

## Face Recognition Based Attendance System

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Article Received: 27 January 2018

Article Accepted: 23 February 2018

Article Published: 09 April 2018

### ABSTRACT

The project is entitled as “Face Recognition Based Attendance System” created by using C#.Net as front end and SQL server as backend. The most common means of tracking student attendance in the classroom is by asking the students to manually sign the attendance sheet, which is normally passed around the classroom while the professor is conducting the lecture. The previous approach in which manually taking and maintains the attendance records was very inconvenient task. In some organizations, fingerprint based attendance are used. After having these issues in mind, a face matching and attendance system is proposed, this automates the whole process of taking attendance and maintaining it. Face identification is one of the most well-known and common biometric identification systems. Because of their uniqueness & consistency over time, face biometrics have been used for identification over many years, more recently becoming automated due to advancement in computing capabilities. So, here the Face identification technique from the group image was used to capture student’s attendance. The record of the students with their facial features is maintained in a database. Additionally the proposed system helps to take hourly attendance from their CCTV footage.

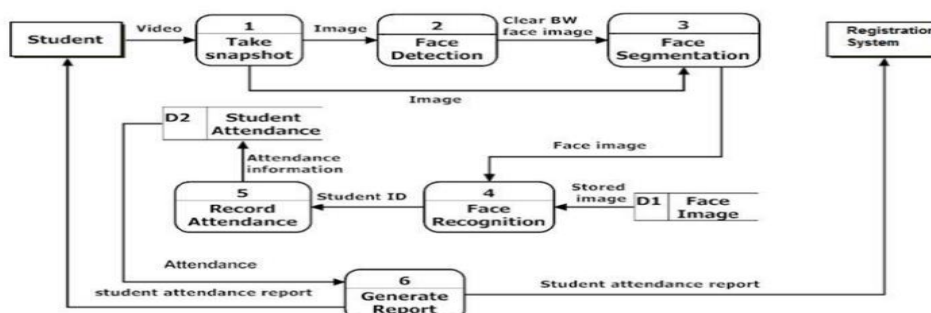
Keywords: Camera module, Face Detection and Face Recognition algorithm.

### I. INTRODUCTION

Face recognition is an important application for the purpose of attendance in an organization. The purpose of developing attendance management system is to computerize the traditional way of taking attendance. Traditionally student’s attendance is taken physically by utilizing participation sheet, given by the employee in class. The Current participation stamping techniques are repetitive and tedious. Physically recorded participation can be effortlessly controlled. Besides, it is exceptionally hard to confirm one by one student in a substantial classroom environment with disseminated branches whether the verified students are really reacting or not. Automated Attendance Management System performs the daily activities of attendance marking and analysis with reduced human intervention. The prevalent techniques and methodologies for detecting and recognizing face fail to overcome issues such as scaling, pose, illumination, variations, rotation, and occlusions. We consider a specific area such as classroom attendance for the purpose of testing the accuracy of the system. The metric considered is the percentage of the recognized faces per total number of tested faces of the same person.

### II. PROJECT DESIGN AND IMPLEMENTATIONS

#### 2.1 BLOCK DIAGRAM



### ***2.1.1 Proposed system***

The proposed system uses Viola-Jones algorithm for face detection. The Viola–Jones face object detection framework proposed in 2001 by Paul Viola and Michael Jones is the first object detection framework to provide competitive object detection rates in real-time face feature.

The system uses PCA (Principal Component Analysis) which is an efficient method for face recognition. The system functions by projecting face image onto a feature space that spans the significant variations among known face images.

### ***2.1.2 .NET Framework***

.NET Framework is a modern computing platform developed by Microsoft focusing the Internet but without giving up the conventional desktop application platform. .NET consisting of tools, languages and technologies that operates as an integrated framework to render outcomes needed to develop and deploy productive enterprise applications. The .NET application renders knowledge, information irrespective of platforms and languages. The .NET applications intercommunicate within each other with much ease.

### ***2.1.3 Face Capturing***

It is the step where image of the person is captured wherein his or her face is visible. In case of 2D facial recognition, a digital camera with normal resolution is needed.

### ***2.1.4 Facial Feature Extraction***

The facial feature extraction process contains different types of process such as face detection, alignment and feature finding process. This also performs the edge detection process using canny and sobel algorithm.

### ***2.1.4 Face Matching***

To make the attendance, the application gets the Student face from the web camera, if the facial features are matches with the database, then the attendance will be entered. The verification module is used to check whether the face is matched with the respective features. It can be verified by checking the details from the database.

### ***2.1.5 Attendance Entry***

After successful face verification, the Student attendance will be updated with the in time, date. Based on the Student id, the details will be updated in the attendance table.

### ***2.1.6 Attendance Report and SMS process:***

This report generation module can be used to view all the details about the Student and their attendance details. Using this module, the attendance percentage can be known by the Student via SMS.

### III. SCREENSHOT OF PROPOSED MODULES

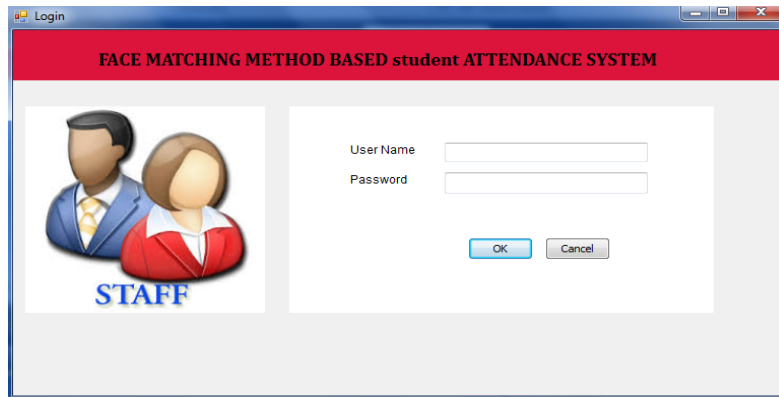


FIG 3.1. Login Page

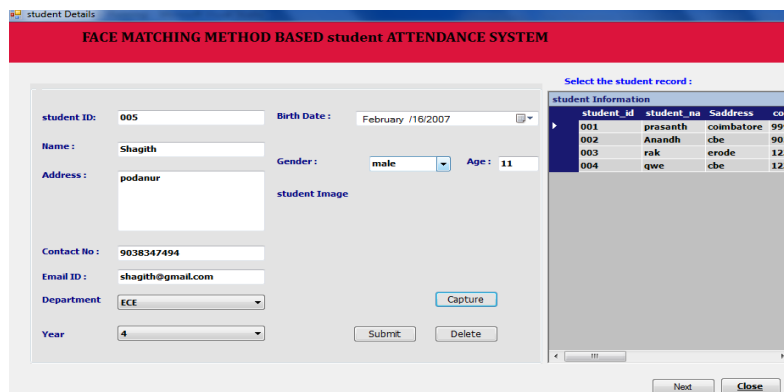


FIG 3.2. Students Registration Page

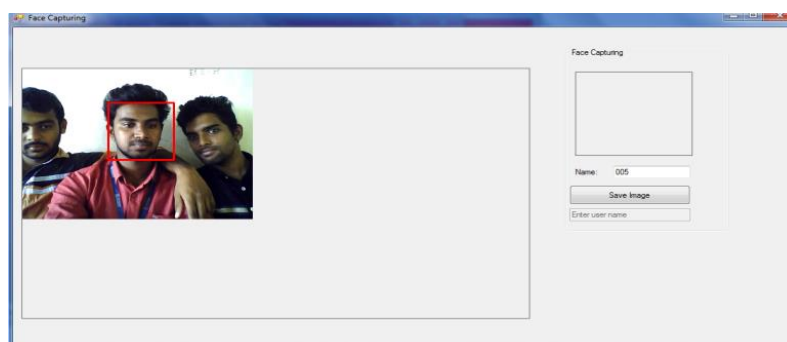


FIG 3.3. Capturing images and updating to the database

### IV. WORKING

We capture an image from a camera which is predominantly checked for certain constraints like lightning, spacing, density, facial expressions. The captured image is resolute for our requirements. Once it is resolute we make sure it is either in PNG or jpeg format else it is converted. We take individuals different frontal postures so that the accuracy can be attained to the maximum extent. This is the training database in which every individual has been

classified based on labels. These detected faces are stored in the test database for further enquiry. The feature which is already trained with every individual is compared with the detected faces feature and if both features match then it is recognized. Once, it recognizes it is going to update in the student attendance database.

## **V. FUTURE SCOPE**

The scope of the project is the system on which the software is installed, i.e. the project is developed as a desktop application, and it will work for a particular institute. But later on the project can be modified to operate it online.

## **VI. CONCLUSION**

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. Hence a system with expected results has been developed but there is still some room for improvement.

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