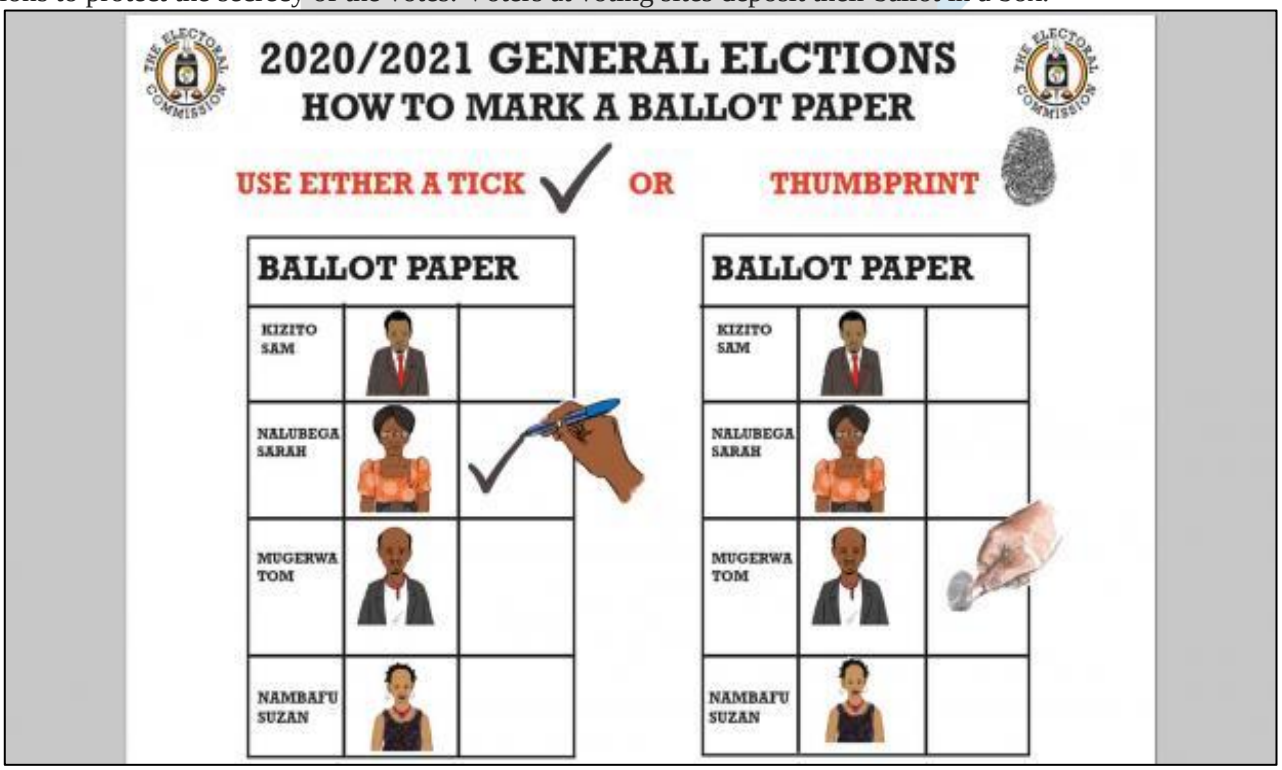


***Fig.2 Ballot Paper***

**Research 3: Electronic Voting Machines (EVMs)**

Electronic voting machines are devices that assist or manage the casting and tabulation of votes.

An EVM consists of two parts: the control unit and the balloting unit. These components are connected by a cable. The control unit of the EVM is under the supervision of the presiding officer or polling officer. In order for voters to cast their ballots, the balloting unit is maintained in the voting compartment. In order for the poll worker to verify your identify, this is done. Voters will be able to cast their ballots electronically by pressing the Ballot Button on the Electronic Voting Machine (EVM) rather than a ballot paper. A list of candidate names and/or symbols together with a blue button will be displayed on the machine. By clicking the button next to the candidate's name, the voter can cast their ballot.

**Fig.3 Electronic Voting Machine**

***Research 4: Biometric Voting System (BVS)***

The fingerprint module, the basis of our biometric voting system, provides a highly distinctive means of uniquely identifying every voter. With respect to all other systems, this one will offer incredibly strong security. Results might be swiftly and simply made available on the central server.

Biometric voting projects include the introduction of biometric registration kits for voter enrolment, the use of electronic voter identification devices leading up to and during Election Day, and the issuance of voter identity documents (biometric voter cards).The steps involved in implementing a biometric voting registration project typically include assessment feasibility studies, securing funding, reviewing legislation, conducting pilot projects and mock registration exercises, procurement; equipment distribution, installation, and testing; hiring and training of staff; voter information; deployment; and postelection audits.

Deduplication of the voting register, the abolition of double voter registration and voting, enhanced voter identification at polling places, and a decrease in voter fraud (such as purchasing or renting voter IDs prior to an election) are the ultimate goals of deploying biometric election technology.

The commissions in charge of these election projects must, however, first make sure that the law permits biometric voter identification. Only then can they guarantee that the information gathered during the registration process is safe and complies with the fundamental needs of privacy and personalization. Having backup procedures in place is also crucial in case biometric systems malfunction. Making ensuring that no voter loses their right to vote due to technological errors or malfunctions is one of the hardest jobs.

**Fig.3 biometric Voting System**

## CONCLUSION

This system can be used for voting since it overcome all the draw backs of ordinary voting machine.
It provide additional security. Its main advantage is that since fingerprints of every person is unique and hence this system completely reduces the chance of invalid votes.
The system can be manufactured simply as well as cheap.

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