

Attendance Management System using Face Recognition And Body Temperature Sensing

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Abstract:

In this digitalized world, industries, various companies as well as educational organizations are using personal identification approach like RFID, fingerprint, etc. Out of all these strategies face recognition is most efficient one. It saves time. It has many applications in attendance management systems as well as in security systems. A camera is basic requirement for this project. If a person enters in a room, camera takes a snapshot and with the further preprocessing like face cropping the face database is collected to recognize the faces of student. Initially the system is trained with faces which are known as student database. Then it compares the image with dataset and if it matches the attendance will directly stores into any storage device with respective person's name and ID. OpenCV algorithm is used with image processing framework. Our approach is- face detection, face preprocessing, database creation, face training, face recognition, attendance database and body temperature sensing. And due to Covid19 situation we measure the body temperature of each student using MLX90614.

Keywords: Personal Identification, OpenCV, Face Detection, Face Recognition, Body temperature sensing

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I. INTRODUCTION

The modern attendance machine is manual. It wastes a large amount of time each for instructors and students. The teaching hour for the students is increased if attendance is taken by this face recognition system. There are nevertheless possibilities for proxies with inside the magnificence whilst attendance is taken manually. Manual attendance continually a have a value of human error. Face is the vital recognizable evidence for any human. So automating the attendance system will growth the productiveness of the magnificence. To make it to be had for each platform we've got selected the Raspberry pi three for face detection and recognition. A Webcam is attached to the Raspberry Pi module. Face identity separates faces from non-faces and people countenances that may be perceived. In this system we can take the attendance using face recognition which recognizes the face of each student during the class.

The system provides features such as detection of faces, extraction of features, and detection of extracted features and analysis of student's attendance. The accuracy in detecting and recognizing faces will be more due to use of larger number of features (shape, color, LBP, wavelet, Auto correlation, etc.) Of the face.

This paper explains about hardware design, software design, implementation and conclusion of the system.

II. PROPOSED SYSTEM:

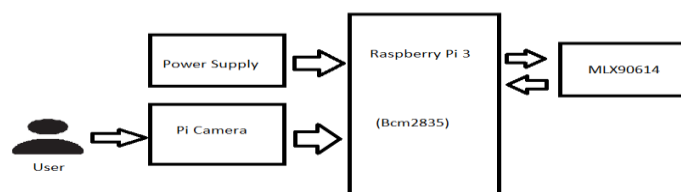


Figure 1

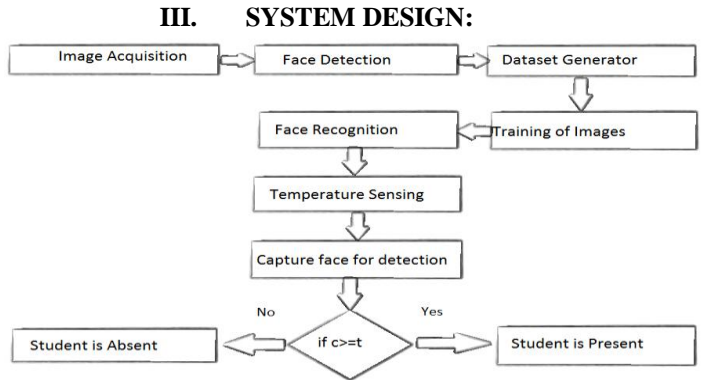
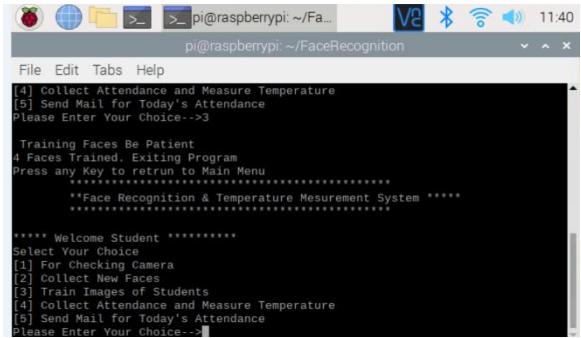


Figure 2. Flow chart

The above diagram shows how the flows in the system. Images from a live stream are passed as input to the system. These images are converted to grayscale. Data set is created, and then training of the images is done. Comparing with newly generated data set face recognition is done with recording student’s attendance.

IV. IMPLEMENTATION OF THE SYSTEM

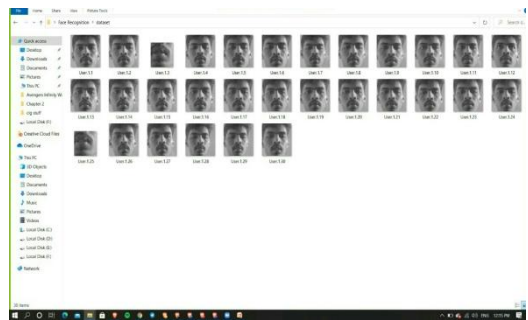


A. Capturing the image

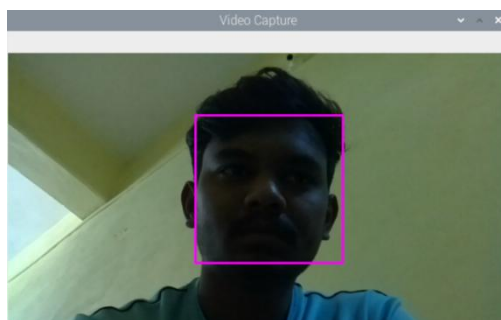
The camera module is set in a location where the individuals enter into college or office and video is taken inside the distance less than 5 meters. A camera is utilized for taking video which contains numerous outlines from which any one of the frames can be utilized for confront acknowledgment and stamping the attendance.

B. Creating database

As a biometric strategy has been chosen for usage, it is significant for enrolment of each individual whose participation ought to be taken. Here face of each person is captured and put away in a reasonable database which includes the name of a person and other qualifications like unique ID number. Here numerous tests are taken for a single person with different lighting conditions.

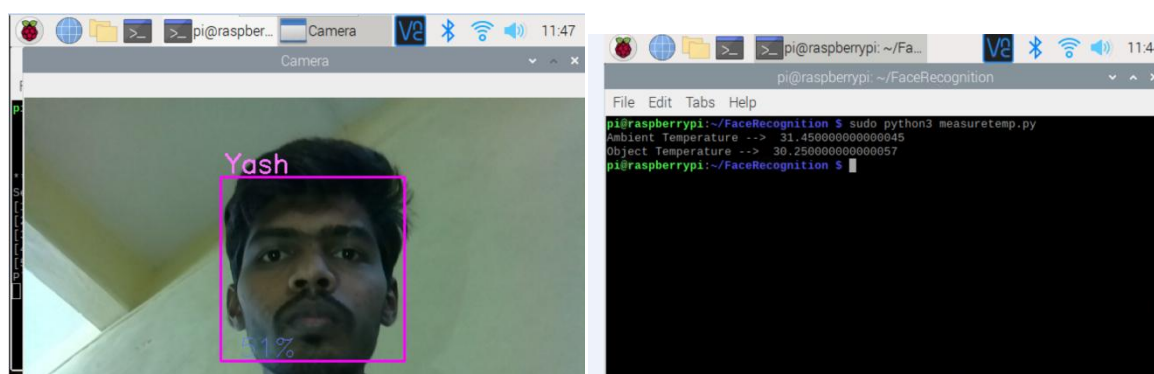


C. Detecting Faces



Choosing an effective algorithm for face acknowledgment or recognition is basic in this proposed work. There are numerous face detection algorithms accessible in OpenCV such as Eigen faces, Fisher faces and Neighborhood Binary Pattern Histograms. Considering the require for the real-time acknowledgment an algorithm which has-been selected is the Haar Cascade Algorithm for face detection and acknowledgment. It is accessible in OpenCV source library.

d. Face Recognition with Temperature Sensing



Within the comparison module, face recognition handle is carried out. When a face is identified by the camera it checks the comparing values of the current obvious face with values put away within the record. In the event that the values are a coordinate, at that point the face is recognized and the title related with that face is shown and with the help of MLX90614 sensor body temperature is sensed.

B. Database

Database holds the name and ID of all people whose attendance will have to be marked. As and when a face is detected and matched with the existing records, the attendance and body temperature is automatically updated in the database

V. CONCLUSION

In this system we have implemented an attendance system for a lecture by which teachers can record student's attendance. It spares time and exertion. The total framework is executed with OpenCV and raspberry pi. This attendance system shows the use of facial recognition and detection method for the student attendance management. The result of the test appears the discovery and Acknowledgment portion. This strategy can moreover distinguish numerous faces and can be effortlessly utilized in a classroom. At that point the identified faces are at that point confirmed with confront database. The accuracy of confront acknowledgment is nearly more than 90% .In Covid19 situation body temperature sensing is important in terms of student's safety, so temperature sensing is done.

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