

AUTOMATED ATTENDANCE SYSTEM USING RFID AND FACE RECOGNITION

Nagaraj S¹, Chethan T B², Rajath V S³, Ganesh Gowda H D⁴, Namratha N⁵

¹ (1EW17EC053)BE, ECE, EAST WEST INSTITUTE OF TECHNOLOGY, KARNATAKA, INDIA

² (1EW17EC019)BE, ECE, EAST WEST INSTITUTE OF TECHNOLOGY, KARNATAKA, INDIA

³ (1EW17EC072)BE, ECE, EAST WEST INSTITUTE OF TECHNOLOGY, KARNATAKA, INDIA

⁴ (1EW17EC029)BE, ECE, EAST WEST INSTITUTE OF TECHNOLOGY, KARNATAKA, INDIA

⁴ Assistant Professor, ECE, EAST WEST INSTITUTE OF TECHNOLOGY, KARNATAKA, INDIA

ABSTRACT

Attendance in the classroom is an essential assignment and if taken physically squanders a great deal of time. There are numerous programmed strategies accessible for this reason i.e., biometric attendance. Every one of these techniques additionally sits around idle because understudies need to make a line to touch their thumb on the checking gadget. This work depicts the effective calculation that naturally denotes attendance without human intercession. This attendance is taken utilizing a Camera alongside RFID label joined before classroom the camera that is ceaselessly catching pictures of understudies, RFID label which starts the camera and a face is caught and perceived with the goal that attendance is checked. If an understudy leaves in the middle of the class hours or comes late to the class, which catches the Image and will be sent to the Database. Made trouble Student (who left the class) data is refreshed in the Records by the Department in charge and SMS Alert is activated to the Parent's Mobile. It is an automated application, which is easy to govern as well as time redeemable and trustworthy.

Keyword : - Automated Attendance System, Radio Frequency Identification (RFID), RFID reader, Face recognition system, SQL Database, Web-GUI

1. INTRODUCTION

The attendance of each student is being maintained by every school, college, and university. The faculty must maintain a relevant and proper record for attendance. The manual attendance record system is not efficient as it consumes a lot of time to arrange a record and to calculate the average attendance of each student. Hence there is a need for a system that will resolve the issue of student record arrangement and student average attendance calculation. The proposed system should be able to store the student's attendance record in digital format so that managing attendance becomes a simple task. Old traditional methods for student attendance are still in use by most of the universities and institutes. As these techniques are used, many students get an advantage to mark the attendance of their classmates in their absence. So, while these methods are used, attendance records are classified and maintained manually by the faculty to know the student attendance list. The faculty needs to take the attendance once again in case of the loss in an attendance sheet and therefore absent students get an opportunity to mark their fake presence in the new attendance sheet. This procedure, besides being tiresome for lecturer, it even affects student as a lot of time is consumed on signing, verifying, and then submitting the attendance sheet. Therefore, an automated computerized system can be implemented that would achieve and help the staff members to maintain and mark the attendance easily. The faculty can easily access this system as it is simple. Handling and managing student attendance data needs to be taken care of by the system so that the manual work of student attendance can be avoided. The system would automatically consider all the data once it gets updated.

1.1 Objective

To detect the face segment from the video frame. To extract the useful features from the face detected. To classify the features to recognize the face detected. To record the attendance of the identified student.

2. METHDOLOGY

The development of the Attendance System based on Face Recognition and Verification by RFID is distributed into two significant unit, one is the hardware side and another one is the software. Personnel with proper authority can login into the system and look for information from there, which keeps a log of the ID, time and date of every student that enters the classroom. It also can register new student using facial image, the tag ID of each tag. The proposed attendance management system is based on face recognition. when a person stands in front of the camera, it detects and recognize the person based on already stored test samples and the ID given. No two persons should stand Infront of camera during the face detection.

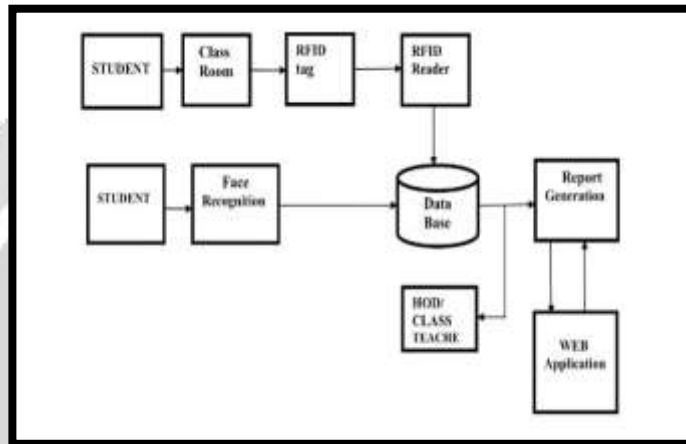


Fig -1: Block Diagram Of System

3. IMPLPEMENTATION

Our improved system working on recognizing face with identification number leaves no loophole of fraudulence and it can initiate a smarter system that addresses each issue mentioned above more accurately without any sort of manual mistakable effort. Images of the face of every student with their name and identification number once recorded, our present system can recognize each student and count while he enters the class by verifying his face and RFID based identity card. All sorts of mismanagements, fraudulence, and carelessness will disappear and no more hindrance for the teacher to continue class smoothly. Students will not deprive from a quality class.

Face recognition part is done through Radio frequency identification (RFID) system is based on two components which area reader and a tag. Here the tag is attached to an object and the reader identifies the proper object. The data here is transmitted by using radio wave. The RFID tag has an embedded transmitter and receiver. Atypical RFID tag consists of two parts, an integrated circuit, and an antenna.

The integrate circuit is used for collecting and running information. And the function of the antenna is to receive and transmit a signal. RFID tags can be of three types, and they are active, passive, battery assistive passive. RFID tags are equipped with non-volatile memory storage. The RFID reader transmits an encoded radio signal to the RFID tag by using a two-way transmitted receiver which is also known as transceiver and interrogate. All the RFID tags that are available fall in three categories. They are classified according to the type of tag and reader. Those are, Passive Reader Active Tag (PRAT), Active Reader Passive Tag (ARPT) and Active Reader Active Tag (ARAT). We have used the second one for our proposed model.

The Facial Recognition is done using OpenCV library and running the respective codes on Python. We have used OpenCV 2.4.0 and Python 2.7.13 specifically for this project, and the latter versions would need to have the codes changed. In our project, we use Haar-like feature detection algorithm to detect faces. Even though single strong

classifier can detect most facial features correctly, it still has considerable high false positive rates; hence we apply the cascading method. Using cascade classifiers, our program scans every sub-window of the input feed image and classifies them as face, or non-face. Majority of the non-face features is eliminated in the first few stages of cascading process, and then lets the program focus on the relevant face window. This method is very efficient since it is executed very fast and precisely.

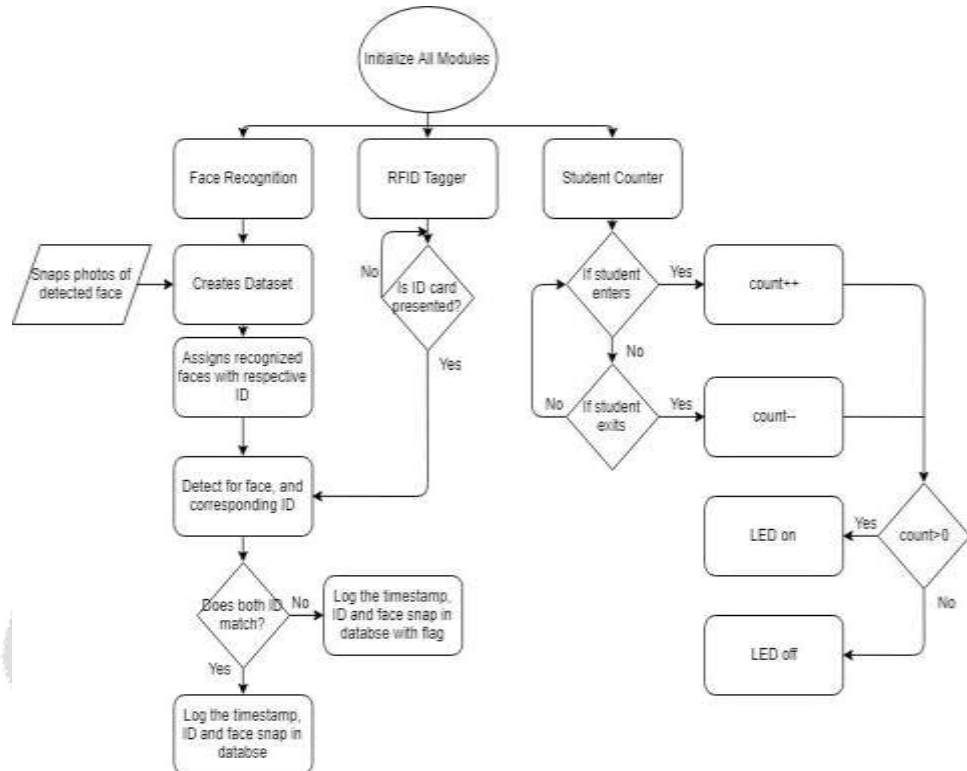


Fig -2: Flow Chart

4. RESULT

This project presents an examination of different advances which are used for participation making structure. Usually understudy participation is taken by instructor and it will misuse too much time of address. An abundance of go-between participation can be recorded in manual system. This will be supplanted with robotized system. RFID take auto participation for each one of understudies entered in the class which will remove the time loss of teacher. Of course, Face Recognition check understudy which will clear the middle person participation.

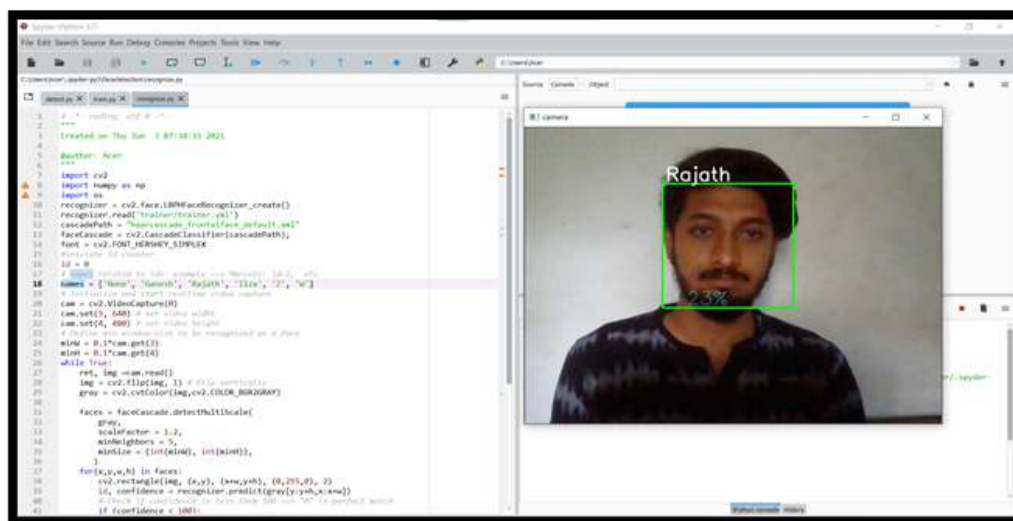


Fig-3 : Result

5. CONCLUSIONS

Before the development of this project. 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. By using technology to conquer the defects cannot merely save resources but also reduces human intervention in the whole process by handling all the complicated task to the machine. 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. In this project, the face database is successfully built. Apart from that, the face recognizing system is also working well. A webpage is also successfully built with fully functioning feature which is user-friendly. 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. At the end, 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.

6. REFERENCES

- [1]. Chao Jia and Brian L. Evans Online Calibration and Synchronization of Cellphone Camera and Gyroscope Global Conference on Signal and Information Processing (Global SIP),2013 IEEE
- [2]. Shane F. Cotter Sparse Representation for Accurate Classification of Corrupted Acoustics Speech and Signal Processing (ICASSP),2010 IEEE international conference
- [3]. B. Biaggio Z. Akhtar G. Fumera G.L. Marcialis F. Roli Security evaluation of biometric authentication systems under real spoofing attacks Robotics and Automation (ICRA),2014 IEEE international conference
- [4]. Maria AnuV, AroulCanessane R, Mary Gladence L, "Optimization of query processing time using Taguchi method for RFID data management", Indian Journal of Science and Technology, Vol9(25), DOI:10.17485/ijst/2016/v9i25/95141, July 2016