WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Face Recognition Based Attendance System Using ESP32 Cam

Archana Kannaujia[1], Ashish Gupta[2], Mayank Sekhar Shukla[3], Manohar Vishwakarma[4]

[1,2,3,4]Dept. of Electronics and Communication Engineering Buddha Institute of Technology, Gida, Gorakhpur

ABSTRACT-

In this pandemic rapid use of online systems and less touches system the one of the most - factor that is face attendance system which replace the finger biometric attendance, due to the increase crime in this world there is the heavily fraud with attendance in finger biometric system. The blueprint of finger can be available and due to that there is security breakdowns are mainly possible, so to minimize that face recognition system uses as the purpose of taking attendance in the offices, industries, school, colleges etc.

I. INTRODUCTION

Face Recognition System Based Attendance System Using ESP32 Cam Module is one of the most important applications of biometric based authentication system in the last few decades. Face recognition is one of the most important applications of biometric based authentication system inthe last few decades. The earliest pioneers of facial recognition were Woody Bledsoe, Helen Chan Wolf and Charles Bisson. In 1964 and 1965, Bledsoe, along with Wolf and Bisson began work using computers to recognise the human face.

Face recognition system construction-

It is composed on the basis of two components-

1. ESP32 Cam Module
2. FTDI Module
3. Jumper Wire

ESP32 Cam -

ESP32 has a lot more features than ESP8266 and it is difficult to include all the specificationsin this Getting Started with ESP32 guide. So, I made a list of some of the important specifications of ESP32 here. But for complete set of specifications, I strongly suggest you to refer to the Datasheet.

ESP32 can perform as a complete standalone system or as a slave device to a host MCU, reducing communication stack overhead on the main application processor. ESP32 can interface with other systems to provide Wi-Fi and Bluetooth functionality through its SPI / SDIO or I2C / UART interfaces.

FTDI Module-

FTDI USB to TTL serial converter modules are used for general serial applications. They are popularly used for communication to and from microcontroller development boards such as ESP-01s and Arduino micros, which do not have USB interfaces.

This is a USB programmer which enables you to upload new firmware for the ARPIE. This programmer can also be used with other "bare bones Arduino" projects or as a general USB- to-TTL serial interface.

The FTDI USB to TTL serial converter module is a UART (universal asynchronous receiver- transmitter) board used for TTL serial communication. It is a breakout board for the FTDI FT232R chip with a USB interface, can use 3.3 or 5 V DC and has Tx/Rx and other breakout points.

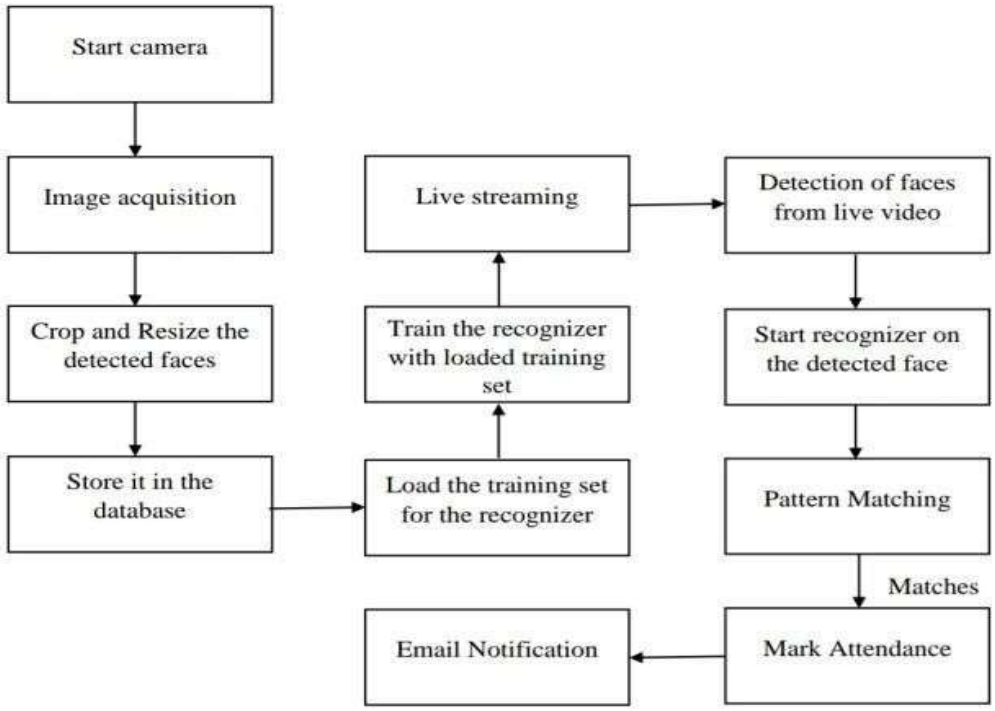
Jumper Wires-

The main purpose of jumper wires is to connect two points in any circuit. All electronics stocks jumper wire in a variety of lengths. These wires are generally used with breadboards and otherprototyping tools and it make easy to change a circuit as needed. Jumper wires are used in oursystem for the connection of all the components to each other.

II. LITERATURE SURVEY

A number of current face recognition algorithms use face representations found by unsupervised statistical methods. Typically these methods find a set of basis images and represent faces as a linear combination of those images. Principal component analysis (PCA) is a popular example of such methods. The basis images found by PCA depend only on pairwise relationships between pixels in the image database. In a task such as face recognition, in which important information may be contained in the high-order relationships among pixels, it seems reasonable to expect that better basis images may be found by methods sensitive to these high-order statistics. Independent component analysis (ICA), a generalization of PCA, is one such method. We used a version of ICA derived from the principle of optimal information transfer through sigmoidal neurons. ICA was performed on face images in the FERET database under two different architectures, one which treated the images as random variables and the pixels as outcomes, and a second which treated the pixels as random variables and the images as outcomes. The first architecture found spatially local basis images for the faces.

The second architecture produced a factorial face code. Both ICA representation were superior to representations based on PCA for recognizing faces across days and changes in expression. A classifier that combined the two ICA representations gave the best performance.



III. PROPOSED SYSTEM

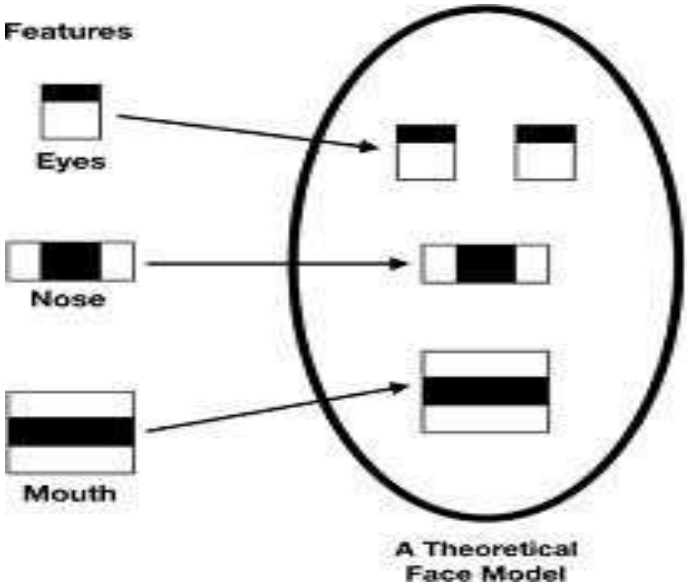
Typically this process can be divided into four stages-

1. Database creation

2. Face Detection

3. Face Recognition

4. Attendance Updation



Possibilities Of the Face Recognition System Usings:

Face Recognition Based Attendance System ideal for patrolling the enhanced the feature of attendance. Also help in real time attendance, archaeological, advertisingpurpose etc. it also helps in the accuracy .

• College

• School

• Offices

• Industry

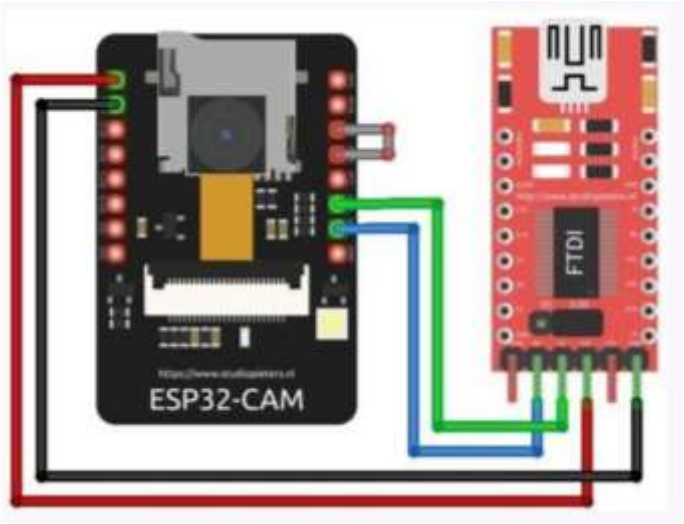
• Government Sectors

Risk associated with the use of Face Attendance System

The main danger is error in Open CV which may be due to following things:

1.Runtime Error 2. Implementation 3.Compile time Error

These risks can be predicted therefore, the action should be taken to prevent their uprising. The open cv status and other telemetry data, including code can be controlled remotely by the system, in case on exceeding one parameter there a system that will give a alert. This will allow take the action like emergency recall the system branch. The sensors and software that based the run path and on the detected obstacles continuously update the attendance are responsible for the avoid of any obstacles.



IV. DISCUSSION AND RESULT

The users can interact with the system using a GUI. Here users will be mainly provided with three different options such as, student registration, faculty registration, and mark attendance. The students are supposed to enter all the required details in the student registration form. After clicking on register button, the web cam starts automatically and window as shown in Fig.3. pops up and starts detecting the faces in the frame. Then it automatically starts clicking photos until 60 samples are collected or CRTL+Q is pressed. These images then will be pre-processed and stored in training images folder.

V. CONCLUSION

This system aims to build an effective class attendance system using face recognition techniques. The proposed system will be able to mark the attendance via face Id. It will detect faces via webcam and then recognize the faces. After recognition, it will mark the attendance of the recognized student and update the attendance record.

REFERENCES

1. https://www.researchgate.net/publication/326261 079_Face_detection_system_for_attendance_of_class'_students

2. Hapani, Smit, et al. "Automated Attendance System Using Image Processing." 2018 Fourth International Conference on Computing Communication Control and Automation (ICCUBEA). IEEE, 2018.

3. Okokpujie, Kennedy O., et al. "Design and implementation of a student attendance system using iris biometric recognition." 2017 International Conference on Computational Science and Computational Intelligence (CSCI). IEEE, 2017.

4. Siswanto, Adrian Rhesa Septian, Anto Satriyo Nugroho, and Maulahikmah Galinium. "Implementation of face recognition algorithm for biometric based time attendance system." 2014 International Conference on ICT For Smart Society (ICISS). IEEE, 2014.

5. Lukas, Samuel, et al. "Student attendance system in classroom using face recognition technique." 2016 International Conference on Information and Communication Technology Convergence (ICTC). IEEE, 2016.