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SMART ATTENDANCE MANAGEMENT SYSTEM USING FACIAL RECOGNITION

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Abstract: In the present-day system student's attendance is recorded manually. It requires a substantial amount of time both for teachers and students. There is still a probability for proxies in the class when attendance is manual. The main motive of this project is to develop an attendance management system that is completely automated and that uses the face of students as the feed input. To implement the above mechanism a Raspberry Pi and a webcam is used where the webcam is connected to the Raspberry Pi module. Face images of the students are recorded using the webcam and stored for further use. Attendance is stored in a file and the same file is sent to the authority. Python and its libraries are used for the implementation of all modules in this project.

Keywords: raspberry pi, webcam, python and it's libraries

INTRODUCTION

Each association requires a strong and stable framework to record the attendance of their students. also, every association have their own strategy to do as such, some are gauging participation physically with a piece of paper by calling out to them during lecture hours and some organisations adopted biometrics framework, for example, finger impression, RFID card per each user, Iris framework to record the participation. The typical strategy of calling the names of students physically is outdated version. The RFID card system, each student assigns a card with their corresponding identity but there is chance of card loss or unauthorized person may misuse the card for fake attendance. While in other biometrics, for example, unique finger impression, iris or voice acknowledgment, they all remain imperfect and likewise they are not 100 percent accurate.

Use of faces of the students as the input to record the attendance of the students is a great strategy to overcome the difficulties that are facing in conventional ways of recording the attendance. In this facial recognition strategy, the student faces are already stored in the database along with their roll numbers. The attendance recorded by using this method is stored in a file. The same file is automatically sent to the respective authority.

MOTIVATION

Nowadays in every organization student's attendance is recorded manually. It requires a lot of time mutually for teachers as well as students. There is still chance for proxies in the class when attendance is manual. The main motive of this project is to develop an attendance management system which is completely automated and that uses the faces of students as input.

OBJECTIVES

The main objectives of this project are

- To capture the images of the students
- Extraction of features
- Compare the faces with database values
- Generating the results

EXISTING SYSTEM

The existing systems based on facial recognition to record the attendance of the students are based on several algorithms like Principal Component Analysis (PCA), Local Binary Patterns Histograms (LBPH), Scale Invariant Feature Transform (SIFT). In these existing systems each student has to appear in front of camera to get the attendance.

Drawbacks

- Proxy can be made
- Not accurate

PROPOSED SYSTEM

In proposed smart attendance management system using facial recognition, a raspberry pi module connected with a web camera is used for recording the attendance of the students. Face images of the students captured are stored in the data base for further use. The attendance recorded is stored in a file along with the student's name and roll number. The same file is automatically sent to respective authority as a SMS in telegram.

Advantages

- Accurate detection
- Easy to use
- Real time monitoring

METHODOLOGY

Web camera

A web camera which is connected to raspberry pi is used to train the faces of the students according to their roll numbers in the data base which is stored for the further use of recording attendance.

Face Training

Face training can be done by taking multiple snaps of the students with respect to their roll numbers in face training application. The snaps of the students are stored in the database for further use.

Face attendance

Face attendance can be done by switching ON the attendance mode. Once attendance mode is ON the faces of the students whoever come Infront of the camera are captured, if the student face is matched with the database, then the student is marked as present, if the face of the student is not matched then buzzer will ring. The unmatched faces of the students in the database are marked as absent. The attendance of the students is stored in a file through out the attendance mode. Once the attendance mode switch is OFF then the same file is automatically sent to the respective authority as a telegram SMS.

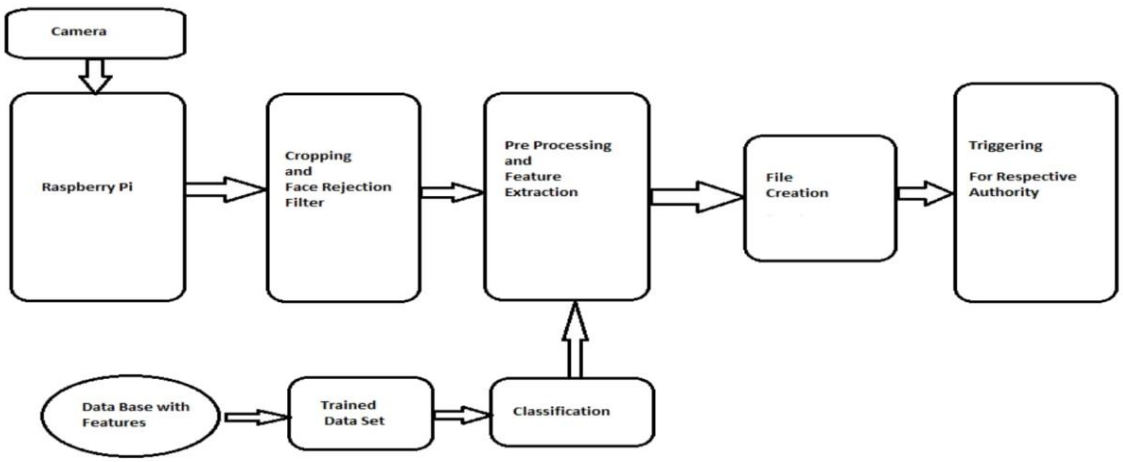
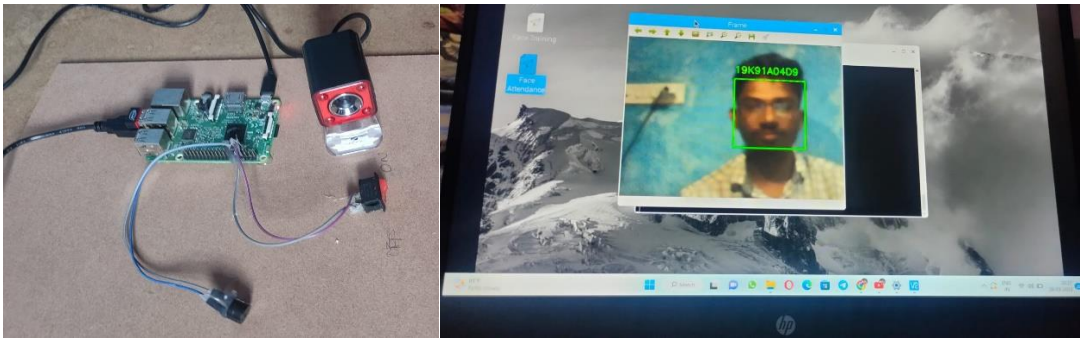


Fig-1: Block Diagram of smart attendance management system using facial recognition.

RESULT



(a) (b)

Fig-2: (a) External connections to raspberry pi (b)Facial recognition

CONCLUSION

This smart attendance management system using facial recognition is to make the attendance system better in this busy schedule of educational institutes. This system works better and saves a lot of time than conventional attendance system. In future this system also needs to improve because this system sometimes may fail to recognize the student from some distance.

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