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Fingerprint Identification System based Voting Machine

Ritesh Shukla, Sambhav Gupta, Rajat Singhal, Rahul Chaudhary
(KIET GROUP OF INSTITUTIONS, Ghaziabad, U.P)

Abstract:- Fingerprint-based voting machines are a recent development in electronic voting that could improve election security and accuracy. These gadgets use biometric identification to ensure that only eligible voters can cast ballots. This paper examines the potential for fingerprint-based voting machines in electoral systems, as well as the advantages and disadvantages of the technology. By a review of the literature and case studies, this research study investigates the effectiveness of fingerprint-based voting machines in ensuring secure and trustworthy voting procedures. It examines the practical and technological challenges of utilizing this technology as well as the privacy concerns brought up by the use of biometric data. This paper concludes with recommendations for policymakers and electoral authorities on the best practices for adopting fingerprint-based voting machines inorder to promote transparency, accountability,and public trust in electoral processes.

I. INTRODUCTION

Fingerprint-based voting machines have emerged as a promising technology in the realm of electronic voting, offering the potential to enhance the accuracy and securityof elections. These machines employ biometric verification to ensure that only eligible voters can cast their votes. This study delves into the underlying technology of fingerprint-based voting machines, including their benefits and limitations, and explores their viability in electoral systems. Through a comprehensive review of literature and analysis of case studies, this research paper evaluates the efficacy of fingerprint-based voting machines in ensuring secure and reliable voting procedures. It examines the technical and operational complexities involved in implementing this technology, as well as the privacy concerns arising from the use ofbiometric data. Ultimately, this paperconcludes with recommendations for policymakers and electoral authorities on the most effective approaches to adopting fingerprint-based voting machines and promoting transparency, accountability, and public confidence in electoral processes. Fingerprint-based voting machines provide a mechanism to authenticate voters, reducing the risk of fraud and manipulation. Using fingerprints as a unique identifier ensures thatonly eligible voters are able to cast their ballots, and that each voter can only cast one vote. In this research paper, we explore the technology behind fingerprint-based voting machines, their advantages and limitations, and their potential for use in electoral systems.We evaluate the current state of electronicvoting systems, and the challenges they face insafeguarding the accuracy and security of elections. We then analyse the potential of fingerprint-based voting machines in addressing these challenges, improving voting accuracy, and enhancing security measures. Furthermore, we consider the technical and operational challenges that come with implementing fingerprint-based voting machines, as well as the privacy concerns associated with biometric data usage. We examine case studies of countries that have implemented this technology and provide an in-depth analysis of their experiences with it. Through this research paper, our objective is toprovide a comprehensive assessment of the potential of fingerprint-based voting machines to enhance the accuracy and security of elections. We also aim to provide recommendations to policymakers and electoral authorities on how to effectively adopt this technology, and ensure transparency, accountability, and public trust in electoral processes.

II. ARCHITECTURE

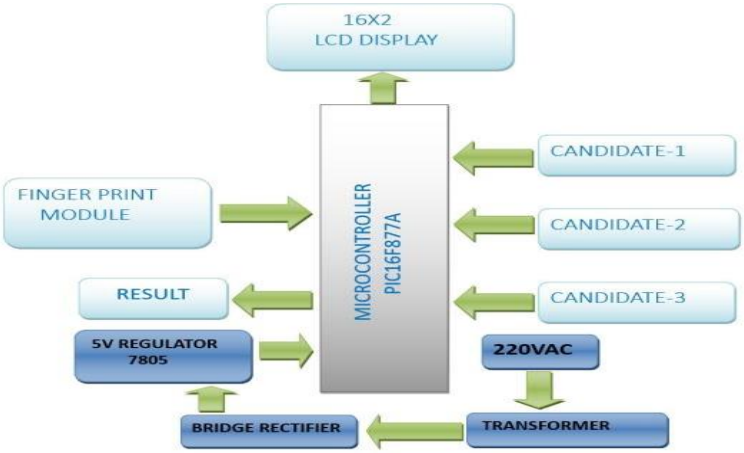

Fig. 1: Block Diagram

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A. Fingerprint module:

This module is responsible for capturing and storing the fingerprints of eligible voters in a secure database. When a voter presents their fingerprint, the module verifies the fingerprint against the stored database to ensure that the voter is eligible to cast theirvote.

Fig. 2: Fingerprint Module

B. LCD module:

This module provides auser interface for voters to interact with the machine. It displays messages to guidethe voter through the voting process, suchas instructions for presenting their fingerprint and selecting their preferred candidate.

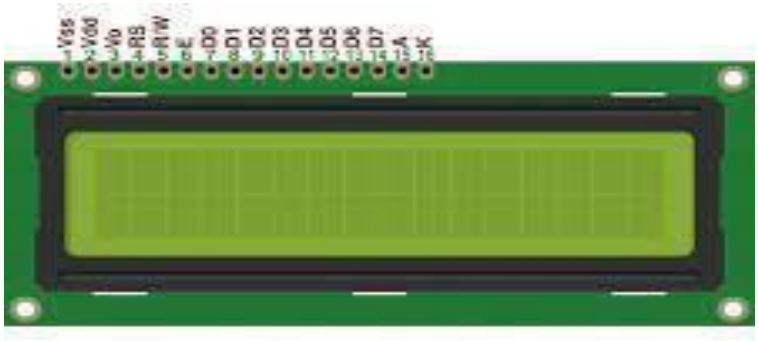

Fig. 3: LCD module)

C. Transformer:

The transformer is used to step down the AC voltage to a suitable level forthe voting machine.

D. Bridge rectifier:

The bridge rectifier is used to convert the AC voltage into DC voltage to power the microcontroller and other components.

E. Microcontroller (PIC16f877A):

This is the heart of the voting machine. It receives input from the fingerprint module, processes the data, and communicates with the LCD module to display the appropriate messages. The microcontroller also ensures that each voter can only cast one vote and stores the voting results securely.

Fig. 4: Microcontroller

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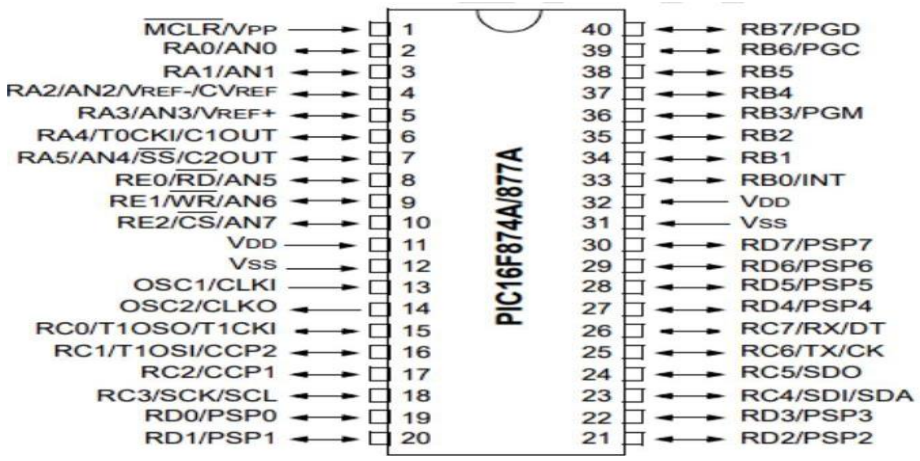

Fig. 5: Pin diagram

F. 5V Regulator (7805):

This component regulates the DC voltage from the bridge rectifier to a stable 5V level that is required for the microcontroller and other components to operate correctly.

III. WORKING

To initiate the voting process, the voter pressesthe power button, setting off the first stepcalled “Start.” Like a revving engine, the system comes to life, ready to fulfil its duty in ensuringthe integrity of the democratic process.

The voter's unique identity is verified through the scanning of their fingerprint. The “Fingerprint Scan” module performs this task with precision, capturing the individual’s fingerprint data like a painter capturing a subject’s likeness on canvas.

The captured fingerprint data is then processed and analysed by the “FingerprintModule” to verify the voter’s eligibility to vote. Like a watchful guardian, the module scrutinizes the data with its advanced algorithms, checking and cross-checking to ensure that only eligible voters are allowed to vote.

After the voter’s eligibility is confirmed, a message pops up on the “LCD Display” notifying the voter that they are verified and authorized to cast their vote. It’s like a green light signalling the start of a journey towards making a democratic choice.

The voter selects their preferred candidate using the buttons provided on the device.

The chosen candidate’s name appears on the LCD display for the voter to verify, like a handwritten signature that validates the choice made in the name of democracy.

The “Microcontroller” records the voter’s selection and stores it in its memory. It safeguards the voter’s choice and ensures thatit is secure and tamper-proof.

The "Microcontroller" displays a message on the “LCD Display,” confirming that the voter’s selection has been recorded, like a stamp of approval validating the voter’s choice.

The “End” step is triggered, signifying the conclusion of the voting process. The system’swork is done, and the democratic will of the people has been expressed through the use ofinnovative technology.

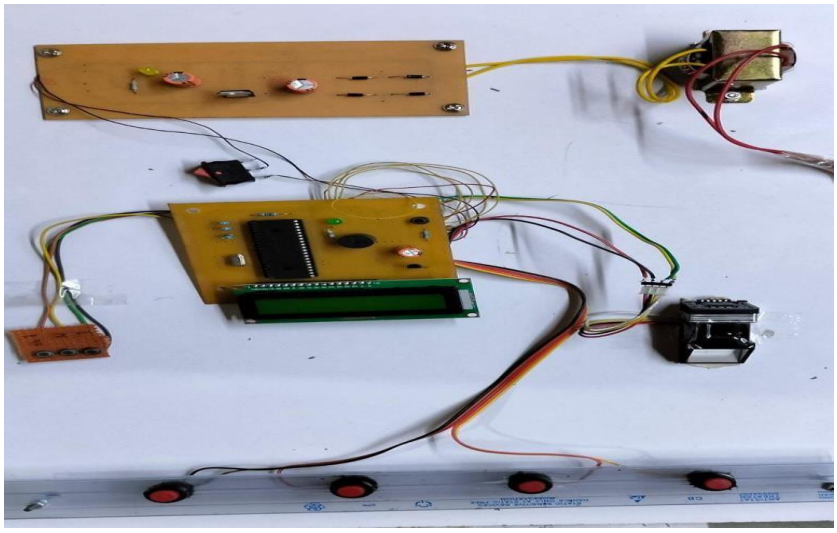
Fig. 6: Model

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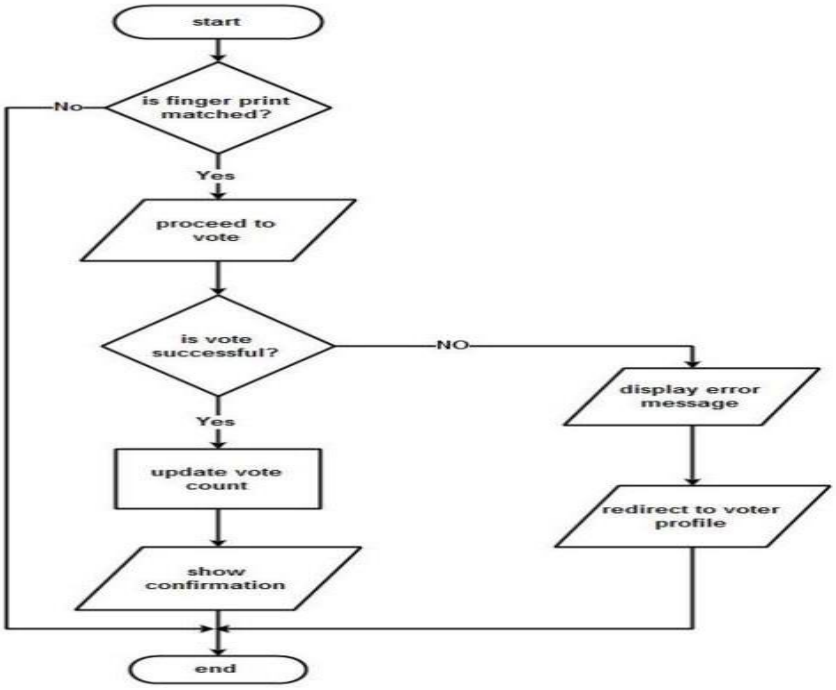

Fig. 7: Flow Chart working

IV. PROCEDURE

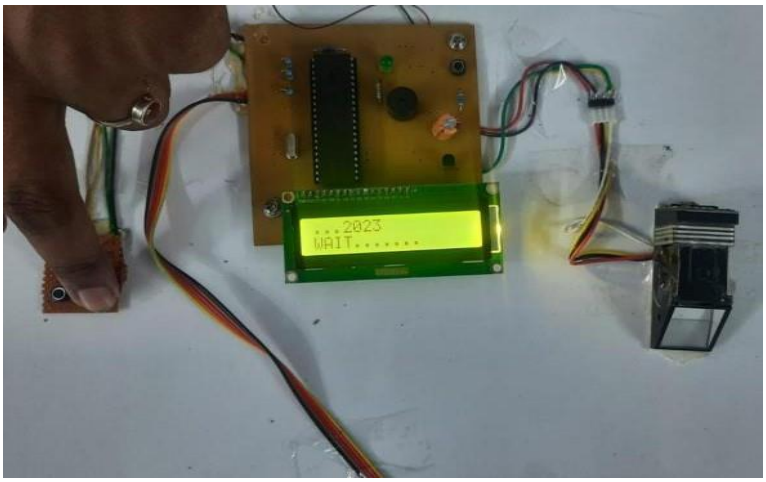

Fig. 8: Reset voting machine

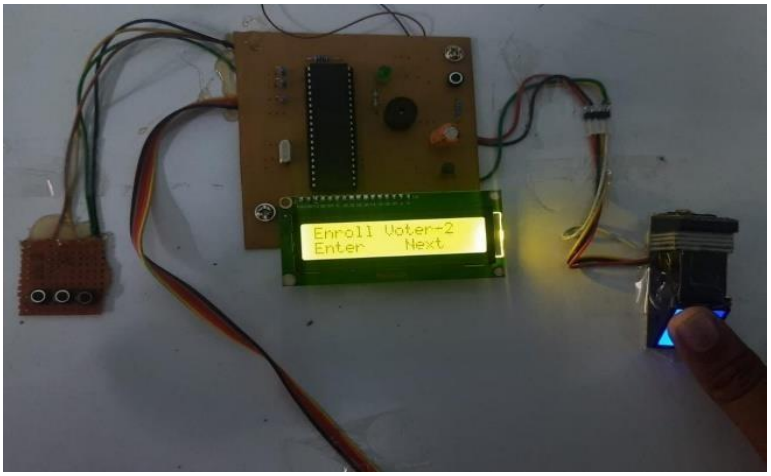

Fig. 9: Enrolment of eligible voter

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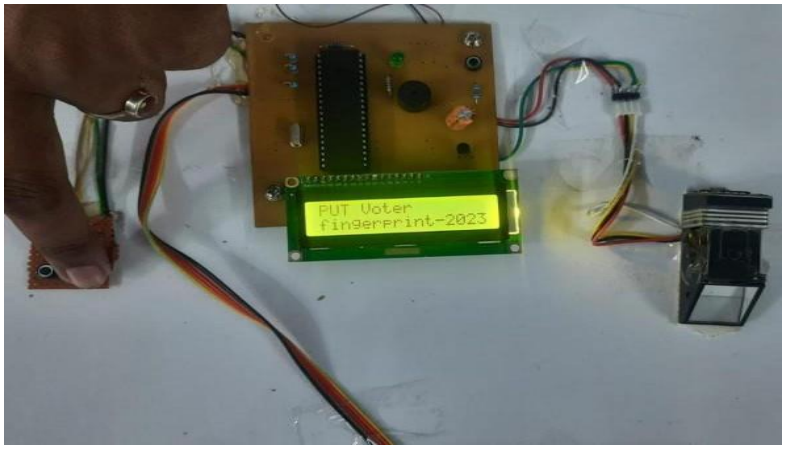

Fig. 10: Register candidates

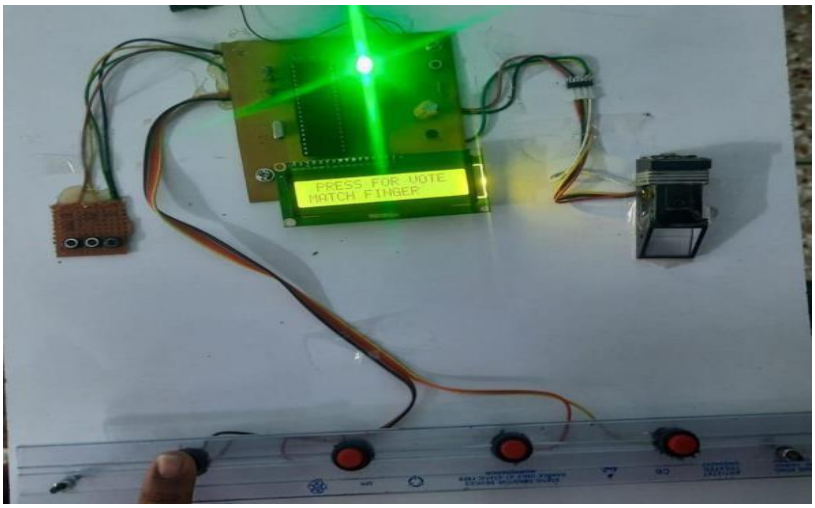

Fig. 11: Casting Vote

Fig. 12: Duplicate votes lead to voting failure

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Fig. 13: Finger print Matched

Fig. 14: Total Votes got by party name BOOK)

V. CONCLUSION

The fingerprint-based voting model offers apromising solution to the challenge of ensuring secure and accurate electoral processes. The use of biometric identification technology in this model enables the system to verify the identity of voters and prevent fraudulent activities such as double voting or voting by ineligible individuals. The components used in this model, including the fingerprint module, microcontroller, LCD display, transformer, bridge rectifier, and 5V regulator, work together to enable a smooth and efficient voting process.

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