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An Electronic Voting System Using FingerPrint Authentication

Mr. Abhijeet Chavanke[1], Miss. Pritika Somase[2], Miss. Jayshri Avhad[3], Miss. Pranjali Salve[4]

Prof. A.S. Dalvi[5]

Student, Computer, SND COE & RC, Yeola, Nashik (423401), Maharashtra[1]

Student, Computer, SND COE & RC, Yeola, Nashik (423401), Maharashtra[2]

Student, Computer, SND COE & RC, Yeola, Nashik (423401), Maharashtra[3]

Student, Computer, SND COE & RC, Yeola, Nashik (423401), Maharashtra[4]

Guide, SND COE & RC, Yeola, Nashik (423401), Maharashtra[5]

Abstract: The electronic voting machine verifies voters using finger print scanners. A voting system that uses fingerprint identification eliminates the requirement for the user to carry an ID that provides the necessary information. Web-based system enables voter to cast their votes from anywhere in the world. Online website has a prevented IP address generated by the government of India for election purpose. People should register the name and address in the website. Election commission will collect the fingerprint and face image from the voters. The database or server will store the images. , keeping track of voter decisions is not a difficult task, however, in situations where there are hundreds of thousands of voters, keeping a precise record of voter decisions becomes important and more difficult. The advancements in blockchain technology provide a potential solution to the record-keeping problem of contemporary voting procedures, as blockchain technology by design, excels in applications where multiple users are working on immutable data. this project provides the best solution to avoid false voting. The electronic voting machine was connected with the computer. The computer is having the full database list of the peoples who are having the eligibility to vote. For each polling, the corresponding person identity was deleted. So it avoids false voting. A touch screen is used, so it is user-friendly.

Keywords: Voter ID, Fingerprint module, Pattern Matching, Machine Learning, Image Processing..

I. INTRODUCTION

This document is a template. An electronic copy can be downloaded from the conference website. For questions on paper guidelines, please contact the conference publications committee as indicated The current system has a lot of loopholes like the possibility of duplicate votes, rigging EVMs, faking the count, all of which tampers the true meaning of democracy. Electronic machines for conducting elections in most of the places, which is quite time-consuming, energy-consumption and should be done at an assigned place. The machine has to be transported and monitored with more man power and it is expensive. The system proposed here is a solution that addresses all the aforementioned concerns. Blockchain technology has been gaining popularity in recent years, influencing various lines of business while proving to be versatile yet increasingly secure, In simple terms, the premise of the technology is to have information stored on a distributed ledger made up of various blocks of information which are all linked to one another. In addition to overcome commonly encountered election errors, electoral vote counts are done in the real time that by the finishes of all election process of elections day, the results are automatically display. The election process can be easily enhanced with some features base on the acknowledgements and requirements of different nations around the world.the software reliability, hardware reliability and accuracy, the processes and techniques deployed within the techniques, and the checking of all hardware, software, and protocols involved.

Elections are the foundation of any democracy and the true spirit of democracy lies in people choosing their own government. But, the way elections are conducted right now in our country has defects and loopholes, which are being used for the advantage of the contestants and political parties. The current system has a lot of loopholes like the possibility of duplicate votes, rigging EVMs, faking the count, all of which tampers the true meaning of democracy. Electronic machines for conducting elections in most of the places, which is quite time-consuming, energy-consumption and should be done at an assigned place. The machine has to be transported and monitored with more man power and it is expensive. The system proposed here is a solution that addresses all the aforementioned concerns.

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Through the Smart voting system that uses facial and fingerprint recognition, people who do not live in the same place or the old or someone, who cannot wait in long queues for a long time will be benefitted. The voter can comfortably vote from anywhere and the possibility of duplication of the vote is also reduced through the same. This Online Voting System uses Image processing to detect voter's faces by using haar Cascade Algorithm. To exact mouth, face and eyes from full face and compared with face image in database.

Fingerprint image are matched by calculate the Using CNN Deep learning. CNN reduced the computational time for processing the large size image. The training of ANN is taken long time. CNN having two stages, future detection and Classification of image.

Face and fingerprint image features are exacted and compared with the database. When it matches .The voter will allow to vote. Voter can vote to any leader in election. After it disable the other leader slots. The votes are stored in the server and the counting is finished at end of election. Clint and server commission is important for the system. The IP address is given from the government website for the election

II. LITRATURE SURVEY

SMART VOTING SYSTEM USING FACIAL DETECTON: This paper discusses an approach which is more accessible,secure and efficient than the existing system which has many defects such as lengthy process, time taking, not being secure enough, bogus voting.Unique features like the distance between the eyes and eyebrows never change regardless of aging. The designed system is also less time-consuming, inexpensive and a hassle-free way of conducting the election process, making smart voting a better way to vote.

VOTING SYSTEM USING FINGERPRINT RECOGNITION: Fingerprint is Recognition using sensor and save in database .Once the biometric image is read and this information will be sent to the web application through the microcontroller's serial port. Input image is compared with the existing image in the database or server sends the message and displays it on the LCD confirming the voter's identity. If not Matching, it displays the same as not eligible through LCD.

ONLINE SMART VOTING SYSTEM USING IMAGE PROCESSING AND CNN: tracts fingerprint features from the vicinity of minutiae points (when available) for performing fingerprint matching. We performed the experiments using two dirent alignment strategies to verify the effect of alignment, with and without minutiae, on the type of fingerprint features extrcted by the proposed CNN. We also repeated the experiments using a modified All-CNN model and confirmed the significance of the minutiae points for fingerprint matching regardless of the choice of CNN architecture used for fingerprint matching.

III. PROPOSED SYSTEM

The proposed online vote casting machine with bio-metric authentication is an digital vote casting machine which seeks to utilize the individuality of the trivia of the human fingerprint and face reputation to in addition beautify the extent of con- sider and confidentiality of the citizens with inside the machine in addition to making the real technique as universally available as viable which could be accomplished via the deployment at the Internet. It is predicted to clear up the 2 crucial troubles going through body of workers elections carried out with inside the PAN India.For the voter registration and authentication strategies which might be executed at the module, the voter is predicted to have his or her fingerprints captured, Face reputa- tion and the trivia extracted this is saved at the database.

This is executed to save you the incidence of more than one registrations or identity. Thus, all through the authentication length, citizens are predicted to go through an identical verification their fingerprint samples and Face reputation in opposition to the values saved with inside the database that is diagnosed via the usage of a completely unique voter identity wide variety assigned all through registration. The challenge turned into capable of obtain a excessive fulfillment price with inside the use for engaging in elections because it turned into capable of stamp more than one registrations with the aid of using citizens via the mixed use of each the specific voter identity wide variety and their specific fingerprints. This efficaciously solved all questions which could rise up on eligibility of citizens and accreditation hiccups.

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IV. SYSTEM ARCHITECTURE

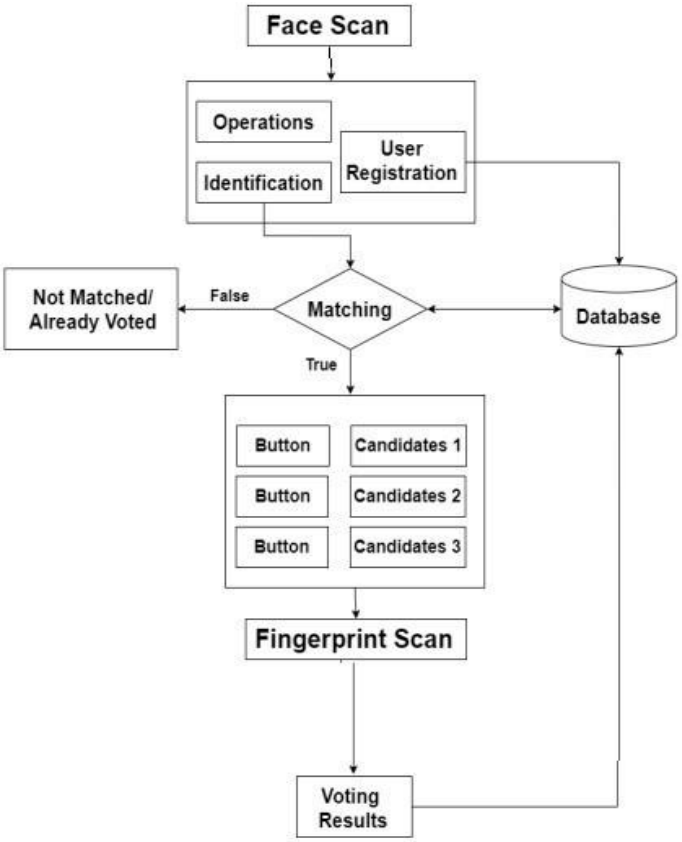

Fig: System Architecture

V. METHODOLOGY

A. Dataset

For this project we have used public dataset for plant leaf disease detection called Plant Village curated by Sharada P. Mohanty et Al. The dataset consists of 87000 RGB images of healthy and unhealthy plant leaves having 38 classes out of which We have selected only 25 classes for experimentation of our algorithm.

B. Data preprocessing and feature extraction

Data preprocessing is important task in any computer vision-based system. illustrates the preprocessing steps for each image. To get precise results, some background noise should be removed before extraction of features. So first the RGB image is converted to greyscale and then Gaussian filter is used for smoothening of the image. Then to binaries the image, Otsu's thresholding algorithm is implemented. Then morphological transform is applied on binarized image to close the small holes in the foreground part. Now after foreground detection, the bitwise AND operation on binarized image and original color image is performed to get RGB image of segmented leaf. Now after image segmentation shape, texture and color features are extracted from the image. By using contours, area of the leaf and perimeter of the leaf is calculated. Contours are the line that joins all the points along the edges of objects having same color or intensity. Mean and standard deviation of each channel in RGB image is also estimated. To obtain amount of green color in the image, image is first converted to HSV color space and we have calculated the ratio of number of pixels having pixel intensity of hue (H) channel in between 30 and 70 and total number of pixels in one channel. Non green part of image is calculated by subtracting green color.

5.3 Feature selection

Feature selection is an important step in all machine learning problems. In this project we are selecting the features on the basis of correlation of variables with target variable. The correlation of feature green part of leaf and green part of

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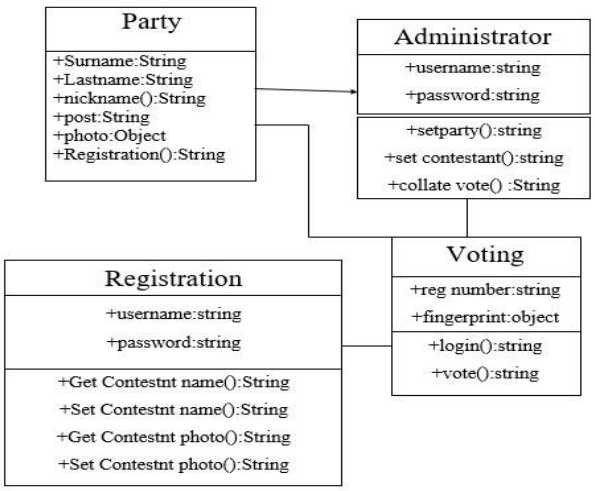
leaf is very high which means both variables are dependent on each other. So we have dropped one of them . Now for apple disease prediction, less correlated features such as green channel mean, red channel standard deviation, blue channel standard deviation, dissimilarity and correlation will not contribute too much in model development. So, we have dropped these variables also. After feature selection, the data is now parsed to machine learning classifiers to find the patterns in the data.

5.4 Classification Algorithm

Random forest classifier has been used for classification or detection task. It is the part of ensemble learning, where the output is predicted from multiple base estimators. Generally, to achieve higher accuracies, decision trees are used. But they are prone to overfitting problems. So, to overcome this issue, random forest classifier is used which is a combination of multiple decision trees. Each tree is trained by using different subsets of the whole dataset, this can reduce the overfitting and improves the accuracy of the classifier. We have slitted the dataset into train set (80%) for fitting the model and test set (20%) for validation. K-fold cross validation technique is implemented to find the accuracy score. This method can find the accuracy on whole dataset without any bias. After fitting the data, f1 score, precision, recall, accuracy has been calculated.

VI. CLASS DIGRAM



VII. APPLICATIONS

1. Panchayat level election.
2. Society level elections.
3. Conduct opinion polls during annual shareholders meeting..
4. Conduct general assembly elections where number of candidates are less than or equal to eight in the current situation, on a small scale basis.

VIII. MATHEMATICAL MODEL

- S = (I,O,F)

Where,
S: System

- I= { VL , CH } are set of Input

Where,

– VL :Voter Login
– CH : Choice

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- F = { A , FR , VP, VC} are set of Function

Where,

– A: Authentication
– FR :Face Recognition
– VP: Vote Processing
– VC :Vote Counting

- O = { N, VR} are set of Output

Where,

– N: Notification
– VR: Voting Result

Success Condition : Valid Voter ID,Valid Choice.
Failure Condition : Invalid Voter Id , Invalid Face, No Internet Connection.

IX. RESULTS ANALYSIS

Fig: Input images

Fig:Fingerprint Sensor

X. ADVANTAGES

1. User Friendly User Interface.
2. Higher level authentication.
3. Unique authorization.
4. Stop fake voting .
5. Easy to calculate result.
6. All data present of previous year election results.

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CONCLUSION

By measuring the accuracy of previous system, we found that the proposed system is more secure and efficient than the existing system.Time taking, vote is less than the old system, bogus voting. Unique features like the distance between the eyes and eyebrows never change regardless of aging. Fingerprint features cannot be changed, but they can same for two members. But we can detect the database im- age which voter fingerprint is that using Tenprint images of minutiae records .The designed system is also less time-consuming, inexpensive and a hasslefree way of con- ducting the election process.

FUTURE WORK

Our System only on supervised models on text have shown not to be enough in all the cases. in order to solve this problem,most of the research focuses on addi- tional information such as author information. i think the most successful approach. the purpose of model would then to be extract information for the text and verify information in the database this approach that knowledge base would need to be constantly and manually update to stay up to date.

REFERENCES

[1] SMART E-VOTING SYSTEM WITH FINGERPRINT AUTHENTICATION USING ARDUINO; Shaikh Rijwana A.1, Lavhe Bhagyashri B.2, Wagh Sayali S.3, Shinde Rekha S.4, Prof. Bobade Archana M.5;2020.
[2] Smart-Voting using Biometric “International Journal of Emerging Technology and Advanced Engineering, 4(6) Vishal Vilas Natu, 2019.
[3] “Smart Voting System using Facial Detection” IEEE Journal, Chandra Keerthi Pothina, Atla Indu Reddy April 2020.
[4] “Biometrics Based Secured Remote Electronic Voting System”Samarth Agarwal, Afreen Haider, IEEE Conference, Sep 2020.
[5] ”Block chain Based Secure Voting System Using Lot”,Suresh Kumar, Tamil Selvan G M, IEEE Journal, JAN 2020.
[6] “Fingerprint Liveness Detection using an improved CNN with image Scale Equalization” IEEE Journal ,Chengsheng, Yuan, Zhihua, Xia, 2019.
[7] “Moscow’s online voting system has some major vulnerabilities, allowing votes to be decrypted before the official count,” Meduza, 01-Jul-2020.
[8] “Efficient, Coercion-free and Universally Verifiable Blockchain-based Voting,” T. Dimitriou, Computer Networks, vol. 174, p. 107234, Jun. 2020.
[9] , “Blockchain Enabled Online-Voting System,” A. Shah, N. Sodhia, S. Saha, S. Banerjee, and M. Chavan ITM Web of Conferences, vol. 32, p. 03018, Jan. 2020.

