

# SWE Project

## **Problem Title:**

Face Recognition based Attendance System

## **Main Objective:**

The main objective of this project is to develop face recognition based automated student attendance system. In this project, a computer system will be able to find and recognize human faces fast and precisely in images or videos that are being captured through a surveillance camera. We will be developing a prototype that will facilitate attendance by face detection and recognition of students' faces in a digital image taken by a camera.

## **Motivation:**

In order to curb the issues of proxies given by other students and time wasting manual attendance procedure, there is a need to build a system that can be deployed in colleges which can automate the task of taking attendance. Besides attendance, it can also remove the need for biometric, which nowadays people generally avoid its usage. Therefore a system like this will help to automate and efficiently perform the cumbersome task of attendance.

## **Problem Statement:**

Face recognition student attendance system is proposed in order to replace the manual signing of the presence of students which is burdensome and causes students to get distracted in order to sign for their attendance. Furthermore, the face recognition based automated student attendance system is able to overcome the problem of fraudulent approach and lecturers do not have to count the number of students several times to ensure the presence of the students.

Taking attendance is a hard process, takes time and causes a lot of paper based work. In order to solve these problems and avoid errors we suggest developing an automated system for deploying an easy and a secure way of marking the attendance of students entering a classroom, by using Computer Vision and Deep Learning based face recognition techniques.

## **Objectives:**

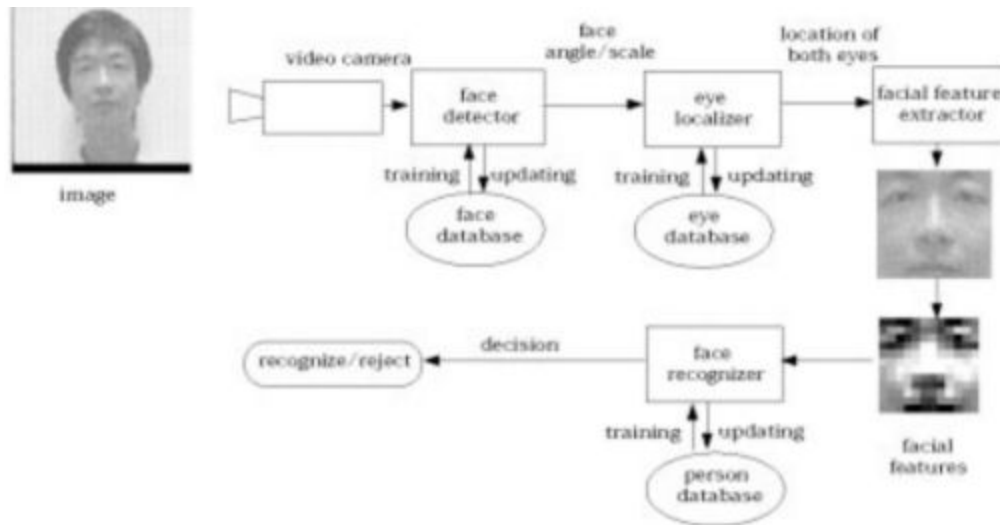
Few of the objectives this project entails are:

- The system should be able to detect students' frontal faces in a classroom with an acceptable range of accuracy.
- The system should be able to automatically reveal the number of students present on a GUI.
- Recognise students stored on a database of faces by matching them to images on a database with an acceptable range of accuracy.
- The system should be able to match detected students faces cropped from an image to those on a database on the System.
- The system should be able to process an image within an acceptable amount of time to be able to achieve the objective of recognition by the end of a lecture.
- The algorithm implemented for the system's functionality should achieve acceptable system accuracy.
- The positive prediction should be within an acceptable range.
- The system designed will be user friendly with a Graphical User Interface that will serve as an access to the functionalities of the system.

## **Solution Overview:**

The system captures an image of all students and stores the information of all the permissible persons into the database. The system then stores the image by mapping it into a face coordinate structure. Next time whenever the registered person enters the class, the system will recognize the person

(face detection, feature extraction, face recognition and verification) and marks



his/her attendance along with time. If a person arrives late than the reporting time, then “absent” will be marked.

(An overview of the pipeline)

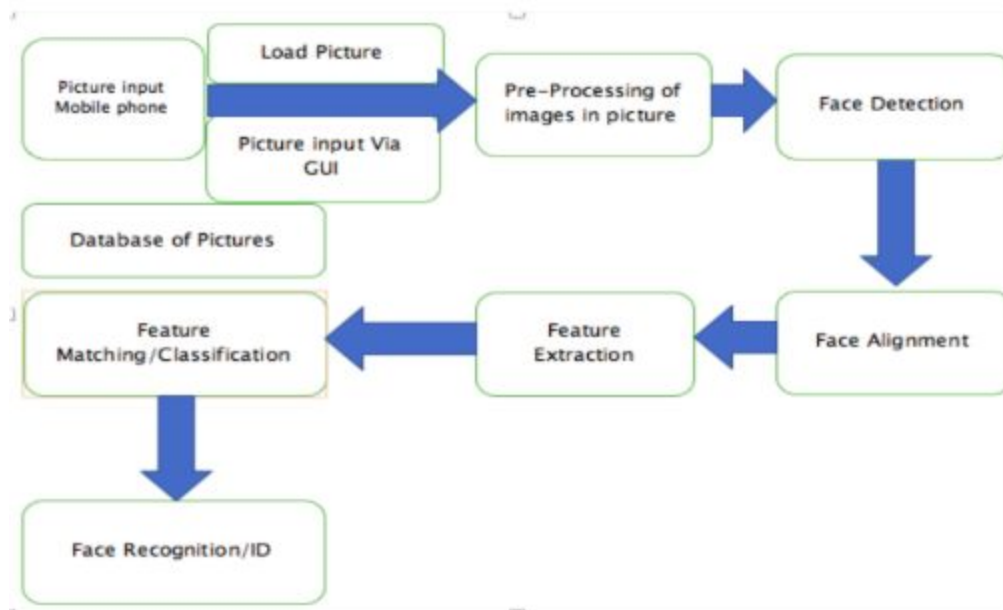


Figure 2.3 Face Detection and Recognition Flow Diagram.