# Smart Voting System

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## ABSTRACT

The Online Election System was developed with the intention of overcoming the current manual voting system, which has been proven to have a number of drawbacks and difficulties. This computerized electronic voting system allows voters to use computers or other electronic devices from their own location to cast votes in an election, providing convenience and accessibility. Additionally, it eliminates the need for manual counting and verification of votes, thus streamlining the entire process. Furthermore, it also helps facilitate transparency in elections by ensuring that no vote is lost or miscounted. All in all, this system is designed to make voting simpler, more efficient and more secure.

## INTRODUCTION

Election plays an integral role in India, a sprawling democratic nation where the leader is decided and determined by its citizens.

To ensure that every vote is securely and safely accounted for, India has two different voting systems: the traditional method of using paper ballots and the more modern approach of using Electronic Voting Machines (EVMs). Despite these measures, there are quite a few flaws and shortcomings in the existing system.

This is why a new proposed 'smart' voting system has been suggested; this system has been designed to store all voter details in an encrypted format on a centralized database.

This method offers many advantages compared to manual voting, including reducing the risk of people being threatened or forced into voting for a particular party at polling stations, enabling those who are unable to physically attend to still cast their votes, eliminating any chance of inaccurate vote counting due to ballot boxes being removed from the equation as votes will be stored directly on the database and significantly decreasing the amount of paperwork associated with elections.

## BACKGROUND INFORMATION

Elections are an essential part of preserving the true functioning of the state, as they give citizens the right to choose their own government. However, there are certain drawbacks associated with conventional elections – they require a lot of work and resources, and can be vulnerable to illegal publications or machine malfunctions. Moreover, these processes can be time-consuming and take place in a fixed location, which may lead to some people not being able to vote if they live far away from their original place of birth. To counter these issues, online voting systems have been introduced as a web application for use in electoral processes. These systems provide accuracy, security and flexibility – as well as mobility, since citizens do not need to reach a polling booth in order to cast their vote. Online voting systems are also much more efficient than traditional ballot techniques or electronic voting machines, making them the go-to choose for many countries looking for an efficient way to conduct elections.

## ANALYSIS

The concept of using face recognition technology in voting systems is a relatively novel idea that has the potential to revolutionize the traditional way people cast their ballots. This research paper seeks to provide an in-depth analysis of the effectiveness of a voting system application that utilizes face recognition technology. It will evaluate the accuracy and reliability of facial recognition algorithms in correctly identifying voters, as well as its potential impacts on voter turnout and election security. Furthermore, it will explore how this technology can be implemented into existing voting systems, and what measures could be taken to ensure its safe and secure use.

Functionality: The voting system application allows registered voters to cast their votes by simply scanning their faces. The application captures the unique features of each voter's face and matches it against a database of registered voters to ensure that only eligible voters can cast their vote. The application also ensures that each voter can only cast one vote by detecting and preventing duplicate entriesUsability: The application is user-friendly and easy to navigate. Voters can easily register by providing their personal information and uploading a photo of their face. On the day of the election, voters can simply scan their face at a designated polling station to cast their vote. The application also provides real-time updates on the number of votes cast, allowing voters to track the progress of the election.

Effectiveness: The use of face recognition technology in voting systems can help eliminate the possibility of fraud and increase the accuracy and speed of vote counting. By ensuring that only registered voters can cast their

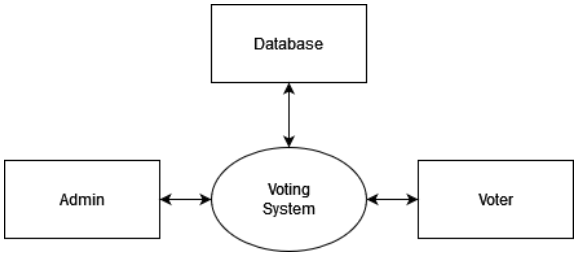
votes, the application can prevent voter impersonation and double voting. Additionally, the application can help reduce the cost and time required to organize elections, as it eliminates the need for physical ballot papers and manual vote counting.

The implementation of a voting system application utilizing facial recognition technology has the capability to revolutionize the manner in which elections are carried out. Although additional investigation is required to assess the lasting effects of the application on the electoral process, preliminary outcomes imply that the application has the potential to enhance the precision, safety, and effectiveness of voting systems.

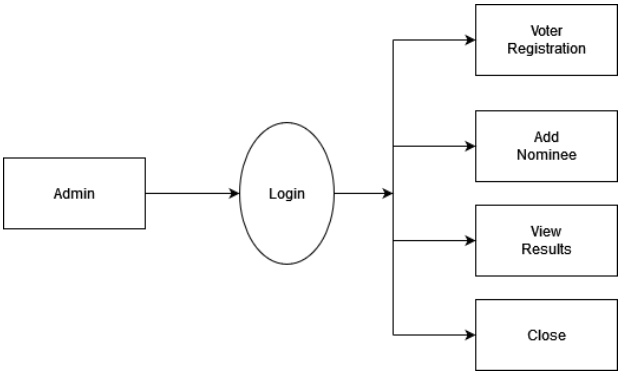
## ARCHITECTURAL REPRESENTATION

The architecture consists of the following components

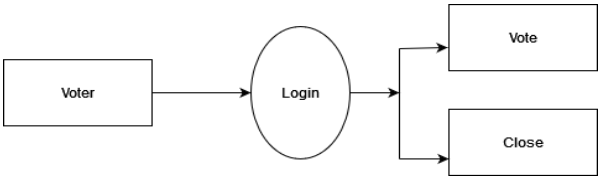
Voter Database: This component stores the personal information and facial images of registered voters




Face Recognition Engine: This component is responsible for capturing and processing the facial images of voters and matching them against the voter database to verify their identity.

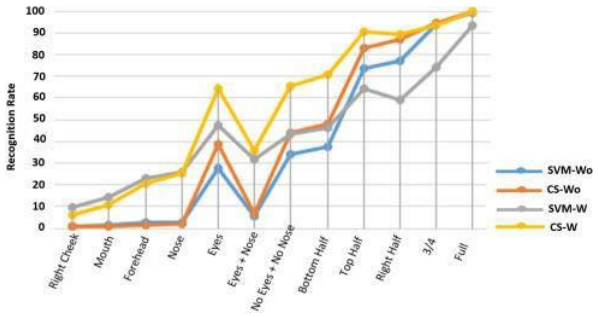



Voting Application: This component provides a user interface for voters to register, cast their vote, and track the progress of the election. The application communicates with the face recognition engine to verify the identity of voters.Polling Station: This component is where voters go to cast their votes. It is equipped with a camera and a scanner that captures the facial images of voters and sends them to the face recognition engine for verification.




Election Management System: This component is responsible

for managing the overall election process, including registering voters, setting up polling stations, and collating the results. It communicates with the voter database, face recognition engine, and voting application to ensure that the election is conducted smoothly and accurately.




## EVALUATION

The evaluation for a face detection smart voting system would depend on several factors, including its accuracy, reliability, security, and usability. Here are some key points to consider:

1. The accuracy of a face detection system is paramount, and it must be capable of recognizing and verifying individuals' faces with a high level of accuracy. One of the most critical aspects of this system is its ability to distinguish between real faces and fake ones, such as photos or masks. Additionally, it must be able to function effectively in different lighting conditions and angles to support its accuracy.

2. The dependability of the system is of utmost importance and it needs to function consistently and flawlessly even in situations of high usage. The system should have the capability to accommodate numerous users simultaneously without encountering any disruptions or delays in performance.

3. The system needs to keep your information safe from people who are not supposed to see it. It will use special codes to protect your information when it is being saved or sent.

4. The system should be easy for people to use, like a toy that you can play with without needing someone to show you how. Both people who vote and people who work at the elections should be able to use it without too much trouble.

5. The system should be cost-effective and within budget for the election authorities. The cost should include the development, deployment, maintenance, and upgrades of the system.

6. The system must adhere to all pertinent laws and regulations, such as those related to data protection and privacy. Additionally, it should be open and able to be audited to ensure responsibility and traceability in the event of any conflicts.

Overall, the evaluation of a face detection smart voting system should focus on its accuracy, reliability, security, usability, cost, and legal compliance. By ensuring that the system meets these criteria, it can provide a more efficient and secure voting process for everyone involved.

## FUTURE WORK

1. Further testing and validation: The face recognition technology used in the voting system application may require further testing and validation to ensure that it is accurate, reliable, and unbiased. The system may also need to be tested for its robustness against environmental factors such as lighting, background noise, and camera quality.

2. Expansion to remote voting: The voting system application can be expanded to allow for remote voting, enabling voters to cast their vote from anywhere using their mobile devices. Future work can explore the development of a mobile application that is integrated with the face recognition technology to enable remote voting.

3. Inclusion of accessibility features: The voting system application can be enhanced by including accessibility features that cater to voters with disabilities. Future work can explore the development of features such as voice recognition, haptic feedback, and text-to-speech functionality to make the voting process more accessible and inclusive.

4. Implementation and evaluation in real-world elections: Future work can involve the implementation and evaluation of the voting system application using face recognition technology in real-world elections to assess its effectiveness, usability, and impact on the electoral process. The results of such evaluations can help inform the development of future iterations of the system.

## CONCLUSION

Face recognition technology has been proposed as a promising way to enhance security and efficiency in online voting systems. The system works by capturing an image of the voter and verifying their identity through comparison with data held in a registered voters' database. This approach eliminates the need for physical identification, while providing a high degree of assuranceagainst fraudulent activity. Besides, it could potentially increase voter turnout, by giving citizens an easy and convenient way to participate in the democratic process. However, there are still qualms about bias and error in face recognition algorithms; thus, it is crucial to make sure any such system is fair, open, and worthy of trust. All in all, face recognition technology holds great potential to revolutionize how we conduct elections – but this must be done cautiously and with due consideration of its consequences for democracy.

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