REAL-TIME FACE RECOGNITION BASED ATTENDANCE MANAGEMENT SYSTEM

PRADEEP R
Dept. Of CSE,
University College of Engineering, Panruti.
pradeepraja430@gmail.com

SUDHARSAN S
Dept. Of CSE,
University College of Engineering, Panruti.
sudharsan2k04@gmail.com

ABSTRACT

In this digital world, the face recognition system plays a vital role in almost every sector. Face recognition is one of the most used biometrics. It can be used for security, authentication, identification, and has got many more advantages. The face recognition-based attendance system is a process of recognizing the students' faces for taking attendance by using face biometrics based on high–definition monitor video and other information technology. Faces are detected and recognized from live streaming videos of the classroom. This system aims to build a class attendance system that uses the concept of face recognition as the existing manual attendance system is time-consuming and cumbersome to maintain

INTRODUCTION

The traditional method of attendance marking is a tedious task in many schools and colleges. It is also an extra burden to the faculties who should mark the attendance by manually calling the names of students which might take about 5 minutes of an entire session. This is time-consuming. Biometric face recognition technology is a non-contact process. Face recognition has set an important biometric feature, which can be easily acquirable and is non-intrusive. The face recognition system consists of two categories: verification and face identification. Here the face of an individual will be considered for marking attendance. So, we used a system that detects the faces of students from live streaming video of the classroom, and attendance will be marked if the detected

TECHNIQUES

HAAR CASCADE:

It is an Object Detection Algorithm used to identify faces in an image or a real time video. The algorithm uses edge or line detection. This algorithm is not so complex and can run in real-time. We can train a haar-cascade detector to detect various objects like cars, bikes, buildings, fruits, etc.…

LOCAL BINARY PATTERN HISTOGRAM (LBPH):

Local Binary Pattern (LBP) is a simple yet very efficient texture operator which labels the pixels of an image by thresholding the neighbourhood of each pixel and considers the result as a binary number.

LITERATURE SURVEY

S. No	Authors Name & Year	Title	Concept Used	Advantages	Disadvantages
1.	Priyanka, Wagh (2020)	Class Attendance system based on Face Recognition	Local Binary patterns (Support vector machine), LDA based OpenCV and FLTK.	Continuous and automatic attendance system.	System has issues with system performance and accuracy.
2.	Khem Puthea, Rudy Hartanto and Risanuri Hidayat (2020)	An Attendance Marking System based on Face Recognition	The complete system is implemented in MATLAB.	User-friendly application on face recognitions created.	Similar techniques are used.
3.	Radhika C. Damale (2018)	Face recognition-based Attendance System using Machine Learning Algorithms	Local Binary patterns (Support vector machine), LDA based OpenCV and FLTK.	Continuous and automatic attendance	issues with system performance and accuracy.

EXSISTING SYSTEM AND PROPOSED SYSTEM

EXSISTING SYSTEM:

In the current attendance system, all work is only on paperwork. the manual attendance system is time-consuming and cumbersome to maintain. The teachers struggle in generating a report in the middle of the session as per the requirement because it takes more time to calculate.

DISADVANTAGES:

- Not User Friendly
- Difficulty in report generating
- Lots of paperwork
- Time consuming

PROPOSED SYSTEM

All the students of the class must register themselves by entering the required details and then their images will be captured and stored in the database. During each session, faces will be detected from the live streaming video of classroom. If a match is found, attendance will be marked for the respective student.

ADVANTAGES OF PROPOSED SYSTEM

- User Friendly
- Reports are easily generated
- Very less paper work
- Enhances security and speed
- Easy to set up and use.
- Convenient and inexpensive.
- Manages student attendance records.

MODULE SPLITUP

MODULE 1- Dataset Creation

Images of students are captured using a webcam. Multiple images of a single student will be acquired with varied gestures and angles. These images undergo pre-processing. The next step is to resize the cropped images to a particular pixel position. Then these images will be converted from RGB to grayscale images. And then these images will be saved as the names of the respective students in a folder

MODULE 2 - Face Detection:

Face detection here is performed using Haar-Cascade Classifier with OpenCV. Haar Cascade algorithm needs to be trained to detect human faces before it can be used for face detection. This is called feature extraction. The haar cascade training data used is an XMLfile haarcascade_frontalface_default.

MODULE 3 – Face Recognition:

The face recognition process can be divided into three steps prepare training data, train the face recognizer, and predict. Here training data will be the images present in the dataset. These images are then used for face recognition.

MODULE 4 - Attendance Updation:

After the face recognition process, the recognized faces will be marked as present in the excel sheet and the rest will be marked as absent. Faculties will be updated with a monthly attendance sheet at the end of every month.

OVERALL DESIGN

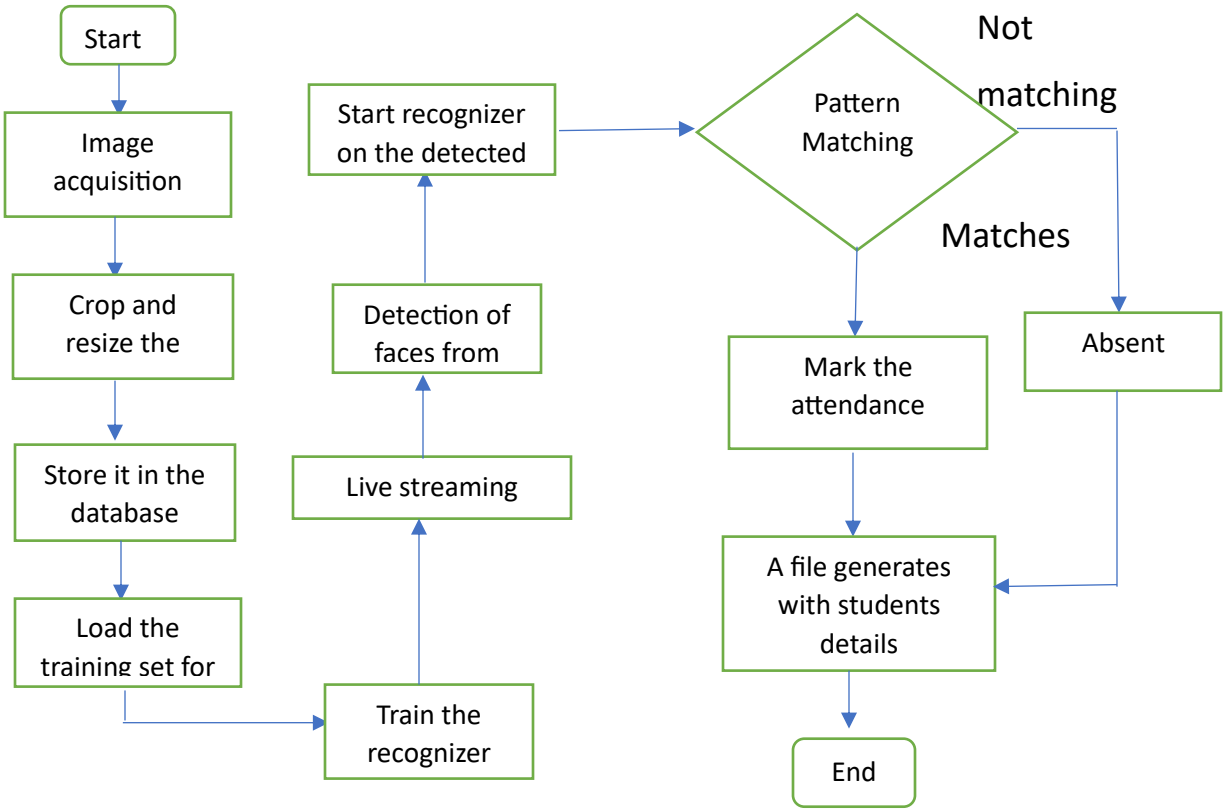

Fig.1 Overall Design

RESULTS

Here users will be mainly provided with three different options such as student registration, mark attendance, and view attendance records. The students are supposed to enter all the required details in the student registration form. After clicking on the register button, the webcam starts automatically, and the window is shown pops up and starts detecting the faces in the frame. Then it automatically starts clicking photos until 50 samples are collected. These images then will be pre-processed and stored in the training images folder in our system database.

Fig.2 Register module

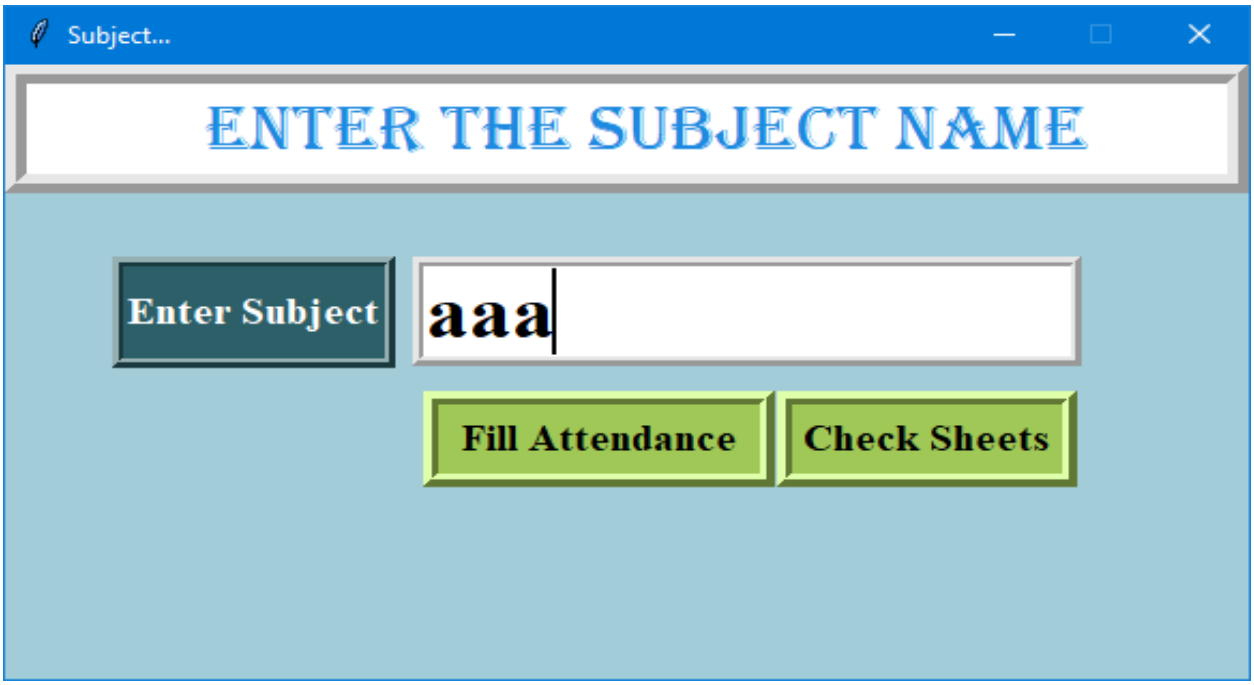

Fig.3 Attendance module

Fig.4 Recognizing Module

Attendance of aaa

Enrollment	Name	2024-02-1	Attendance
44	Sudharsan	1	100%

Fig.5 Attendance Records

REFERENCES

- [1] Hao Yang1 And Xiaofeng Han 2 , “Face Recognition Attendance System Based on Real-Time Video Processing”, September 11, 2020.
- [2] S. M. Anzar 1, (Member, IEEE), N. P. Subheesh 2, (Member, IEEE), Alavikunhu Panthakkan 3, (Member, IEEE), Shanid Malayil4, And Hussain Al Ahmad3, (Life Member, IEEE), “Random Interval Attendance Management System (RIAMS): A Novel Multimodal Approach for Post-COVID Virtual Learning”, July 1, 2021.
- [3] Dwi Sunaryono a, Joko Siswantoro b, Radityo Anggoro a, “An android based course attendance system using face recognition”, January 2019.
- [4] K. Solanki and P. Pittalia, ‘‘Review of face recognition techniques,’’ Int. J. Comput. Appl., vol. 133, no. 12, pp. 20–24, Jan. 2016.
- [5] K. Taniya, M. Nidhi, and T. Nandini, ‘‘Automated human resource and attendance management system based on real time face recognition,’’ IJSRSET, vol. 16, no. 4, pp. 847–853, 2016.
- [6] V. Grover and N. Chhabra, ‘‘Attendance monitoring system through face recognition,’’ in Proc. 6th Int. Co