FACE RECOGNITION BASED SMART ATTENDANCE SYSTEM USING MACHINE LEARNING

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ABSTRACT:

The main purpose of this project is to build a face recognition-based attendance monitoring system for educational institution to enhance and upgrade the current attendance system into more efficient and effective as compared to before. The current old system has a lot of ambiguity that caused inaccurate and inefficient of attendance taking. Many problems arise when the authority is unable to enforce the regulation that exists in the old system. In this project, face databases will be created to pump data into the recognizer algorithm. Then, during the attendance taking session, faces will be compared against the database to seek for identity. When an individual is identified, its attendance will be taken down automatically saving necessary information into a database system.

INTRODUCTION:

According to the previous attendance management system, the accuracy of the data collected is the biggest issue. This is because the attendance might not be recorded personally by the original person, in another word, the attendance of a particular person can be taken by a third party without the realization of the institution which violates the accuracy of the data. Attendance management system in school/colleges was done by manual reporting where the student's attendance was recorded by placing a mark or signature beside their name in a name list to indicate their presence in a particular class. While the staff in the institution will report their attendance through the punch card machine which also have to be done manually.

LITERATURE SURVEY:

According to research journal "Attendance System Using NFC Technology with Embedded Camera on Mobile Device" (Bhise, Khichi, Korde, Lokare, 2015). The attendance system is improved by using Near Field Communication (NFC) technology and mobile application. The second research journals "Face Recognition Based Attendance Marking System" (Senthamil Selvi, Chitrakala, Antony Jenitha, 2014) is based on the identification of face- recognition to solve the previous attendance system's issues. The third research journal "Fingerprint Based Attendance System Using Microcontroller and LabView" (Kumar Yadav, Singh, Pujari, Mishra, 2015) proposed a solution of using fingerprint to mark the attendance. According to the fourth research journal "RFID based Student Attendance System" (Hussain, Dugar, Deka, Hannan, 2014), the proposed solution is almost similar to the first research journal where RFID technology is used to improve the older attendance system.

SYSTEM DESIGN:

There are two major system flows in the software development, they are the creation of the face database and the process of marking attendance. Both processes mentioned above are essential because they made up the backbone of the attendance management system. The face database is an important step to be done before any further process can be initiated In the process above, a csv file is created to aid the process of image labelling because there will be more than one portrait stored for each student, thus, in order to group their portraits under the name of the same person, labels are used to distinguish them. Since the training process is very time consuming as the face database grew larger, the training is only done right after there is a batch of new addition of student's portraits to ensure the training is done as minimum as possible. Other than the creation of face database, the rest of the remaining process can all be done through a webserver. Thus, the attendance taking procedure will also be done through a web server.

Fig. process of marking attendance   **Fig. creation of face database**
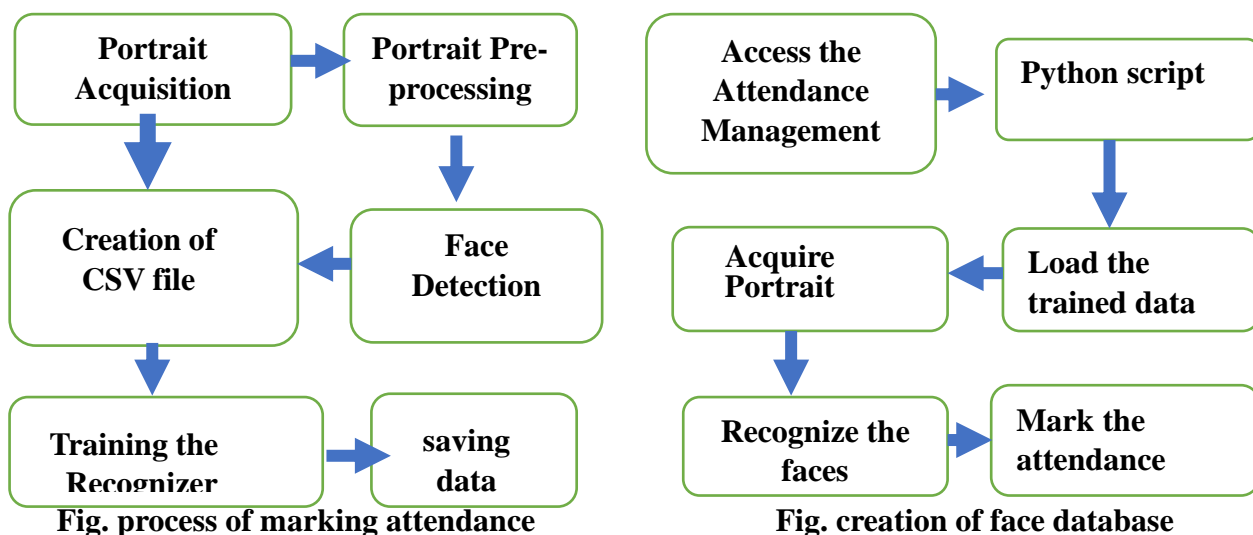
METHODOLOGY:

Before the attendance management system can work, there are a set of data needed to be inputted into the system which essentially consist of the individual's basic information which is their ID and their faces. The first procedure of portrait acquisition can be done by

Camera to capture the faces of the individual. In this process the system will first detect the presence of a face in the captured image, if there are no face detected, the system will prompt the user to capture their face again until it meets certain number of portraits which will be 10 required portraits in this project for each student.

Fig. target acquisition and pre-processing process

RESULTS AND DISCUSSION:

when we run the program, an interface display occurs asking details of student ID, student name, take images, save profile and take attendance. When the interface display occurs, the student should enter the details that is student given ID and his/her name. After entering the details, we should press on Take images. After pressing on Take images, a camera will open and captures the images of the student standing Infront of the camera. The camera captures the images of the student in front of the camera for 30 seconds. after camera capturing the images of student, the camera will automatically close and the images will be saved in the selected directory or path with a folder name: training images.

Fig. interface display   **Fig. Student details**   **Fig. training images**   **Fig. trained images**
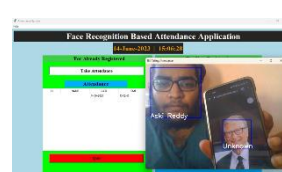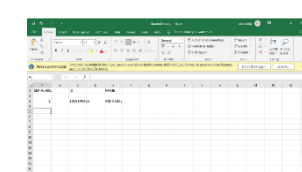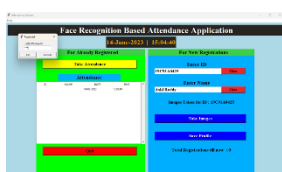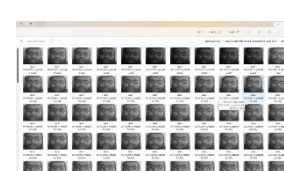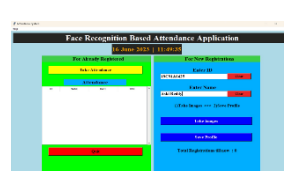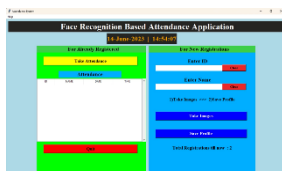

Fig. saving profile   **Fig. details in excel sheet**   **Fig. attendance marking**

After taking the images of the student, the system is trained using the student images that are stored in the system. These images are used to verify the students while taking the attendance After training data and saving the details of the student, the profile of the student should be saved. To save the profile of the student, it asks the password to verify if the user is the owner of the system or not. If the entered password is wrong then the profile won't be saved. The student information is stored in the form of Excel sheet along with student information like student name, student Id. The saved profile will be stored the system in the form of Excel sheet. After saving the data of the students, the take attendance will be shown in the interface display. By pressing the take attendance option, a camera will open and starts running the video, in which the students face along with the name of the student will appear in the box which appears around the face of the student as shown in the figure above/below. If there are any unknown students are captured in the video then the attendance will be given to the unknown students but the name of the student or Student Id won't appear in the Excel sheet.

CONCLUSION:

There are many loopholes in the process of taking attendance using the old method which caused many troubles to most of the institutions. Therefore, the facial recognition feature embedded in the attendance monitoring system can not only ensure attendance to be taken accurately and also eliminated the flaws in the previous system. The only cost to this solution is to have sufficient space in to store all the faces into the database storage. Fortunately, there is such existence of micro-SD that can compensate with the volume of the data. The database built is hidden from the user, however they can still access and make changes to it through the developed webpage with excellent interface. the system not only resolve troubles that exist in the old model but also provide convenience to the user to access the information collected which perfected the existence of technology to assist human's needs.

REFERENCES:

"Attendance System Using NFC Technology with Embedded Camera on Mobile Device" (Bhise, Khichi, Korde, Lokare, 2015).

journals "Face Recognition Based Attendance Marking System" (Senthamil Selvi, Chitrakala, Antony Jenitha, 2014)

"Fingerprint Based Attendance System Using Microcontroller and LabView" (Kumar Yadav, Singh, Pujari, Mishra, 2015)

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