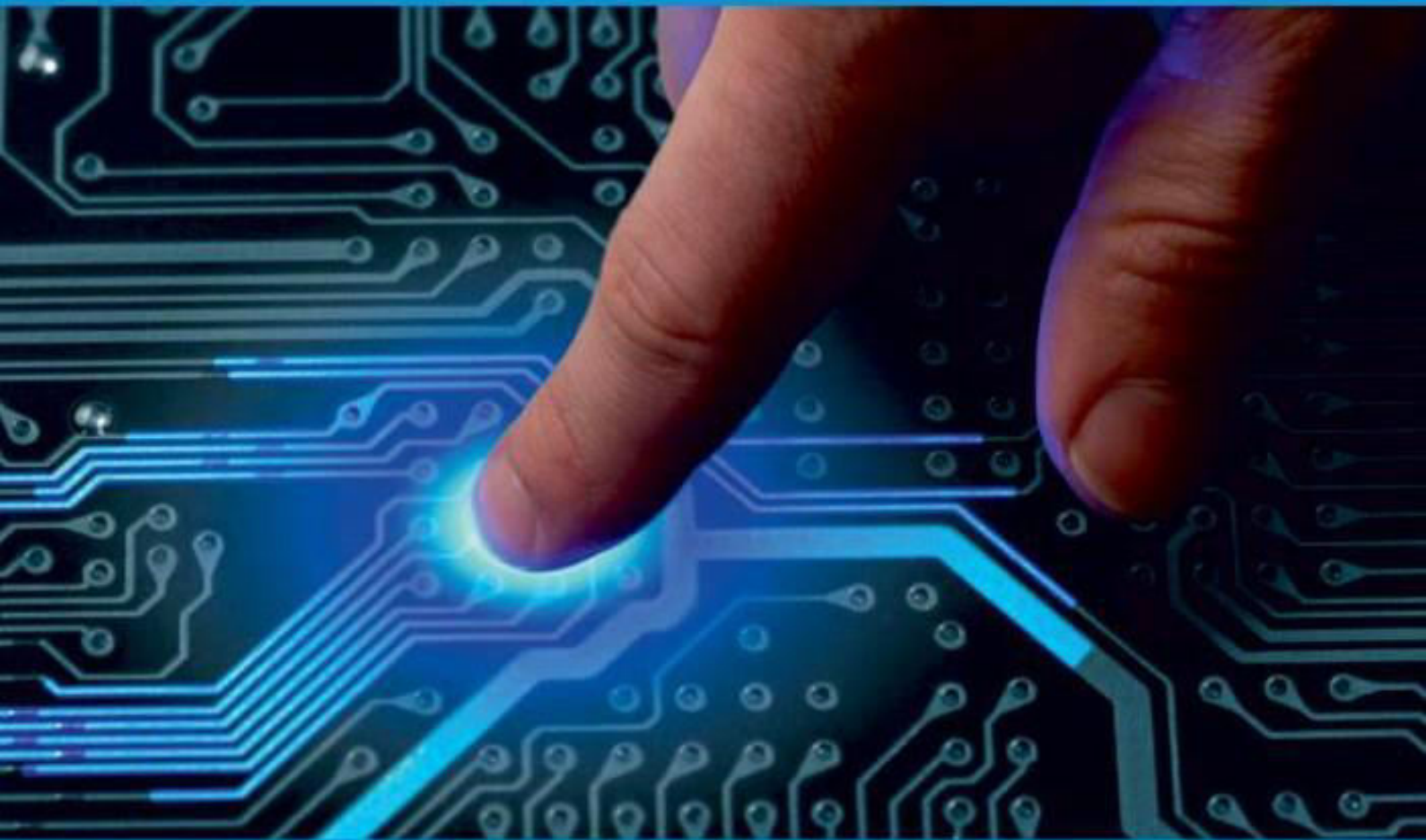




IJIRCCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 11, Issue 1, January 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.165

9940 572 462

6381 907 438

ijircce@gmail.com

www.ijircce.com



Smart Voting System using Biometrics

Shashank B V, Kavya H P, Madeeha Iram, Yuktha N, Sudarshan G K

Undergraduate Student, Dept. of I.S.E., Malnad College of Engineering, Hassan, Karnataka, India

Undergraduate Student, Dept. of I.S.E., Malnad College of Engineering, Hassan, Karnataka, India

Undergraduate Student, Dept. of I.S.E., Malnad College of Engineering, Hassan, Karnataka, India

Undergraduate Student, Dept. of I.S.E., Malnad College of Engineering, Hassan, Karnataka, India

Assistant Professor, Dept. of I.S.E., Malnad College of Engineering, Hassan, Karnataka, India

ABSTRACT: The design and implementation of a biometric authentication system for electronic voting machines (EVMs) is the subject of this study. The biometric data used in this case is a finger print. The recommended fingerprint voting method enables the user to scan their fingerprint in order to validate their eligibility by comparing their current fingerprint with the one previously saved in the system's database. Users can cast their votes using a user-friendly geographic user interface once the identification process is complete. Votes will be promptly counted, which makes the voting procedure quick, quick, and secure. Voting machines now use a basic box known as the ballot unit instead of ballot paper, ballot boxes, stamping, etc. The reliability of biometric identifiers for person recognition is thought to be higher than that of conventional token- or knowledge-based techniques because they cannot be readily lost, falsified, or exchanged. Therefore, with the most recent technology, namely the biometric system, the electronic voting system needs to be enhanced. In-depth discussion of voting technology, problems, and comparisons of various voting processes and biometric EVMs are covered in this article.

KEYWORDS: Electronic voting system (EVM), Voting, Biometric Scanning.

I. INTRODUCTION

Voting's primary objective is to provide citizens the chance to exercise their right to freely express their opinions on certain matters, laws, citizen initiatives, constitutional amendments, recalls, and/or candidates for office. Voters are being assisted in casting ballots through technology. Nearly all voting systems worldwide have the following procedures to enable the use of this right:

- Authentication and Identification.
- Recording the vote cast.
- Tallying vote.
- The announcement of election results.

Voter identification is required at two points in the electoral process: voter registration, which establishes the right to vote, and voting, which allows a person to exercise that right by ensuring they comply with all voting rules (authentication). Almost everyone in the world is born with a fingerprint, which is distinctive and completely identifies us from the other 7 billion individuals that live on this planet. This explains why fingerprints have proven to be such a useful component of biometric security. This fact also serves to illustrate the fundamental reason why fingerprint scanners are helpful. Since its creation, the discipline of biometrics has grown to encompass many other forms of bodily identification. The human fingerprint is still a identification method that is widely used and the preferred biometric method for law enforcement. the development of quick fingerprint scanners that can identify persons and provide access is a result of these ideas about human identity. During the last decade of the twenty-first



century, finger printing recognition—the electronic techniques for capturing and identifying a specific finger print—made significant advancements. As a result, the use of automated fingerprint identification systems (AFIS), which store, record, search, match, and identify fingerprints, is rapidly expanding.

II. LITERATURE SURVEY

It is essential to fully comprehend the aim and be aware of all feasible avenues for achieving that target before beginning work on a project. The earlier work that has been done in the field of fingerprint matching is described in this material. There have been several studies that include some even extremely helpful with fingerprint matching algorithms.

In the year 2011 Ekta Walia and Sanjay Kumar. Evaluation of Electronic Voting Systems in Different Nations. *Journal of Computer Science and Engineering International* [1], This essay offers a summary of the experiences with computerized voting machines in other nations. In contrast, focus is placed on using computerized voting processes on a worldwide scale. There are several security flaws in the current voting system, and it is challenging to demonstrate even the most basic security characteristics. There are numerous issues with a voting method that can be confirmed to be accurate. Increased election activity and lower election costs are two reasons why a government could want to employ electronic systems. Even still, there is still room for improvement in the electronic voting system because there is no method for it to verify whether a user is legitimate or not or to protect the voting equipment from thieves. This essay gives a broad overview of various nations' electronic voting machine experiences. The deployment of electronic voting methods at the international level is the comparative emphasis. Votes that were cast electronically were invalid, and auditing characteristics.

In 2015, The concept eliminates fake voting by depending on fingerprint verification and is an easy and safe way to poll votes using biometrics. Each allowed individual in the government's database gets struck off in a polling region after a successful poll as part of the algorithm's cancelling strategy, which aims to eradicate multicasting [2].

Dr. Nicolae Goga, Haider Abdullah Ali¹, Sarmad Monadel Sabree Al-Gayar, and Naseer Abdulkarim Jaber Al-Habeeb described a 2020 m-voting application that targets the unique circumstances of Iraq under the COVID situation [3].

In today's world, the application we're discussing can also be considered as a vital aid for a large number of nations during the COVID-19 pandemic. Mobile technology is the foundation of the application. Although few people in Iraq have computers, practically everyone owns a cell phone, which is why mobile technology was chosen. Android Studio, PHP-Responsive Services for the Backend Component, and MySQL were the technologies/platforms utilized.

2020 will see the publication of "ElectionBlock: An Electronic Voting System Using Blockchain and Fingerprint Authentication" by Mohamed Ibrahim et al. a voting process that distinguishes between registered and unregistered voters and offers its own blockchain. Performance analysis of minutiae-based fingerprint matching algorithms" [4] has reported the performance analysis of these techniques. In this work, comparisons of several methods are also explained.

S. Jehovah Jireh Arputhmoni and Dr. A. Gnana Aravanan argued that an internet domain has a blocked IP address created by the Indian government for electoral purposes in the year 2021 [5]. The website should be used to register a person's name and address. The voters' face image and fingerprints will be taken by the election commission. The photos will be kept on the server or database. The photographs will be verified with the database when they are collected on voting day, ensuring a secure vote on election day. Like how a mobile phone works, the voting system is unlocked using faces and fingerprints. The existing system necessitates the voter's actual presence, which many voters find inconvenient. Additionally, the procedure takes less time. The quantity of bogus voters can be decreased

using the detection of face and fingerprint pictures. HTML, Visual Studio, and the CNN algorithm were the technologies/platforms used.

In the year 2019, Firas I. Hazzaa, SeifedineKadr [6] This paper deals with the design and development of a web-based voting system using fingerprint 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. The new design is proposed an election for a university for selecting the president of the university. The proposed EVS allows the voters to scan their fingerprint, which is then matched with an already saved image within a database. Developed Web-based Voting System using Fingerprint Recognition. This system has provided an efficient way to cast votes, free of fraud, and make the system more trustworthy, economic and fast. They have used Minutiae-based fingerprint identification and matching with high accuracy.

III. EXISTING SYSTEM

The technology employed in voting has been under fresh scrutiny during the past few years. There are several security flaws in the existing voting system, and it is challenging to demonstrate even the most basic security characteristics. Many issues exist with a voting process that can be independently verified. Increased election activity and lower election costs are two reasons why a government could want to employ electronic systems. Because there is no means for the electronic voting system to determine if a user is legitimate or not, and because there is no mechanism to secure the electronic voting machine from criminals, there is still some room for improvement.

Traditionally, votes were cast on paper and counted by hand. Voters had faith that the marks on their ballots truly reflected their intentions. Voters also had a great deal of faith in the accuracy of their ballots while using voting machines with levers and punch card systems. Voters also frequently believed their ballots were correctly counted prior to the 2000 elections. The fact that computerized voting systems are offered by private corporations and the government typically has no supervision into the manufacture of the systems beyond deciding whether to employ them presents the biggest verifiability issue with their use.



Fig. 1 – EVM Machine

Accessibility is one of the biggest problems with DRE voting technologies. The easiest design consideration to overlook for computer software developers is accessibility. A voting system that only allows "regular" users has the potential to easily deny voting rights to many different types of citizens. The most notable example is voters with impairments. The federal Voting Accessibility for the Elderly and Handicapped Act of 1984 mandates that polling places be accessible to the elderly and disabled (VAEHA). According to the National Organization on Disability, lever, punch-card, optical scan, and manual count technologies are less accessible than DRE voting machines.

In addition to being inaccessible, the problem of prejudice in elections poses both a practical and a legal challenge.

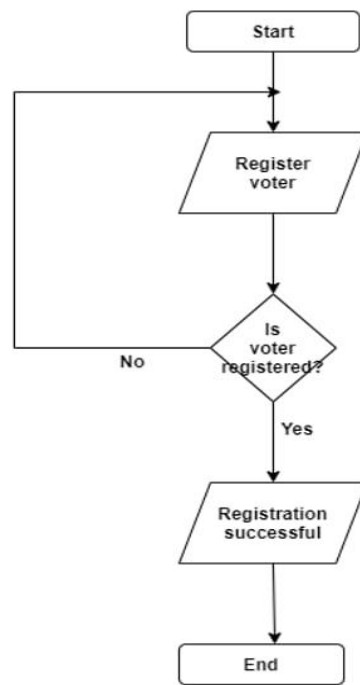
The actual ballot design is quite divisive, in part because candidates think that where they appear on the ballot affects how likely it is that a voter would choose them. Candidates who appear first on a ballot, for instance, are typically preferred. As a result, many jurisdictions have a set order for balloting; usually, candidates are listed by party in a certain order, by lottery, or alphabetically. Electronic ballots cannot avoid these issues for the same reason that paper ballots cannot; names on a ballot must be shown in some form.

Election authorities are looking at a variety of technologies throughout the world in order to address a variety of voting challenges, such as system flexibility and acceptance by all shareholders, including common people living in rural towns, some of whom are likely illiterate as well. It should operate as closely as feasible to a conventional paper ballot mechanism. ease and cost-effectiveness of system implementation and upkeep. When it comes to tamper resistance, error-free functioning, etc., system security and reliability are important. Voting process efficiency and results announcement speed. Elections may experience issues in addition to typical limitations due to the problem of "computer disability". According to research, older adults routinely do worse than younger adults when completing computer-based tasks. This is accurate in terms of both the time needed to complete the work and the number of mistakes made. Age was found to positively connect with the difficulty of using a computer mouse in one recent study. Similar problems exist even if common DRE systems don't employ a mouse. For elderly people who have more difficulty understanding computer screens, the proper notion of the link between screen or button movement and programmed action may be a challenge.

IV. PROPOSED METHODOLOGY

The method in this case allows users to vote online without using a physical voting location, including users who work for organizations and election participants. The voter information is kept in the database along with their Credentials. With the "ONLINE VOTING SYSTEM," a voter may exercise their right to vote online.

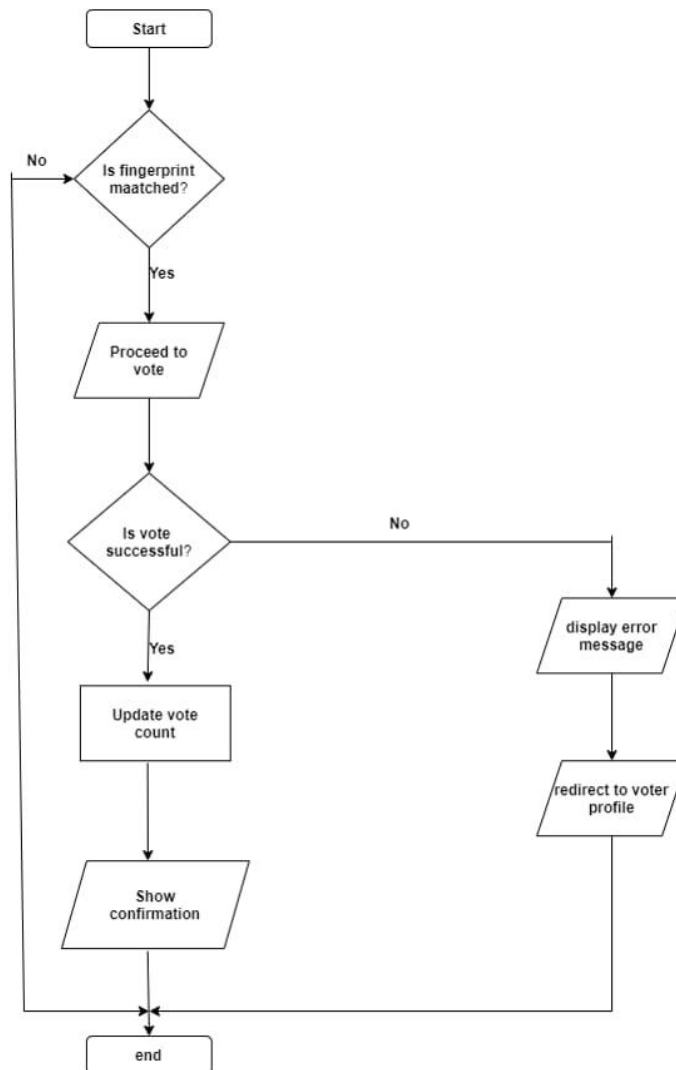
A person must inform the system first to cast the vote i.e., he/she as to enroll first, the flowchart is given in fig 2,



1. Voter Enrollment

Fig.2

During the voting process, the voter's fingerprint would be compared to the database already in place, acting as a security safeguard by preventing any fraud or incorrect voting. The voter is given access to cast their ballot after the verification process is complete (Fig.3). If a vote is successfully cast, the vote count is updated and confirmation is sent to the voter; if a vote is unsuccessfully placed, an error message is provided and the voter is directed to their profile.



2. Vote Casting

Fig.3



V. NEED FOR FURTHER DEVELOPMENT

- The EVM Design only requires minor adjustments because it may be used with every country's election system.
- The authentication must be extended to the next level (VOTER ID) using either iris technology or thumb imprints in order to prevent poll workers and unregistered voters from casting ballots.
- One can cast a ballot on the same day from any location in the globe any online source center equipped with a thumb impression or iris device thanks to networking innovations in the present EVM technology. For security reasons and to get the results as soon as possible after the election, a network of biometric EVMs must be built so that we can receive them on election day.
- With a few minor adjustments, The EVM software developed will allow for simultaneous elections for the assembly and parliament. Elections for local bodies may also utilize it.
- In order to hold elections for the entire country without day breaks, the EVM needs to be tailored to address a wider population.

VI. CONCLUSION

The implementation of the biometric voting technology was made to address proximity constraints and avoidable time delays with very secure and precise vote counting. This project's objective is to set up a system that will be utilized during the voting process. Thanks to the online voting module, which can be accessed from any device with internet connectivity, voters will be able to cast their ballots from anywhere. Biometric authentication has been added to the system, making it more dependable, affordable, and efficient. By using fingerprint identification technology, it is possible to further ensure that the principle of "one man, one vote" is properly followed. At each end point, the system is fault tolerant (registration, voting platform and the server). For a rapid system like ours, the voting gadget can last for more than 6 hours, which is more than enough. With little to no cost to the voter and limitless voter participation in rural areas, this technique will significantly lower voter indifference. To strengthen the validity of the votes and further lessen proximity difficulties, the method might be improved.

REFERENCES

- [1] Sanjay Kumar, Ekta Walia. (2011). Analysis of Electronic Voting System in Various Countries. International Journal on Computer Science and Engineering.
- [2] Anandaraj S, "Secured Electronic Voting Machine using Biometric (2015)", International Conference on Innovations in Information, Embedded and Communication systems (ICIIECS).
- [3] Naseer Abdulkarim Jaber Al-Habeeb, Dr. Nicolae Goga, Haider Abdullah Ali1, Sarmad MonadelSabree Al-Gayar, "A NewE-voting System for COVID-19 Special Situation in Iraq", The 8th IEEE International Conference on E-Health and Bioengineering – EHB, 2020.
- [4] Mohamed Ibrahim, et.al. "ElectionBlock: An Electronic Voting System using Blockchain and Fingerprint Authentication", 2021.
- [5] S. Jehovah Jireh Arputhamoni, Dr. A. Gnana Aravanan, "Online Smart Voting System Using Biometrics Based Facial and Fingerprint Detection on Image Processing and CNN", Third International Conference on Intelligent Communication Technologies and Virtual Mobile Networks (ICICV), 2021.
- [6] Firas I. Hazzaa, Seifedine Kadry, Oussama Kassem Zein, Web-Based Voting System Using Fingerprint: Design and Implementation, Vol.2, Issue.4, Dec 2019.



INNO  SPACE
SJIF Scientific Journal Impact Factor

Impact Factor: 8.165

 **doi**[®]
CROSS **ref**

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

 9940 572 462  6381 907 438  ijircce@gmail.com



www.ijircce.com

Scan to save the contact details