

FACE DETECTION BASED ATTENDANCE SYSTEM USING ESP32

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ABSTRACT: This proposal is mainly projects about the face detection based attendance system which overcomes from some of the problems which were raised due to the new virus corona breakout. Unlike Biometric attendance system, this face detection based attendance system does not require any person to be in contact with finger print reader module, which reduces the increase of the corona cases in turn. Same student or employee touches the biometric attendance system to mark their attendance, infecting the biometric machine. This project involves the student, faculty or employee attendance by face recognition. The face detection and recognition was carried out by using ESP32 cam module which captures the images of the available students in the classroom. Using this image it recognizes and compares with the images in the database and marks their attendance. ESP8266 is used for faculty attendance and data can be logged in SD card and Google sheets are also available.

Keywords: Face Recognition, Face Detection, ESP32 camera module.

Introduction: The sudden breakout of corona virus brought various changes in everyone's life. Most of the offices and institutions were under close for many days. In many of the institutions and colleges the most preferred attendance system is based on the biometric system. But biometric attendance system spreads the virus rapidly according to the leading doctor's and epidemiologist's information. Since this system made a person to place his/ her finger on the surface of the finger print reader module. If an infected employee unknowingly touches the biometric system to mark attendance, which infects the system and have a chance to spread the virus rapidly.

Proposed System: The task of the proposed system is to capture the face of each student/ employee and to store it in the database for their attendance. The face of the student/ employee needs to be captured in such a manner that all the feature of the students'/ employees face needs to be detected, even the seating and the posture of the student/ employee need to be recognized. There is no need for the teacher to manually take attendance

in the class because the system records a video and through further processing steps the face is being recognized and the attendance database is updated. The system takes the attendance automatically recognition obtained by continuous observation. Continuous observation helps in estimating and improving the performance of the attendance. To obtain the attendance, positions and face images of the students present in the class room are captured. Through continuous observation and recording the system estimates seating position and location of each student for attendance marking. The work is focused on the method to obtain the different weights of each focused seat according to its location. The effectiveness of the picture is also being discussed to enable the faster recognition of the image.

Literature Survey:

The author [7] has given the importance of attendance in evaluating a student cannot be overstated. Taking attendance manually is a time-consuming process that frequently results in human mistake. This paper describes the use of Open Source Software to create a Radio Frequency Identification-based Student Attendance Management System in a multi-user setting. For reading tags, the system employs Python as a backend. To authenticate lecturers, run the Python code, and record tags in an XML file, a JAVA-based desktop programme is employed. Finally, the XML file is posted to the server, where it will be processed and interpreted. The web portal can be used to check attendance.

The author [6] in this paper discussed about the current state of our educational system, we have discovered that we have many technologies to use, but we are still following the traditional way. When it came to the attendance system in universities and schools, professors had to do everything by hand. Lecturers took attendance and manually updated it in the database. When it comes to technology, we've discovered that there are numerous instruments that may be used to ease the strain of lectures. One example of this is the use of RFID. If we combine RFID and IOT (Internet of Things), we can accomplish it automatically, eliminating the need for lectures. For greater speed, we intend to leverage the Cloud as storage, using the Internet of Things

Project Description:

The project mainly works on ESP32 CAM which is a Wi-Fi module used for face recognition and face detection. This CAM has its own memory card slot which stores the detected information received from the PIR sensor connected to it. Here, we have used a TP4056 battery module for supplying required power to it and it also has a backup provided by 18650

3.4A battery. When a person stands in front of the camera the PIR Sensor (Passive Infrared Sensor) which is a pyro electric device detects the body temperature of the person who stands in front of it and sends this information to the ESP 32 cam module. Now, the ESP 32 cam module compares the information received from the PIR sensor with the data collected previously from the database.

Block Diagram:

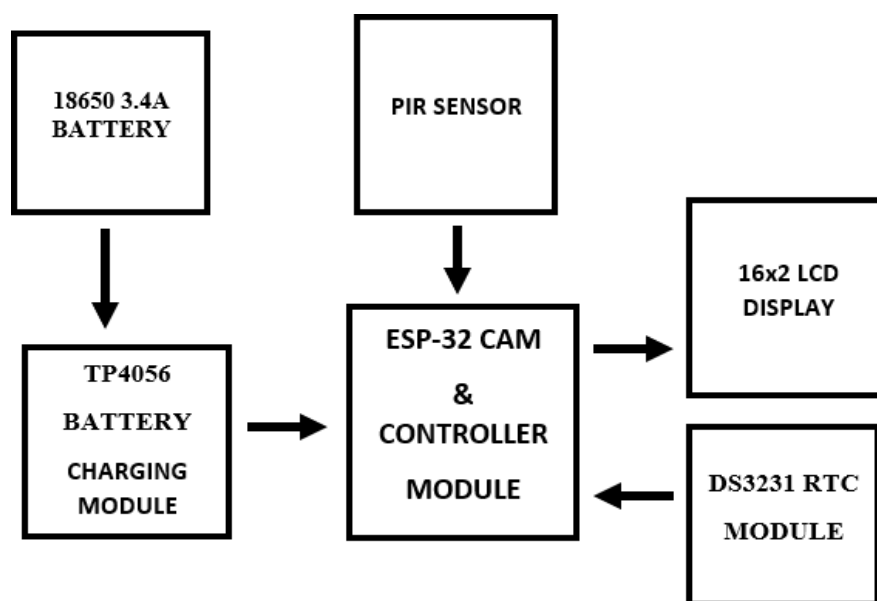


Fig 1: Non-Contact Face Detection Attendance System

For any institution the names and register numbers of the students and faculty members with their Id numbers are previously entered in the database for the marking of daily attendance. The ESP32 cam module detects face, name and register number of the person on comparing with the data from database. Now, the retrieved details from the database are displayed on the LCD screen. With the use of Real Time Clock (RTC) module, the time and date of the person is also recorded i.e when the person attended for their attendance. This data can also be stored in the excel sheets for record of attendance for the institution purpose.

Schematic Diagram:

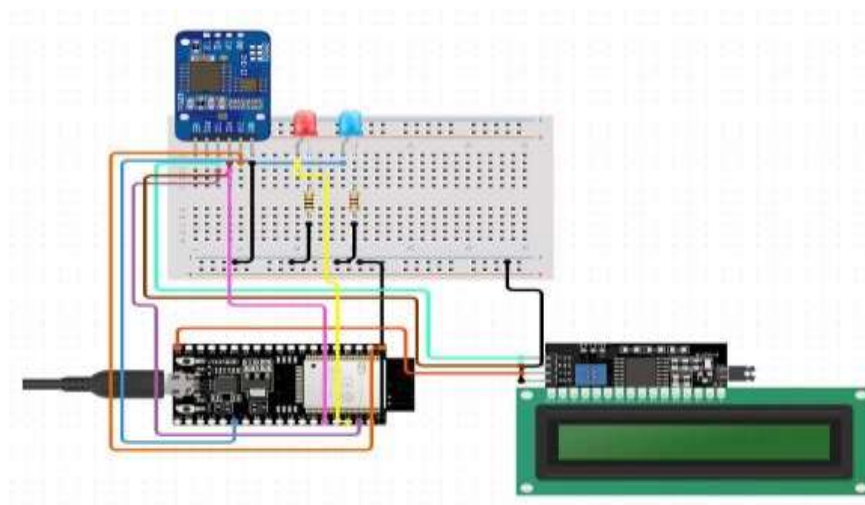


Fig 2: Schematic diagram

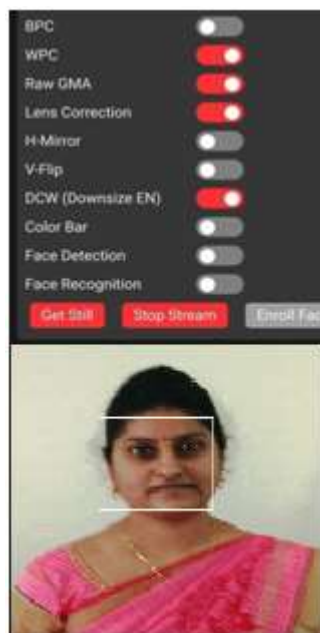


Fig 3: Face Detection of Person 1

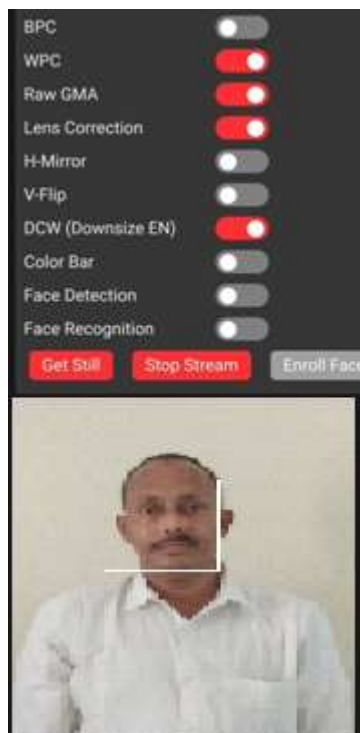


Fig 4: Face Detection of Person 2

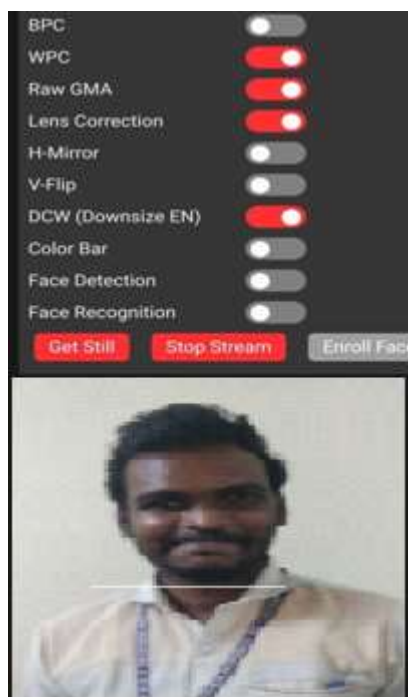
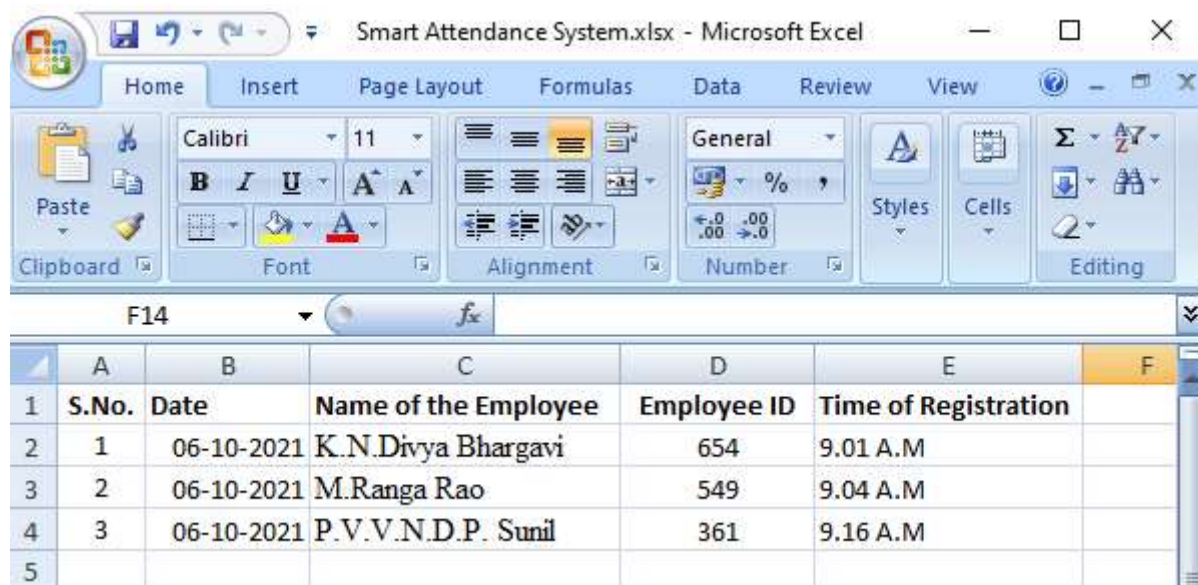


Fig 5: Face Detection of Person 3



	A	B	C	D	E	F
1	S.No.	Date	Name of the Employee	Employee ID	Time of Registration	
2	1	06-10-2021	K.N.Divya Bhargavi	654	9.01 A.M	
3	2	06-10-2021	M.Ranga Rao	549	9.04 A.M	
4	3	06-10-2021	P.V.V.N.D.P. Sunil	361	9.16 A.M	
5						

Fig 6: Employee Attendance Sheet

CONCLUSION: There may be various types of lighting conditions, seating arrangements and environments in various classrooms. Most of these conditions have been tested on the system and system has shown 100% accuracy for most of the cases. There may also exist students portraying various facial expressions, varying hair styles, beard, spectacles etc. All of these cases are considered and tested to obtain a high level of accuracy and efficiency. Thus, it can be concluded from the above discussion that a reliable, secure, fast and an efficient system has been developed replacing a manual and unreliable system. This system can be implemented for better results regarding the management of attendance and leaves. The system will save time, reduce the amount of work the administration has to do and will replace the stationery material with electronic apparatus and reduces the amount of human resource required for the purpose.

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