



ATTENDANCE MONITORING SYSTEM USING MULTIPLE FACE RECOGNITION WITH SMS ALERT

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ABSTRACT: *Now a day's attendance plays a major role in classrooms. Conducting attendance manually is indeed a tedious task, it consumes a lot of the lecture hours which leads to less productivity and waste of time. To get over such dissipation of time, there is a direct need of an attendance system which is reliable, efficient, and which saves time during lecture hours and avoids proxy. But authentication is an important issue in this system. This paper concentrates on the design of a Biometric and Face recognition based attendance system which uses the face recognition algorithms to monitor the students attendance and sending the SMS to their parents regarding their absence and the data will be updated automatically on excel sheet.*

KEYWORDS: *Face recognition, Open CV, Raspberry pi, web camera, GSM*

I. INTRODUCTION

IoT makes us to develop a system without human interference. This technology transfers data over the network. It allows objects to be sensed and controlled remotely. The conventional methods for taking attendance in most of the institutions are by calling names or signing on papers, which is highly time-consuming and insecure. For the above problem Biometrics based system which can reduces the time and proxy attendance. Now a day's Biometrics has an epic range of applications and more innovative ways of using it keeps emerging. Biometrics such as finger

prints for authentication and face recognition for identification. face recognition technology stands tall with its unique advantages. Every student has a separate facial identity and it cannot be faked by mere proxies. In the end, face recognition is totally non-intrusive and so does not expose the user to germs that may be prevalent in a system that has multiple users.

II.OBJECTIVE

The main objective of our paper is to design bimodal attendance system of biometric authentication such as the student need to place an finger at fingerprint scanner and also multiple face recognition based attendance system which can detects and recognises multiple faces at a time in class hour and generates the data in excel sheet and send the SMS to the parents regarding their children absence through GSM.

III. LITERATURE SURVEY

Kawaguchi et.al., proposed an algorithm in which all the faces detected in an image are compared to the images in a database with constraint on their seating position thus making the system very susceptible to rudimentary techniques of just detecting presence of a person in a particular place [1].

R.Kiran Kumar, Mekala.S et.al., The main advantage of face recognition attendance system is to prevent the fake attendance system in the classrooms. The camera module is placed at the center of the classroom. The face recognition method recognizes the face and automatically verifies with the existing database present in Open CV and the attendance is taken [2].

Kennedy Okokpuije et.al., He developed a face recognition attendance system backed by a database, implement the design, add the novelty of being able to send results of attendance taken via a cellular network to designated handheld devices and test to see how variations in face angle, facial expression and lighting affects the accuracy of the designed and implemented face recognition attendance system [3].

J.P. Jeong, M.kim et.al., proposed IoT-based Automatic Attendance System (called IAAS). Their goal is to provide a reliable and improved automatic attendance checking system with face recognition technologies [4].

A. Charity, K. Okokpuije and N. -O. Etinosa Proposed and explores the use of bimodal biometrics to improve the recognition accuracy of automated student attendance systems. The system uses the face and fingerprint to take students' attendance [5].

IV. IMPLEMENTATION

The proposed system consists of a Raspberry pi 4 B model which can act major role in this system. And the camera is connected with the Raspberry pi. Initially the different sets of images of the students and finger prints of the students are to be stored in a student's database. The image is trained using the haar cascade algorithm. To train the classifier, this algorithm needs a few images. it extracts the features from the image and calculates it. Firstly whenever student enters in to class they need to place an finger at scanner later the camera will detect faces at a fixed time. The Open CV has both - the trainer as well as the detector the captured images are compared with trained images and the attendance will be taken automatically using face recognition module. The detected faces are compared with the student's database stored in the IOT. When the detected faces matches with the already stored database, then the attendance is marked as present. If not, the absent is marked for the student's those who are not present inside the classroom. After a specified amount of time, the message will be sent to the parents or guardians of the absentees using GSM module. Thus the attendance is automatically updated to excel sheet.

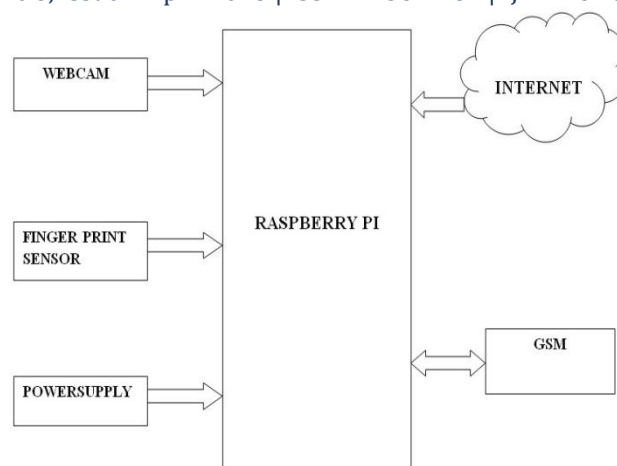


Fig 1: Block Diagram

The above block diagram consists of Raspberry Pi, Webcam, Fingerprint Sensor, Internet, Power Supply, and GSM. Raspberry Pi is a mini computer that is capable of doing things that a personal computer can do, all the components are connected to it. Webcam is used in image processing applications in this project the webcam captures the image of the student and sends it to Raspberry Pi and that image is compared with image dataset of the student. Fingerprint Sensor takes the fingerprints of the student as input and feeds the data to the processor. Power Supply is used to provide power to the entire kit. GSM is used for communication between processor and outside world components like sending messages. Raspberry Pi has to be connected with internet.

V.FLOW CHART

The entire operation of the system described by this below flow chart.

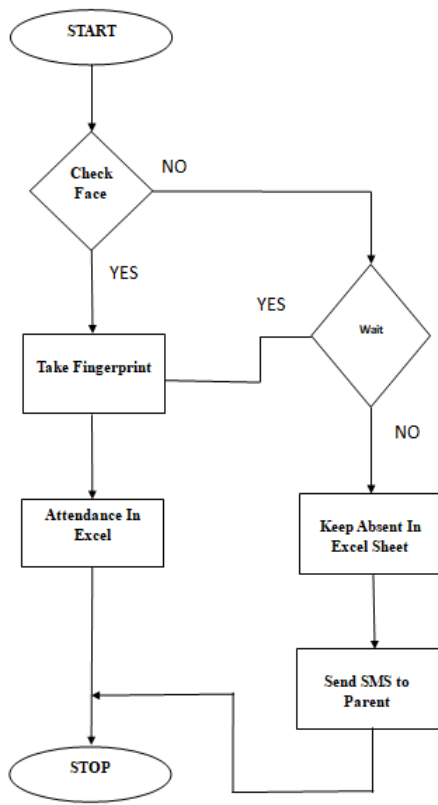


Fig.2: Flow chart

VI. RESULT

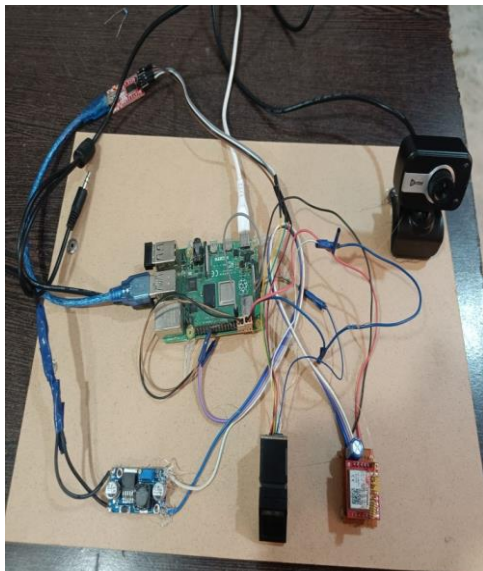


Fig 3: Experimental setup of the Proposed Prototype

The captured images are compared with trained images and the attendance will be taken automatically using face recognition module at a fixed time.



Fig 4: recognizing student faces

After recognizing the faces the student’s data is updated on excel sheet automatically.

SL.No	name	22-03-2023	23-03-2023
1	Mounika	present	present
2	Likhitha	present	present
3	Nagendra	present	present
4	Rajikiran	present	present

Fig 5: Data updating on excel sheet

If any student were absent then it will be automatically informed to their parents through SMS using GSM.



Fig.6: SMS sent to parents

CONCLUSION

The proposed system helps to mark an attendance of a student in order to mark present or absent. It is an excellent tool for schools and institutions where time cannot be wasted on taking attendance instead, it can be focused on more productive things. The existing system lacks proper time management and lead to proxy. In our system time is saved, as we designed bimodal system which includes biometric and facial recognition on multiple faces to mark present or absent. And also parents are informed with an SMS if their children are absent.





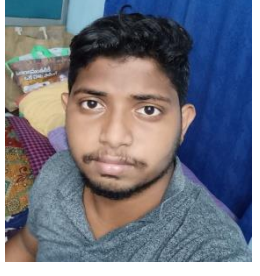
FUTURE SCOPE

By using High-Resolution camera the system performance and accuracy can be improved. Students are notified in the display in case if the system fails to detect their faces. Our proposed model doesn't work in real time, and it does not monitor the students, which includes problems like what to do if the student leaves the class. So, any advancement in the future can be directly added to the system, ultimately increasing its efficiency.

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