

CONFIDENTIAL E-VOTING SYSTEM USING FINGERPRINT AND FACE DETECTION

MR.Ganesh Kadam, Sanyukta Ostwal, Shubham Sagar, Vaibhav Wagh, Pravin Rasal, Pavan Burle

Department of Computer Engineering,
G.H.RAISONI INSTITUTE OF ENGINEERING AND TECHNOLOGY, WAGHOLI, PUNE.

Abstract : All the world Voting is one of the fundamental rights of every citizen/people of an all country. By voting the citizen to the eligible candidate to elect them for to solves problems. Now days all country used new technology to voting every citizen to the best candidate. The voting system has a various voting techniques used such as Paper Ballot, E-Voting System (Electronic Voting System), Internet Voting System, SMS and Miss Calls Voting System. In this paper we implement location free voting system to the voters who are not possible to the come at voting location (hometown). Here we propose a system that includes multiple layers of verification to ensure the reliability of the device which includes face verification and then OTP verification with validation data. Each voter can access to the system only when being recognized and checked with the given database of enlist voters. Once the corresponding face and thumb is matched with the information provided, the voter will be allowed to proceed for choosing their preferred candidate from the panel.

Key Words: Image Processing, Python, Voting System, Face Recognition, MySQLBiometric Device., OTP.

I. INTRODUCTION

The Election is the important for every country to make county security, peace and healthy environment. In election time different party candidate standing in front of the citizen to the particular area to won the election. Today voting is the manual process and slow process to count the each and every vote, like voting commission send the electronic ballot box will send the every city where the both is allocated and collect the vote every citizen. So our proposed system solves the existing system problem based on online voting system to take the voting online from any location. So it is a time consuming process and also requires a lot of resources to conduct voting process. In this paper we have proposed online voting system to cast the vote using face recognition and OTP. The information about the OTP and Face is passed to the server unit for the further verification. Then the server checks for the data from the database and compares that data which is already existing in database. If the data matches with the already stored information, the person is allowed to poll the vote. If not, a message is displayed on the screen and therefore the person is not allowed to poll the vote. For voting representatives are appointed by electorates. In current scenario voter needs to show his/her voter ID card to cast the vote on the booth. So this process is time consuming as the voter ID card needs to be get verified by the officials. Thus to speed up the voting process and avoid such type of problems, we have proposed the new system.

II. LITERATURE SURVEY

In [1], This paper represents frameworks of blockchain for the E-voting system. This implementation can be used for small scale elections such as board rooms or inside corporate houses elections. Smart contract from Ethereum is used for this implementation. The idea behind this implementation is to combine the technology of blockchain with the homomorphic encryption and secret sharing schemes for the decentralized voting applications safe from trusted third party. It gives the public and transparency voting process which protects the anonymity of voter's identity and the privacy of data transmission and verification of ballots during billing phase.

In [2], This paper describes the construction and design of voting machine using ATMEGA 32 microcontroller which has security of three extra layers. EVM takes a lot of time for the process of voting using ballot papers. So considering to the amount of time, manpower to be saved for extremely fast and reliable. So here implementation of the system is in such a way that voting secrecy is maintained without using ballot paper. VVPAT is currently used for voting machine which is expensive than EVM. EVM gives 100% proof of tamper, where results are just a click away. But this EVMs can be tampered easily by changing the hardware connections. So this paper proposes a three layered extra security.

In [3], Arduino and Finger print scanner is used to implement the system which identifies each voter, also count votes and avoids fake votes. In this system voter is identified using FPS which detects if a person is a registered or not and also it denies for the voter to cast the second vote.

In [4], this system the voter just needs to have a Aadhar card number and a smart phone which can scan the barcode implemented on the system. The user can vote on any location as it is totally online based application. This system creates its own voting ballot. The encryption of vote data is at the user's end and decryption is at the local administrator end. This makes the system more authenticated and secure for voting.

III. PROPOSED SYSTEM

Description

Initially, user needs to register in the system by providing information such as Aadhar number, Mobile number, City, Age, Password etc. This information is stored in voter dataset. The system takes input image from the user at the time of registration through webcam. This image is stored in face dataset for template matching. Then for casting the vote, user needs to login to the system by entering Aadhar number and Password. After this user needs to answer security question. If it gets verified successfully the user moves on to the next page where

he/she can select the candidate to cast the vote. After clicking the vote button the webcam gets on and verify face of the user from the prepared dataset . After successful verification of face it will send OTP on user’s registered mobile number. The OTP gets verified and casting of vote is successful. At the end Admin releases the result of voting process.

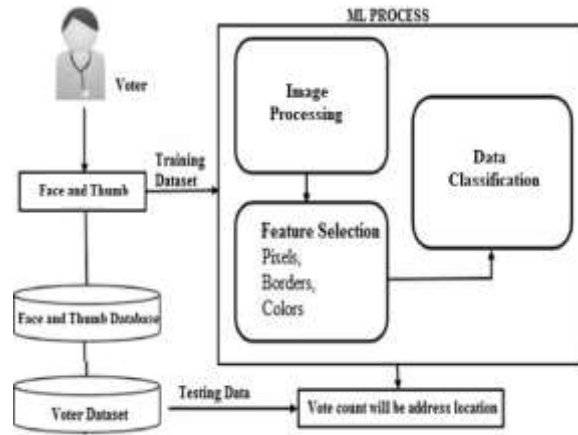


Fig -1: Face Detection System Architecture

Modules

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

ML Process: Machine learning process is for training the voter faces to recognition voting time to vote the candidate.

Facts and OTP Verificaion: The proposed architecture explains that here 2 ways authentication process on voting time; one is face recognition and second is OTP verification.

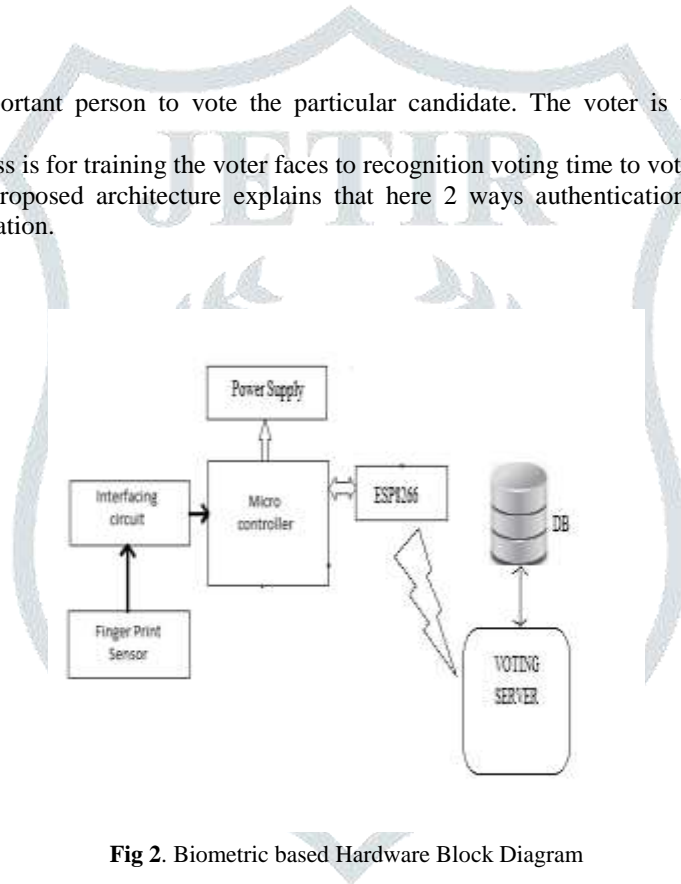


Fig 2. Biometric based Hardware Block Diagram

System flow:

1. All records of voter can maintain.
2. Then verify his thumb using biometric device and detect with help of IoT processing.
3. Also, identity is according voter data.
4. After, he is allowed to cast his vote by pressing the corresponding button on the machine.
5. Finally, corresponding vote will be send to the respective area where the voter will be registered by online.

IV. ALGORITHM USED

1. Local Binary Pattern Histogram

Local Binary Patterns (LBP) is a detectable descriptor style which is used for the classification of Computer Vision. Texture Spectrum model which was proposed in 1990 from which LBP became a specific case. LBP was represented in the year 1994 for the first time. So it has been used as a classifying texture for solid elements. Improvement of the execution of identification on some datasets is done when LBP gets combined with the descriptor histogram of oriented gradients(HOG). Figure 1 shows the LBPH algorithm flowchart diagram.

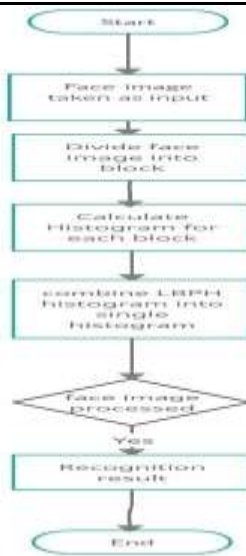


Fig -3: LBP-H Flowchart

2. Haar Classifier Algorithm:

Haar-like features is the core basis for Haar classifier object detection. Instead of using the intensity values of the pixel, it changes the contrast values between adjacent rectangular groups of pixels. The relative light and dark areas are being determined using contrast variances between the pixel groups. Haar-like feature is formed by two or three adjacent groups with relative contrast variance. Scaling of Haar features can be done easily by increasing or decreasing the size of pixel group, which allows features to be used for various sizes by detecting the objects. Haar-features which distinguishes an object are analysed with the highest probability with sub images which allows the cascading of classifier. It allows accuracy of a classifier to vary only once. Increasing of false alarm rate and positive rate and decreasing of number of stages can be done. This algorithm has achieved 95% accuracy rate for human face detection by using 200 simple features which was experimented by Viola and Jones. Haar classifier cascades are to be trained first for detection of facial features of human such as mouth, eyes, nose. As for the training of classifier Haar feature algorithm needs a gentle AdaBoost algorithm along with it. But as Intel has developed an open source library which makes it easy for the implementation of computer vision related programs known as Open Computer Vision library(OpenCV).

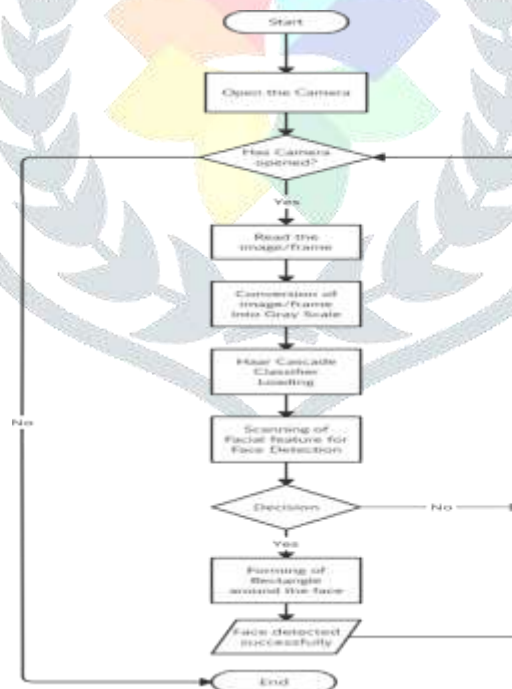


Fig -4: Haar Classifier Flowchart

V. RESULTS

Home page:



VI. CONCLUSIONS

Our proposed solution is machine learning based with face detection which allows the voter to register and he/she can vote from anywhere irrespective of the location. This system provides security and also avoids casting of the multiple votes by same person. This system is more reliable in which we can vote from multiple locations. It also minimizes work, human requirements and time resources.

VII. REFERENCES

- [1] Prof. KritiPatidar, Prof. Swapnil Jain “Decentralized E-Voting Portal Using Blockchain. ”
- [2] Prof. Shashank S Kadam, Ria N Choudhary, SujayDandekar, DebyeetBardhan, Namdeo B Vaidya “Electronic Voting Machine with Enhanced Security ”
- [3] RahilRezwan, Huzaifa Ahmed, M. R. N. Biplob, S. M. Shuvo, Md. AbdurRahman “Biometrically Secured Electronic Voting Machine ”
- [4] Z.A. Usmani, KaifPatanwala, MukeshPanigrahi, Ajay Nair “Multipurpose platform independent online voting system.”
- [5] Madhuri B , Adarsha M G , Pradhyumna K R, Prajwal B M “Secured Smart Voting System using Aadhar” in IEEE,2017 2nd International Conference On Emerging Computation and Information Technologies (ICECIT).
- [6] Karishma Varshney , Rahul Johari , R. L. Ujjwal “Remote Online Voting System using Aneka Platform” in 2018 7th International Conference on Reliability, Infocom Technologies and Optimization (ICRITO) (Trends and Future Directions), August 29-31, 2018, AIIT, Amity University Uttar Pradesh, Noida, India.
- [7] Smita B. Khaimar, P. Sanyasi Naidu, Reena Kharat ” Secure Authentication for Online Voting System” in IEEE, 2019 International Conference on Computing Communication Control and automation (ICCUBEA).
- [8] Bhuvanapriya.R, Rozil banu.S, Sivapriya.p Kalaiselvi.V.K.G “SMART VOTING” in 2019 Second International Conference On Computing and Communications Technologies[IEEE]