



Automatic Attendance Management System Using Face Recognition

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ABSTRACT

To maintain discipline in schools, colleges, universities and organizations the attendance system was introduced. There are two ways to mark the attendance. One of them is by calling the roll number and second is to take sign of the students on a paper. Attendance marking by those methods is not only a difficult task, but also a time-consuming one. There will always be a chance of proxy attendance because the lecture had an exceptionally high number of students in attendance. A rising difficulty in the field of face recognition is the increasing demand for effective and automatic systems of registering attendance. Standard biometrics like fingerprints and RFID tags have been used extensively in recent years to address the issue of automatic attendance marking, but these methods lack the element of reliability. Hence there was a need to evolve this system in such a way that it could become more user friendly, less time consuming and more efficient. This is an automated system for marking the attendance without any disturbance or time waste. This project uses face recognition to mark student, professor, or employee attendance using the ESP32 cam module and FTDI programmer. Camera module captures the face of each student or employee and is stored in the database. The ESP32 detects the face and compares it in the database and later on it marks the attendance and upload it in the excel sheet for further reference

Keywords: ESP32, FTDI programmer, Face recognition

1. INTRODUCTION

Facial recognition is swiftly overtaking other types of biometrics (Fingerprints, RFID, etc.) because facial recognition systems use a collection of attributes specific to one person. Image processing is now a very exciting issue that has only scratched the surface. Our goal in developing this project is to make the attendance system effective, stop methods and means of proxies, and save time that would otherwise be lost in the lecture. This proposed project can be used to create an attendance system using facial recognition as the traditional method, i.e., pen and paper, is not only time consuming and burdensome, it is also susceptible to proxies and manipulation.

The idea for this project first occurred to us in class when we observed the amount of time that must be skipped for attendance and the students' laziness after marking their attendance, which causes the method to be further delayed. We then decided that this would be a good and interesting field to explore for our Project because the field of image processing, recognition, etc., has a vast array of applications and would help us hone our skills and prepare us just a little bit.

2. Related Work

2.1 Existing System

In recent years, Attendance was taken manually. Manually recording attendance on an attendance sheet, or "paper-based" method, is time-consuming and flawed and there are high chances of proxy and the lesson is being disrupted by the use of manual attendance sheets that students must pass around. As a result, different methods of recording attendance, such as employing RFID, thumbprints and QR- code based attendance system have emerged in the last few years. Each of these techniques has benefits and drawbacks of its own.

2.1.1 Manual System:

By using the manual technique, the instructor calls the students' names or roll numbers; if the student responds positively, the teacher records the specific student's roll number in the list of present pupils. This system is thought to be a time-consuming process, or there may be a chance that someone's identity will be overlooked. Automation system has been introduced to address all of these problems.

2.1.2 Finger Print Based Attendance System:

A portable fingerprint device that is already set up with the student's fingerprint is required for the existing fingerprint-based attendance system. The student must record their fingerprint on the set device later, either before or during lecture hours, to confirm their attendance for the day. The main drawback in this system when fingerprints are smudged with oil or grime or have cuts or wounds, it can be difficult to identify the person.

2.1.3 RFID Tags:

For instance, updating attendance in an RFID-based attendance system would require direct communication with the user. As students must line up to update their attendance in the system, this strategy is ineffective for large classrooms. The main drawback of this system is When one student is absent, some students may use another student's ID to ensure their presence.

2.2 Proposed System

The proposed system's function is to record each employee's or student's face and store it in a database for their attendance. The student's or employee's face needs to be captured in such a way that all of the face's features are detected. The teacher does not have to manually take attendance because the system records a video of the lesson, which is then processed further to identify the student's face and update the attendance in database. The proposed system uses ESP32 camera module for face recognition and FTDI (Future technology device international) programmer for programming.

our proposed system has following advantages:

- Efficient
- Time saving
- No chance of proxy
- reliable
- fast
- secure
- lessen the amount of work that needs to be done by the administration
- decreases the number of people needed for the purpose.
- great degree of precision

3. Methodology:

3.1 Block Diagram:

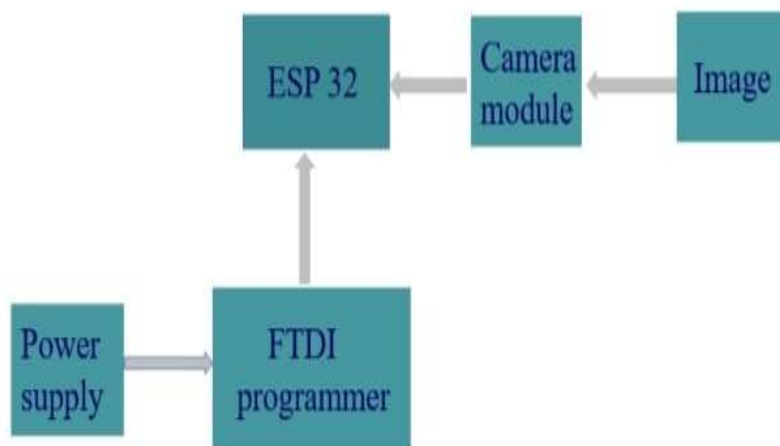


Fig 3.1 Block diagram

3.2 Flow Chart

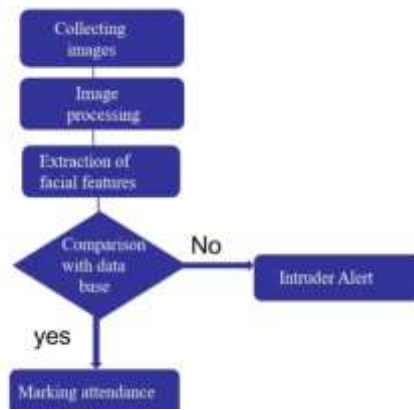
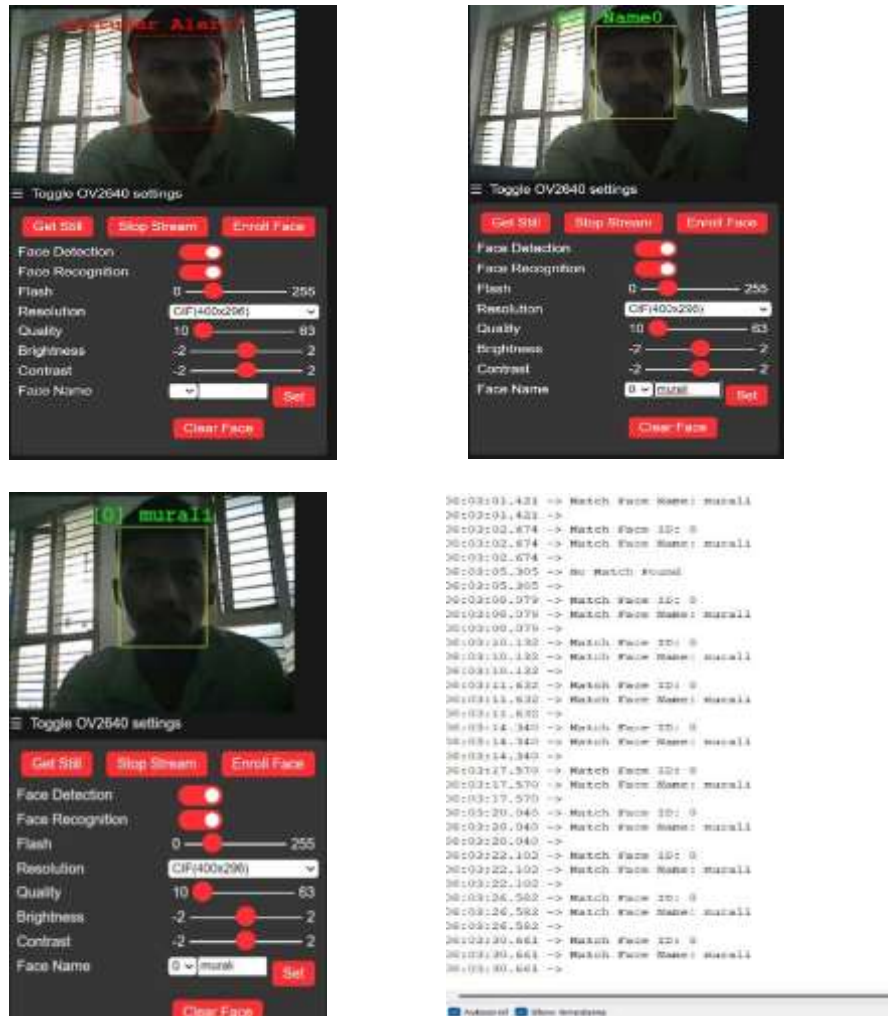


Fig.3.2 Flow chart

The image is collected by ESP32 camera module and compares it in the database. If the match found then it marks the attendance or else it gives intruder alert.

3.3 Result



4. CONCLUSION & FUTURE SCOPE:

Different classrooms may have different lighting setups, seating configurations, and atmosphere. The system has been tested in most of these circumstances, and in most instances, it has demonstrated 100% accuracy. Students may also depict various facial expressions, hairstyles, beards, spectacles, and other accessories. To achieve a high level of accuracy and effectiveness, all of these instances are taken into account and tested. Thus, it may be inferred from the foregoing description that a system has been established to replace a manual and unreliable method that is reliable, secure, quick, and efficient. This system can be used to improve outcomes in terms of managing attendance and leaves. The method will save time, lessen the amount of work that needs to be done by the administration, replace stationary with electronic equipment, and cut down on the number of people needed for the job.

The suggested work's future scope may include simultaneously taking several detailed photos of the students. The system is configurable and can be used at ATMs to spot fraud. The technique can also be utilized during elections so that the voter's face can be recognized and they can be located. As a result, the suggested system is quicker and more effective.

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