



International Journal of Innovative Research in Computer and Communication Engineering

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)





International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

Smart Voting System using Iris Recognition

Mrs. M. Mounika, S. Meghana, M. Prithvi, N. Pavithra, A. Poojitha

Guide, Department of Computer Science and Engineering, School of Engineering, Malla Reddy University,
Hyderabad, India

B. Tech, School of Engineering, Malla Reddy University, Hyderabad, India

ABSTRACT: In modern democratic systems, ensuring secure and fraud-free elections is a critical challenge, as traditional voting methods are prone to identity theft, multiple voting, and other fraudulent activities. To address these issues, the proposed **Smart Voting System Using Iris Recognition** leverages biometric authentication to enhance security, transparency, and efficiency in the voting process. The system uses iris recognition technology, where each voter's unique iris pattern is scanned, verified against a pre-registered database, and authenticated before casting a vote. This ensures that only eligible voters can participate, eliminating impersonation and duplicate voting. The system is designed to be user-friendly, efficient, and highly secure, reducing the dependency on election officials while increasing voter confidence. The system offers a reliable method to modernize elections, reduce administrative costs, and increase voter participation. By utilizing advanced biometric technology, this approach ensures a more accurate, transparent, and trustworthy electoral process, upholding the fundamental principles of democracy while making elections more accessible and fraud-resistant.

I. INTRODUCTION

The election system is the pillar of the every democracy. The depth of democracy is voting. The voting process must be reliable, and the voting record must be accurately and reasonably recorded. The success of democratic administration is totally dependent on the results of the election. The election process provides the right to every citizen of a country to select a legitimate representative among themselves who can guide the democratic system towards the welfare of the society. The voting system has observed many effective changes over the past few decades, right from the traditional paper ballot voting to electronic voting and now towards the online voting. Every system tries to overcome the loop holes of the previous system. The primary goal of this paper is to understand the traditional voting system with the recently proposed voting system. In modern world, many new techniques such as voting process play an important role in any democratic country.

Iris recognition is a method of biometric authentication that uses pattern-recognition techniques based on high-resolution images of the irises of an individual's eyes. Iris is a muscle within the eye that regulates the size of pupil, controlling the amount of light that controls the eye.

II. OBJECTIVES

By putting in place a biometric-based authentication system, the Smart Voting System with Iris Recognition aims to improve the voting process's security, precision, and effectiveness. By guaranteeing that every voter can be uniquely identified by their iris pattern, this project seeks to eradicate electoral fraud, including multiple voting and identity theft. The system aims to provide a transparent and impenetrable voting mechanism that increases confidence in the electoral process by incorporating cutting-edge biometric technology. It also seeks to expedite voter authentication, cutting down on wait times and enhancing the voting process in general. By using secure encryption and real-time result processing, the system will also prioritize preserving the integrity and confidentiality of votes. Additionally, the project aims to minimize administrative burdens and human error by promoting an automated and paperless voting system. The ultimate goal is to create a digital voting system that respects democratic principles and guarantees fair elections by being dependable, scalable, and easy to use.



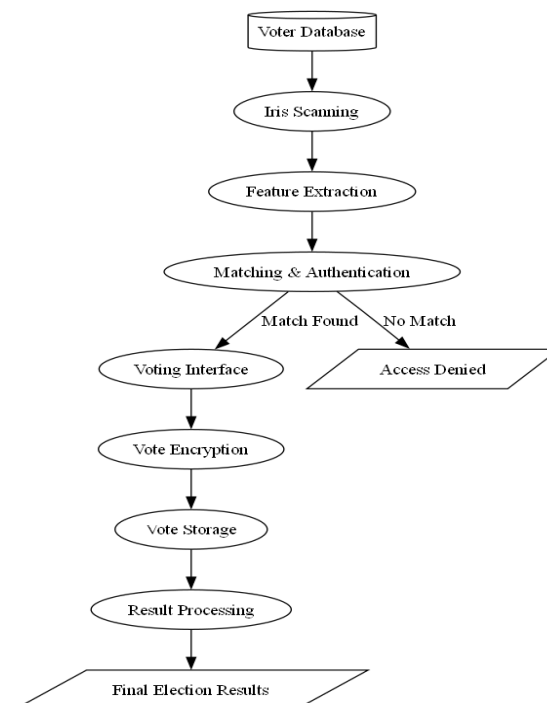
International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

III. LITERATURE SURVEY

Several studies highlight the limitations of traditional voting methods, such as voter fraud, impersonation, and inefficiencies in result processing. Researchers have explored biometric-based voting systems, with iris recognition emerging as the most secure and accurate method due to the uniqueness and stability of iris patterns. Studies by Jain et al. (2013) and Daugman (2004) confirm that iris recognition has a low false acceptance rate, making it ideal for secure authentication. Implementations in various countries, as discussed by Reddy et al. (2020), show that biometric voting systems significantly reduce electoral fraud. Furthermore, Ali & Mohammed (2021) suggest integrating blockchain with biometric authentication to enhance election security and transparency.

ARCHITECTURE



The Iris Recognition Smart Voting System architecture adheres to a safe and organized procedure. The Voter Database, which houses voter information, is where it begins. Voters' iris is scanned when they try to cast their ballot, and feature extraction is used to extract distinctive features. After that, the system verifies identity through Matching & Authentication. The voter is granted access to the Voting Interface if a match is found; if not, access is refused. Before being kept in the Vote Storage, the vote is encrypted for security purposes after it has been cast. The voting process is then made accurate and transparent by the Result Processing Module, which counts the votes and produces the Final Election Results.

IV. METHODOLOGY

The Smart Voting System using Iris Recognition follows a systematic methodology to ensure a secure and efficient voting process.

1. Voter Registration

- Each voter's biometric iris data is captured and stored securely in the Voter Database.
- Unique identification is assigned to prevent duplication and fraud.

2. Iris Scanning & Feature Extraction

- During voting, the system scans the voter's iris using specialized hardware.
- The system extracts unique features from the iris image using advanced image processing techniques.



International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)

(A Monthly, Peer Reviewed, Refereed, Scholarly Indexed, Open Access Journal)

3. Authentication & Matching

- The extracted iris features are compared with stored biometric data.
- If a match is found, the voter is authenticated and allowed to proceed; otherwise, access is denied.

4. Secure Voting Process

- Authenticated voters access the **Voting Interface** and cast their votes.
- Votes are encrypted using **cryptographic algorithms** to ensure data integrity and prevent tampering.

5. Vote Storage & Processing

- The encrypted votes are securely stored in the **Vote Database**.
- After the voting period ends, the **Result Processing** module counts and verifies the votes.

6. Final Election Results

- The system generates and publishes **election results**, ensuring fairness and transparency.

V. CONCLUSION

The Smart Voting System using Iris Recognition presents a secure, efficient, and fraud-resistant approach to modernizing the electoral process. By leveraging the uniqueness of iris patterns for voter authentication, the system effectively eliminates issues such as multiple voting, identity fraud, and unauthorized access. This system can significantly improve transparency and trust in elections. By adopting this technology-driven approach, electoral bodies can move towards a more reliable, scalable, and corruption-free voting system that strengthens democratic processes and ensures fair election outcomes. The database needs to be updated every year or before election so that new eligible citizens may be enrolled and those who are dead are removed from the voter list. In this proposed project, the Security of the voter is discussed and in general the focus is on making the voting system more robust and reliable by eliminating dummy voters.

REFERENCES

1. Aman Jatain, Yojna Arora, Jitendra Prasad, Sachin Yadav, Konark Shivam, Department of Computer Science, Amity University, Gurgaon, Haryana, Design and Development of Biometric Enabled Advanced Voting System May 2020.
2. Chandra Keerthi Pothina, Atla Indu Reddy, Ravikumar CV, Electronics and Communication Engineering, Vellore Institute of Technology, Vellore, Smart Voting System using Facial Detection April 2020.
3. Jayapriya J, Roghini M, Jayanthi S, Department of CSE, Agni College of Technology, Tamil Nadu, India, A Survey on Biometric Voting System using Iris Recognition Mar 2020.
4. Kennedy Okokpujie, Samuel Nduco John, Etinosa NomaOsaghae, Charles Ndujiuba, Department of Electrical and Information Engineering, Covenant University, Ota, Ogun State, Nigeria, An Enhanced Voters Registration And Authentication Application Using Iris Recognition Technology February 2019.



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