Online Voting System using Face Recognition and OTP

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Abstract:- The fundamental goal of this system is to provide a voting process that will aid in reducing fraud in manual voting systems as well as earlier iterations of online voting that used a webcam for face recognition and OTP creation. Here, we provide a system with many layers of verification, including face verification and OTP verification with validation data, to guarantee the device's dependability. Each voter can only access the system after being identified and verified against the provided database of registered voters. Afterwards you will be able to choose your favourite one. The technique generates pseudorandom results, enhancing security.

Keywords:- Face detection and Recognition, One Time Password (Two- Factor authentication).

I.   INTRODUCTION

Why can't individuals vote online in federal and state elections with the same security and ease that they do when doing their banking or purchasing books, given how far e-commerce has come? In an online voting system, ballots must be addressed, obtained, marked, delivered, and counted using computers. Election data is generally recorded, saved, and processed as digital information. As a result, voter identification and authentication methods are crucial for more secure platform mechanisms to get around the client vulnerabilities of the voter's voting device. Voters can cast their ballots online from anywhere in the state or abroad. To protect voting platforms and combat fraudulent voting, a number of voter identification and verification procedures were established.

Many of these methods include: Using biometrics and steganography, a highly secure online voting system offers multiple layers of security. But, it was expensive and not very secure. A Facial Detection and Recognition system (FDR) and One Time Password (OTP) are employed as authentication methods for online voting in the proposed system. Online voting uses FDR (Face Detection and Recognition) as an authentication method. The FDR system recognises faces from e-voting databases and faces from webcam photos to identify faces and determine whether the two images are identical. If a match arises, confirm that the rules of voting and the law have not been broken before allowing him to cast his ballot. The One Time Password (OTP) idea is used for second level authentication. The OTP concept highlights that the method generates pseudorandom

output each time the user tries to log in, increasing security. A password known as an OTP is one that is only good for one login session or transaction. It makes use of strong passwords generated by powerful hashing algorithms. Furthermore, by encrypting passwords to be used only once, reusing passwords is prohibited.

Even though our nation has made progress in digitalizing India, the voting system still has major shortcomings. For the existing method, voting can only be registered if people visit the polls. During the time of voting, voter's name is listed on the list of his/her respective area. They are unable to cast a ballot further than the voting card's listed address. However, voters who have relocated to other locations are unable to do so physically. The vulnerability of this system is demonstrated by the current Corona Virus epidemic. Due to the requirement that the voter be there in person to cast their ballot, this could result in a failure of social distance throughout the voting process.

II.   LITERATURE SURVEY

Many investigations have been conduced to distinguish the exact looks that are connected with melancholy. A review has been led for figuring out Activity Units (AU) connected with various feelings showed by discouraged patients [1]. The presence of AU12 which is related with feeling grin was low in exceptionally discouraged patients. The presence of AU14 connected with feeling hatred and AU10 connected with feeling disdain was likewise present alongside AU12. The video information for this study was gathered through clinical meetings of discouraged patients as well as non-discouraged patients. The outcomes showed that AU14 connected with feeling disdain demonstrated generally exact for misery location.

Highlights connected with eye development to comprehend the eye action of the discouraged and includes connected with head present development to comprehend the head development conduct of the discouraged has been finished in [2]. The arrangement of the elements connected with eye movement showed higher importance in recognizing extreme discouragement. Identification of despondency from facial highlights should be possible by estimating 'Multi-Scale Entropy' (MSE) on the patient meeting video. [4] MSE assists with figuring out the varieties that happen across a solitary pixel in the video. The entropy levels of profoundly expressive, non-discouraged patients were high. The entropy

level was low for discouraged patients who were less expressive of their emotions.

Another review introduced a method which utilizes investigation of facial calculation alongside examination of discourse for wretchedness recognition [3]. This work says that the articulations related with gloom are viewed as in lower frequencies in more modest term recordings. Subsequently longer time recordings should be caught for powerful misery discovery. Datasets are likewise made by catching recordings of patients while noting clinical meetings. Interviews recorded were for both for discouraged patients as well as non-discouraged patients. Recordings are additionally recorded from the analysis of misery till the patient has moved along. [1][4]. Studies showed that there is a huge connection between facial highlights and vocal way of behaving of the discouraged [5].

In specific examinations, patients were given wearable devises to screen their actual wellbeing, close to home way of behaving and social connection for distinguishing wretchedness [6]. A few specialists have gathered datasets by showing people film-strips to catch the looks of subjects watching them. Information is likewise gathered by giving an undertaking of perceiving pessimistic and positive feelings from various facial pictures [7]. As opposed to examining a video for melancholy location outline by outline, improved results have been got for recognition of misery when the video is thought of as overall. [8] For this the patient's face area is first instated physically. Then KLT (KanadeTomasi-Lucas) tracker is utilized to follow the face all through the video. The KLT tracker separates bend data from a picture, for example for a miserable articulation the sides of the mouth would be calculated down. Video based approach showed more precision as it sums up the face district all the more precisely thus the moment developments inside the face locale are additionally considered for discouragement detection.

The understudies experiencing discouragement would show less mindfulness in homerooms. Assuming the understudies' feelings are planned to the exercises done in homeroom, their profound state can be seen if they are discouraged or not, and in view of this the educator can help the understudy by focusing closer on that specific understudy. [11] Assuming various countenances in a similar scene show a similar positive or negative feeling, it would assist with understanding the entire circumstance of the scene, whether subjects in the scene are cheerful or whether something wrong is going on in the scene [12].
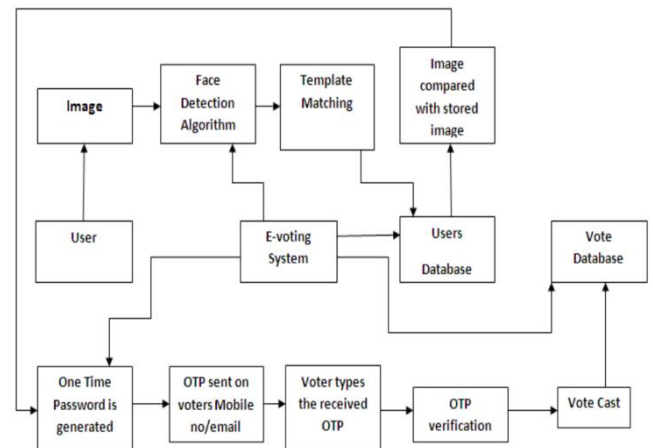
III. PROPOSED SYSTEM

Fig: - System Architecture

The voter's image is captured using a webcam. This image is used as an input for the face detection algorithm. The CNN algorithm is been used for detection of face. This image is sent to the server side for verifying the user. This is achieved by template matching where the image received from the user side is compared with the image stored in user database at the time of registration. Once the user is verified, a One Time Password is generated and sent to the user's email id/sms on his cell phone. After the user enters the OTP, he can cast his vote. The vote cast by him is then stored in the database and is taken for tallying purpose after the deadline for voting process.

➤ *Modules*

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- Voter(User): Here Voter is the important person to vote the particular candidate. The voter is verified user authorised by admin on registration process.

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- ML Process: Machine learning process is for training the voter faces to recognition voting time to vote the candidate.
- Face and OTP Verification: The proposed architecture explains that here 2 ways authentication process on voting time; one is face recognition and second is OTP verification.

➤ *Convolutional Neural Network*

Step 1: Convolution Operation
The convolution operation is the first component of our strategy. We will discuss feature detectors in this phase because they essentially act as filters for neural networks. Also, we'll talk about feature maps, their parameters, the levels of pattern detection, and how the results are laid out.

Step 2: Pooling
We'll discuss pooling in this section and learn exactly how it typically operates. Yet max pooling will be the central concept in this situation. But, we'll discuss a variety of strategies, including mean (or total) pooling. This section will conclude with an interactive visual example that will undoubtedly clarify the entire idea for you.

Step 3: Flattening

Here is a basic explanation of the flattening procedure and how, when using convolutional neural networks, we get from pooling to flattened layers.

Step 4: Full Connection

Everything we discussed in the previous section will be combined in this section. By understanding this, you'll get to visualise a broader picture of how Convolutional Neural Networks operate and how the "neurons" that are finally formed learn the classification of images.

IV. CONCLUSION

The proposed system suggests the solution to uses face identification and machine learning to enable voters to register and cast ballots from any place, regardless of where they are. This technique offers security and prevents one person from casting multiple votes. With the ability to cast our votes from numerous locations, this approach may be more dependable. It might also reduce the amount of work, human resources, and time needed.

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