A PROPOSED METHOD OF ONLINE VOTING BY FACE DETECTION

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ABSTRACT

Internet voting systems have gained esteem and have been used for government elections and referendums in the United Kingdom, Estonia and Switzerland as well as municipal elections in Canada and party primary elections in the United States. Voting system can engross transmission of ballots and votes via private computer networks or the Internet. Electronic voting technology can speed the counting of ballots and can provide improved accessibility for disable voters.

This paper deals with design and build a highly secure online voting system using some face based recognition techniques. There are many techniques of face detection and recognition such as Eigen face algorithm, Gabor filter and many others. This paper demonstrates a golden ratio method to recognize the different postures and faces using online voting system. For this different facial expressions and poses of individual faces are detected and stored in a database system. Then we estimate the ratios of different face parts and matches it with the ratio of the face image we have stored in the database system. If it matches the person will be allowed to cast the vote. If the image is not recognized the person is not eligible to cast its vote.

General Terms: Techniques,Demonstrates,Voting,Database.

Keywords: Eligible,Ratio,Postures,Faces,Golden Ratio.

I. INTRODUCTION

In the development of any country democracy plays a vital role. Democracy System runs by a leader of the country who is selected by citizen of a country. Citizens have right to choose leader through election. Process of election consumes lots of man-power as well as resources and preparation is started many days before commencement of the election .During thispreparation it may happen that involved people make an illegal arrangement with each other or try to replace with their henchmen in this process to win the election . Election is the system which gives people a chance to choose their leader, so it must be transparent, Meddle-Proof, Usable, Authenticated, Accurate, Verifiability and Mobility. In the existingsystem there are certain drawbacks such as damage of machines, chances of violence, dummy voting and problem of proper monitoring is also an issue. Also Manual voting system has been developed in many parts of our country. However then also people could not attend the vote as this process is place oriented and there is region wise distribution, voters need to reach the place of voting

Security can be achieved using some of techniques like Gabor filter, Eigen face, golden ratio and line edge map technique for electronic voting. To solve this problem there is a need for online voting system using mobile application. In modern world mobile phones are easily available to each individual so developing a mobile

application will make the system more expedient and effortless for the user to cast its vote from home or any other place oriented location.

II. PROBLEMSTATEMENT

Online voting has not been yet implemented in our country.Manual voting system has been developed in many parts of our country which is not safe and secure too.The voter which is not eligible can also cast its vote by fake means.This may lead to many problems such as an untalented,undesirable leader will get selected and it   will have a direct impact on the growth of our nation.

III. EXISTING VOTING SYSTEM

In current voting system allocation of polls is done by election commission in advance. Generally polling booth is setup in school and community halls. Voter's card is distributed before one week so; the people can come to know about the location of voting. Time and place for voting is predefined. Each polling station is opened for at least 8 hours on the Election Day. Different fingerprints of a person are taken. Here there is a high security risk. A person may with fake voting card can also cast its vote. Such a method is not an effective way. It must be stopped. Also to maintain discipline and security requires a huge amount of man power therefore; it is bit difficult to accomplish election in a single day. Due to such problems of existing voting system there is a need to develop a anticipated system in which user can cast its vote without any reason or excuse of not casting the vote.

IV. DIFFERENT PROPOSEDTECHNIQUES FOR FACE RECOGNITION

4.1 Gabor Filter Technique

The voter's image which is captured using a webcam is used as the input in this face detection algorithm. Before entering image to Gabor filters, it must be normalized. Gabor filter algorithm consists of 40 filter used to detect faces from the captured image; the proposed system applied different Gabor filters on the image to generate 40 images with different angles and orientation. Next, maximum intensity points in each filtered image are calculated and marked as fiducially points. If the distance is minimum between these face points then system reduces the points. The next step is calculating the distances between the reduced points using distance formula. At last, the calculated distances are compared with Gabor database. If match occurs,it means that the image is recognized as a face.

4.2 Eigen Face Technique

In Eigen face algorithm we acquire a database of face images, calculate the eigenfaces and determine the face space with all them. It will be necessary for further recognitions. When a new image is found, calculate its set of weights. Determine if the image is a face; to do so, we have to see of it is close enough to the face space. Finally, it will be determined if the image corresponds to a known face of the database of not.

Analysis and experimental results indicate that the eigenface algorithm, which is essentially a minimum distanceclassifier, works well when lighting variation is small. Its performance deteriorates significantly as lighting variation increases.

4.3 Golden Ratio Technique

The human face golden ratio means the most beautiful face ratio. It has 'Three parts' and 'Five eyes', the 'Three parts' means from hairline to eyebrow, from eyebrow to nose and from nose to chin. The 'Five eyes' means human face is five eyes width. If human face conform the two conditions, we can call human face golden ratio.

4.4 Line Edge Map (LEM) Technique

Face recognition using line edge map .This algorithm describes a new technique based on line edge maps (LEM) to accomplish face recognition. In addition, it proposes a line matching technique to make this task possible. In opposition with other algorithms, LEM uses physiologic features from human faces to solve the problem. It mainly uses mouth, nose and eyes as the most characteristic ones.

These are all the above techniques we can use for face recognition. But in my opinion the best one which we can use are line edge map technique and golden ratio technique.

V. PROPOSED TECHNIQUE

In India today also ballot machines are used for voting instead of many algorithms present which can be implemented practically to form a system through which people can online conduct the voting system. To implement or form such a system different algorithms are present through which we can practically implement this system. But this research paper proposes the use of two techniques mainly line edge map technique and the golden ratio technique.

As the discussion begins with voting through mobile device, first an application is required through which voters can commune. Secure data centre is required to store and fetch the data as per requirement. Still there is a question of gathering voter's information. We need to use existing database in which voters information exist. Voters/citizens information is available in "ADHAR CARD" database. Assume that almost every next person is having mobile phone on which our application program will execute. To begin with mobile based voting system throughout voting process an internet connection is essential. After connection is established voters need to download application from a specific source. After downloading and installing, start the application for face recognition to do this need to start front camera of smart device once it's started then need to examine face throughfront camera of smart device then system compares scanned image with centralized stored information this is called as sign in process. Once face is recognized successfully the complete detail of voter comes from "ADHAR CARD" database and related information exists on mobile device. Within this application list of candidates appear as per place which is fetched from "ADHAR CARD". From the list, voters can select any one candidate as per his/her choice and after selecting the candidate voting is accomplished. So, after selecting particular candidate counting is incremented by one centrally.Database is used to fetch the information of voter and only one flag attribute constructed when user performs face recognition flag default value is zero changes to one which indicates that particular voter has given the vote and another separate database is used to store count of votes. So, as per Indian constitution it also preserves secure ballot. If Voters do not have any smart device in such situation one common location is assigned for voting through mobile phones. So, on this location only few persons are involved to carry out this process.

To implement such an application we chiefly using two techniques in this research work. These are Line Edge Map technique and golden ratiotechnique.

5.1 Methodlogy

Line edge map (LEM) describes a technique to accomplish face recognition. In addition, it proposes a line matching technique to make this task possible. In conflict with other algorithms,LEM uses physiologic features from human faces to resolve the problem. It mostly uses mouth, nose and eyes as the majority feature ones.

In order to determine the similarity of human faces the face images are firstly converted into gray-level pictures. The images are preset intobinary edge maps using Sobel edge detection algorithm. This system is much related to the way human beings identify other people faces as it was acknowledged in many psychological studies. The main advantage of line edge maps is the low sensitiveness to illumination changes, because it is a halfway image representation derived from low-level edge map representation. The algorithm has another important improvement; it is the low memory requirements because the kind of data used. It also keeps face features in a very simplified level.

One of the most important parts of the algorithm is the Line Segment Hausdorff Distance (LHD) described to accomplish an exact matching of face images. This method is not oriented to calculate exact lines form different images; its main characteristic is its flexibility of size, position and orientation.

Given two LEMs $P^1 = \{p_1, p_2 \ldots p_n\}$ (face from the database) and $T^1 = \{t_1, t_2, \ldots t_n\}$ an (input image to be detected); the LHD is represented by the vector $\bar{A}(p_i^1, T_i^1)$. The elements of this vector represent themselves three difference distance measurements: orientation distance, parallel distance and perpendicular distance respectively.

$$A_\theta (p_i^1, T_i^1) = [f^\theta (p_i^1, t_i^1)] \quad , A_{||}(p_i^1, t_i^1) = \min(l^1, l^2) \quad , A_\perp(p_i^1, t_i^1) = l_\perp$$

The function $\theta (p_i^1, t_i^1)$ represents the smallest intersection angle between the lines (p_i^1, t_i^1). The function f is a penalty nonlinear function that ignores smaller angles and penalizes greater ones. It can be used as the penalty function. Then the parallel and perpendicular distance are calculated with distance formula. Finally, the distance between the two segments is calculated.

The main strength of this distance measurement is that measuring the parallel distance, we choose the minimum distance between edges. It helps when line edge is strongly detected and the other one not. It avoids shifting feature points. However, it also has a weakness; briefly, it can confuse lines and not detect similarities that should be detected. In order to avoid errors, another measurement can be made. We can add a new parameter to the Hausdorff distance, comparing the number of lines in the images is a good method to exclude images. After measuring the parallel distance we will calculate the golden ratio with the help of parallel distance we have calculated. The golden ratio of the with the help of distance of line will give the exact ratio between the position of different face parts and we can recognize the face moraccurately and competently.
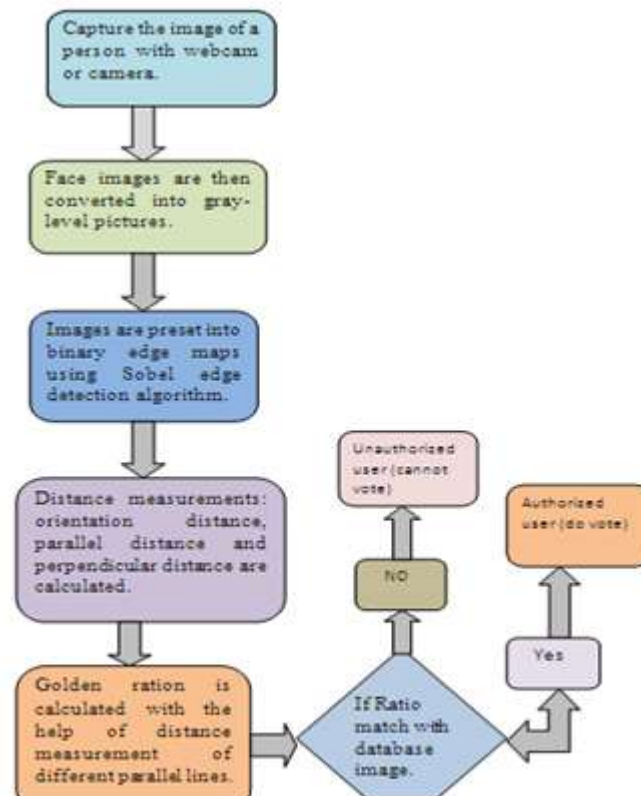
Figure1: Process Of Face Detection

VI. CONCLUSION

In this paper we have applied a technique for improving the status of voting system to present a highly secure Online Voting System.The security level of our system is greatly improved by the new application method for each voter. The user authentication process of the system is improved by adding face recognition in an application which will identify whether the particular user is authenticated user or not.The recognition portion of the system is secured as each person will have a different golden ratio.This system will preclude the illegal practices like rigging. Thus, the citizens can be sure that they alone can choose their leaders, thus exercising their right in the democracy. The usage of online voting has the capability to reduce or remove unwanted human errors. In addition toits reliability, online voting can handle multiplemodalities, and provide better scalability for large elections. Online voting is also an excellent mechanism that does not require geographical proximity of the voters. Thus,we will be able to change the face of today's voting system by making it corruption less. It will give a fair chance to every leader to win on the basis of his/her talent, ability and not on the basis of strength of money, powerand rule. The scope of the project can be raised to the society,institutional or nation level by using a more secure and efficient database management system that could handle hundreds, thousands or billions of users.

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