

## Secure Internet Based Voting System Using QR Code and Face Recognition

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### Abstract

*In earlier times people are using different types voting system for electing their representative. This systems are inefficient and it has different types of drawbacks such as process are very time consuming and less secured. The proposed system is Secure Internet Based Voting System Using QR Code and Face Recognition resolves all demerits of existing system. In this voting system images contains human faces are essential to intelligent vision based human computer interaction and research efforts in the face processing includes face detection and face recognition, pose estimation and recognition. Face is the most important defining characteristics of the human body. Every human body face is unique, the facial structure of every human body can change dramatically. The main advantages of this system is that less time very consuming, it is more secured, location constrained is avoided, is has more accuracy, minimum requirement of equipment's and skills.*

**Keyword—Facial, Recognition, Open CV (computer vision), Internet voting, Estimation.**

### I INTRODUCTION

This paper has been developed in an attempt to provide an objective introduction to the internet based voting system including the information about the voting system technology into the voting process. In this paper we are going to represent the various Electronic voting methods like voting by Internet, telephone, and optical scan ballot. I have also described how the evolution of various voting machines are implemented.[1]

In this section we mainly focus on the discussion of the definition of the voting system and importance of the voting system. Here we are going to discuss the types of voting system and our new proposed secure internet based voting system using QR code and face recognition. In that internet based voting system is made intelligent which can determine the eligibility of the voter by scanning the QR code [2] and also the count is not kept into the same machine itself instead of it is stored data in the remote server. The internet based voting system is more secure than the present system. Each and every person eligible to vote should get the opportunity to vote even if he or she is away from his hometown or unable to cast a vote due to some problem.

Face recognition is the technique in which the identity of a human can be identified using their individual face. This type of system can be used in photos, videos, or in real time machines. The main objective of this paper is to provide a simple and easy method in the voting system. With the help of

these technology you can easily detect the face by the help of dataset in similar matching appearance of a person [3]

In face recognition technique we can detect the face of the human body with the help of python and OpenCV in deep learning. Deep learning is the most efficient and powerful tool to detect the faces of the human body. This method is used in different types of fields such as the military application for security purposes, and also it is used in education like schools, colleges and universities. This method is also used in airlines, banking sector, and online web based applications. In this system we use the python algorithm to detect and recognize faces very easily and efficiently. The extracted features are given to a classifier which compares these features with the trained ones and displays the data and reports stored in the database [4]. These two algorithms are implemented in python using OpenCV.

The proper face is determined with the help of identification of the covariance matrix by its own vectors, which is a collection of fingerprint images which is stored in the database. I built a camera based real time face detection and face recognition system and set an algorithm by developing programming on OpenCV. Face recognition is a one type of identification system and faster than other systems since multiple faces can be analysed at the same time [5]. The difference between face detection and identification is, face detection is to identify a face from an image and locate the face.

With modern communications and the Internet, today in the world most of the people are accessible electronically, the computer technology users, brings the increasing need for electronic services and their security. This is new internet based voting systems in that the election data is recorded, stored and processed primarily as digital information. The necessity of designing a secure internet based voting system is very important. This system ensures the security and privacy of an election can be time consuming, expensive for election administrators, and inconvenient for voters.

## II. BLOCK DIAGRAM

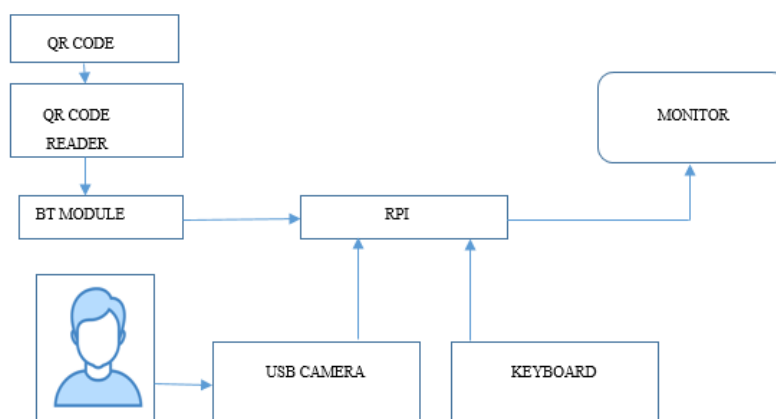


Fig.1 Block Diagram of internet based voting system using QR code and face recognition.

The proposed system is “Secure Internet Based Voting System Using QR Code and Face Recognition” system is the internet based voting system which is very intelligent and it can determine the eligibility of the voter by scanning the QR code which is available on voter card and also the vote count is not stored in the same system itself. It is stored in the remote server. Here there is no chance of increasing the vote count of machines. If any damage in the voting machine there will not be harm to continuity of the election process. Latency also can be reduced [11].

This system has four main stages: the first one is the application control process which includes the identification and authentication phases for the applied citizens. Second one is the voting process which is done by information provided by the user. In the third stage is the confirmation process, in this stage we check the image captured of the voter and match the image of the voter which is online for giving vote for their identification. Finally the election server administrator will sort out the final result by deciphering the received encrypted information using a private key [6].

The proposed method is to develop a secure internet based voting system which is based on face recognition which tries to overcome all the drawbacks that occur in existing or current voting systems in the world. The proposed internet voting system has many strong features like correctness and verifiability [7]. For this system there is no requirement of any election officer or any electronic voting machine. Only the internet connection and Face scanners are required. One can vote from anywhere securely.

India is a democratic country every citizen in the country above 18 years of age is eligible to elect their leaders. When every citizen or a person age becomes 18 they have the constitutional right to voluntarily enroll for voter id given by the election commission of India. Nowadays, Aadhar card is used as a Voter ID so we don't need to carry a separate voting card for voting.

Citizens who miss out on registering their vote during the election time due to any unavoidable reasons in voting because the voter is not ready to travel such a distance for voting. To avail constitutional voting rights to every citizen in India. Nowadays, an internet based voting system using QR Code and Face Recognition is the best solution. Nowadays with the rise in population the need for checking the validity of the voters has become a problem. Nowadays as modern communications and the internet are accessible electronically. New technology in the voting process improves the election process and improves the accuracy of the system [8]. The new technology is internet based voting systems where the election data is recorded, which is stored in the database and processed as digital information.

In the past information security was used mostly in military and government institutions. But nowadays this type of security is growing every day. In computing e-services and information security it is necessary to ensure that data communications or documents are secure and privacy enabled. Advanced cryptographic techniques allow pretty good privacy on internet based voting systems. Security is at the heart of the internet based voting process [9]. Therefore, the necessity of designing a secure internet based voting system is very important. This mechanism usually ensures that security and privacy of an election can be time-consuming, expensive for election administrators and inconvenient for voters.

Face detection and face recognition is the most popular subject of research on biometrics. Face detection and face recognition is a real time setting that has an exciting area and a rapidly growing challenge. Opencv scans each frame of the human face from the webcam and you can easily detect faces by processing each frame [10]. In computer vision one essential problem we are trying to figure out is to automatically detect and recognition object in an image without any human interaction. Face detection can be thought of as such a problem where we detect human faces in an image. There may be slight difference in the faces of human but overall, it is safe to say that there are certain features that are associated with all the human faces.

Face recognition and detection is a method of identifying or verifying the identity of an individual person using their faces. There are different types of algorithms that can do face detection and face

recognition but their accuracy may be changed. The training of the neural network and the network learns to output similarly. Suppose I have multiple images of faces within different timespan, of course some of the features of my face may be changed but not up to much extent. So in this case the vectors associated with the faces are similar or in short they are very close in the vector space. Power analysis of the system can also be controlled [12].

### III. SYSTEM FLOWCHART

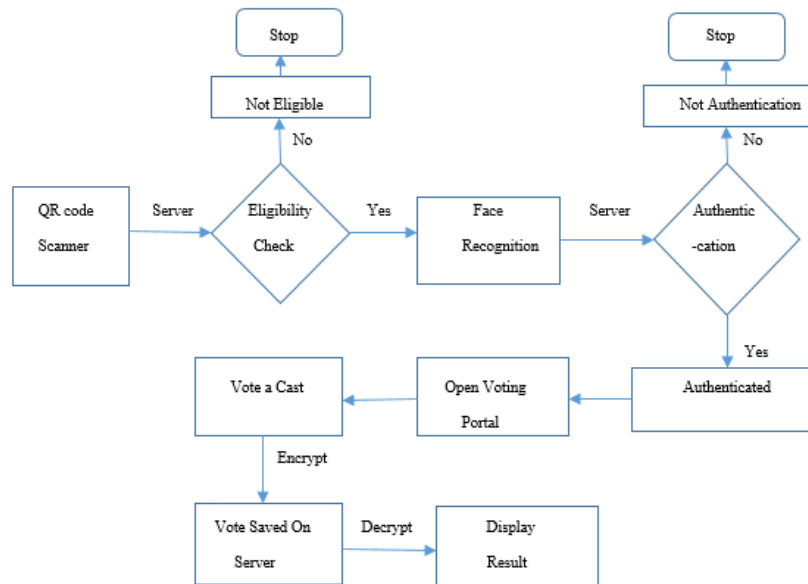


Fig. 2 Flowchart for the proposed system.

Steps for internet voting system:

1. QR Code scanning – It is used for data access and data validation. It also Cross checks the data present in the database with a scanned aadhar card.
2. Eligibility check – Check the age of the user.
3. Face recognition – It is used for authentication purposes.
4. Voting portal – Open voting web page for casting vote.
5. Display result.

### III. OBJECTIVE AND SCOPE

1. An Internet based voting system is made intelligent which can determine the eligibility of the voter by scanning the QR code and also the vote count is not kept into the same machine itself instead of it is stored in the remote server.
2. The internet based voting system is more secure than the present system.
3. The location constraint is avoided in our system.
4. In the future we can extend our project to cast a vote through mobiles.
5. Each and every person eligible to vote should get the opportunity to vote even if he or she is away from his native place or unable to cast a vote due to some problem.
6. To increase or maximize the percentage of voting.

#### IV. CONCLUSION

Thus this machine can be used for any level voting purpose. The secure internet based voting system provides a high level of security, authentication, reliability, and corruption free mechanism. In this internet based voting system minimum manpower is utilized, hence the mechanism is error free.

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