Iris Detection based Authentication for Secure Voting System

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Abstract - **India being a democracy that too worlds largest, still conducts its elections using either Secret Ballet Voting or Electronic Voting Machines (EVM) both of which involves high costs, manual labor and are inefficient. So, the system must be optimized to be made efficient which would not leave room for unwanted means of voting. The most familiar issue faced by the election commission is inappropriate confirmation with respect to the arrangement of casting the votes, duplication or illegal casting of votes**

The proposed biometric electoral authentication system allows the user to scan s so that his or her credentials can be compared to existing iris images already stored in the system's database. Present Aadhar database will be integrated into voting authentication system.Using detection of iris based authentication decreases the chance of duplicating a vote and those who are registered prior to the election and are recognized by the system will be allowed to vote. Hence, the approach makes the system the best way to vote.In proposed project, biometric based authentication avoids anonymity and the focus is on making the voting system more robust and reliable by eliminating dummy voters. By using Daughman's algorithms will scan IRIS and check those details in our database for match.

Keywords - Iris Detection, Authentication , Voting System

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. The voting system is improving step by step; advancement in the new system eliminates the drawbacks of the previous system. 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. Democracy is meant to allow people to vote freely and the election result is accepted by voters group.

The concept of Iris Recognition was first proposed by Dr. Frank Burch in 1939.It was first implemented in 1990 when Dr. John Daughman created the algorithms for it.
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. BACKGROUND

"Smart Voting" is used to identify people who are trying to vote a second time, and once the fingerprint print And iris are scanned, authentication is complete, and the user is locked into login.[1]. Face detection, which is the major part of this project is done by using the Haar Cascade method. It is a machine learning object detection algorithm used to identify objects in an image or video[2]. The process of election data is recorded, stored and preceded as digital information. Electronic voting system is used to fling vote as well as counting number of votes. The electronic voting system uses AVISPA technique[3]

Canny Edge detection algorithm for localizing the iris and pupils.[4]. Iris recognition system consists of five stages, such as, image acquisition, segmentation, normalization, feature extraction and matching.[5]. In security of voting system by bringing advanced technologies of neural networks with multimodal biometrics (face recognition, fingerprint scan, retina scan etc).[6]

Iris recognition refers to the automated method of verifying a match between two human IRIS. Iris scanner Capture the iris image and compare or match to database.[7]. RFID tags have been used. Each and every tag contains the information related to individual voters[8].

The voter identity card is replaced by smart card in which all the detail of the person is updated. Only the specified person can poll using their smart card[9]. The incorporation of biometric technologies can be as simple as using a single biometric. However, a single biometric measure is always subject to security breaches, if not properly attended and administered.[10].

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III. METHODOLOGY

The iris is unique. However, there are so many factors that go into the formation of these textures (the iris) that the chance of false matches for either is extremely low. Even genetically identical individuals the same have completely independent iris textures. There is no need for the person being identified to touch any equipment that has recently been touched by a stranger, thereby eliminating an objection that has been raised in some cultures against fingerprint scanners, where a finger has to touch a surface, or retinal scanning, where the eye must be brought very close to an eyepiece (like looking into a microscope.

For the proposed voting method, we use a biometric system that uses multiple sources of biometric behavior. This can be done by combining multiple features of an individual or multiple bio-extraction and matching algorithms running on the same biometrics. This system improves the accuracy of matching the data for the biometric system in the voting process. Since there is no way for any candidate to provoke government-issued biometric records before the election process, we use iris recognition and fingerprint scanning for accuracy and reasonable voting result.
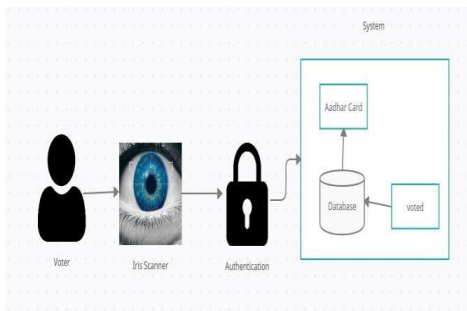
 Step I: Image acquisition deals with capturing sequence of iris images from the subject using cameras and sensors. These images should clearly show the entire eye especially iris and pupil part, and then some preprocessing operation may be applied to enhance the quality of image e.g. histogram equalization, filtering noise removal etc.

STEP II: The next step of iris recognition is to isolate the iris portion from the eye image, called segmentation. It is a technique required to isolate and exclude the artifacts as well as locating the circular iris region. The inner and the outer boundaries of the iris are calculated. Segmentation of iris depends on the quality of the eye.

STEP III: In third step segmented iris is normalized. The normalization process will produce iris regions, which have the same constant dimensions, so that two images of the same iris under different conditions will have characteristic features at the same spatial location. In order to provide accurate recognition of individuals, the most discriminatinginformation present in an iris pattern must be extracted in the fourth step. Only the significant features of the iris must be encoded so that comparisons between templates can be made.

SYSTEM ADMINISTRATOR

The system administrator registers the voters by simply filling a registration form to register the voters.

USER IRIS DETECTION

Iris recognition is the process o recognizing a person by analyzing the random pattern of the iris. A person is identified by the iris which is the part of the eye using pattern matching or image processing.

USER VERIFICATION

Iris verification verifies the identity of a person while iris identification establishes the identity of the person.

USER APPROVAL

The system confirms the voter to be the eligible individual to vote by checking his/her Aadhar details. Once confirmed the voter will be allowed to cast the vote.

IV.CONCLUSION

This proposed project has presented an iris recognition system, in which segmentation was done using Daughman's algorithm.
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 and the focus is on making the voting system more robust and reliable by eliminating dummy voters.

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