Student Attendance System using Face Recognition

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Abstract - In the contemporary world, education system is advancing day-by-day thanks to the introduction of thought of sensible room. However, the group action system still remains primitive, wherever the teacher/lecturer calls the name of scholars to mark their group action. The automated group action management can replace the manual technique, that takes heaps of your time, that is, it's terribly time overwhelming and is tough to take care of. There are unit several biometric processes, among that face recognition is that the best technique. During this project, we tend to area unit getting to describe the group action while not human interference. During this technique the camera is fastened at intervals the room and it will capture the image, the faces area unit detected then it's recognized with the info and at last the group action is marked. It additionally proposes one image-based face aliveness detection technique for discriminating 2-D paper masks from the live faces. Still pictures taken from live faces and 2-D paper masks were found with the variations in terms of form and detail. So as to effectively use such variations, we tend to exploit frequency and texture info exploitation varied algorithms. We are going to be making an attempt to enhance the accuracy to a good extent and therefore generate the ultimate group action report when update within the info.

Key Words: Image Processing, Face Recognition, CCTV Camera Detection, AI, Machine Learning.

1. INTRODUCTION

The main aim of the system is to mark the attendance but using image processing when the student enter into the class room then the attendance of student for particular lecture is mark. We are going to developed the system so when the particular student enter his own details then the details are match with the data based details as the match found the then the student can also able to see the present and absent lecture also able to see the percentage.

The system consists of as camera that captures the images of the students sitting in the classroom and sends it to the image enhancement module. In the image enhancement module, images are enhanced so that matching can be performed easily. After enhancement, the image comes in the Face Detection and Recognition modules and then the attendance is marked in the database. At the time of enrolment, templates of face images of individual students are stored in the Face database. Here all the faces are detectedfrom theinput image and the algorithm compares them one by one with the face database.

1.1 Problem Definition

Maintaining the attendance is very important in all the institutes for checking the performance of students. Every institute has its own method in this regard. Some are taking attendance manually using the old paper or file based approach and some have adopted methods of automatic attendance using some biometric techniques. There are many automatic methods available for this purpose i.e. biometric attendance. All these methods also waste time because students have to make a queue to touch their thumb on the scanning device.

This system uses the face recognition approach for the automatic attendance of students in the classroom environment without student's intervention. This attendance is recorded by using a camera attached in the classroom that is continuously capturing images of students, detect the faces in images and compare the detected faces with the database and mark the attendance.

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If any face is recognized the attendance is marked in the database from where anyone can access and use it for different purposes. Teachers come in the class and just press a button to start the attendance process and the system automatically gets the attendance without even the intensions of students and teacher.

In this way a lot of time is saved and this is highly securing process no one can mark the attendance of other. Camera takes the images continuously to detect and recognize all the students in the classroom. In order to avoid the false detection we are using the skin classification technique. Using this technique enhance the efficiency and accuracy of the detection process.

2. METHODOLOGY

Haar Cascade

Haar Cascade is a machine learning object detection algorithm proposed by Paul Viola and Michael Jones in their paper "Rapid Object Detection using a Boosted Cascade of Simple Features" in 2001. It is a machine learning based approach where a **cascade function** is trained from a lot of positive and negative images. It is then used to detect objects in other images. Luckily, OpenCV offers pre-trained Haar cascade algorithms, organized into categories, depending on the images they have been trained on.Now let's see how this algorithm concretely works. The idea of Haar cascade is extracting features from images using a kind of 'filter', similar to the concept of the convolutional kernel.OpenCV provides two applications to train cascade classifier opencv_haar training and opencv traincascade. These two applications store the classifier in the different file format.
For training, we need a set of samples. There are two types of samples:

- Negative sample: It is related to non-object images.
- Positive samples: It is a related image with detect objects.

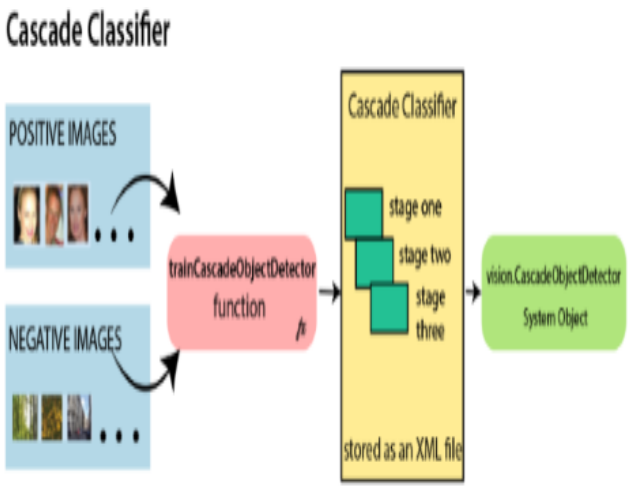

Fig -1: Cascade Classifier

3. WORKFLOW

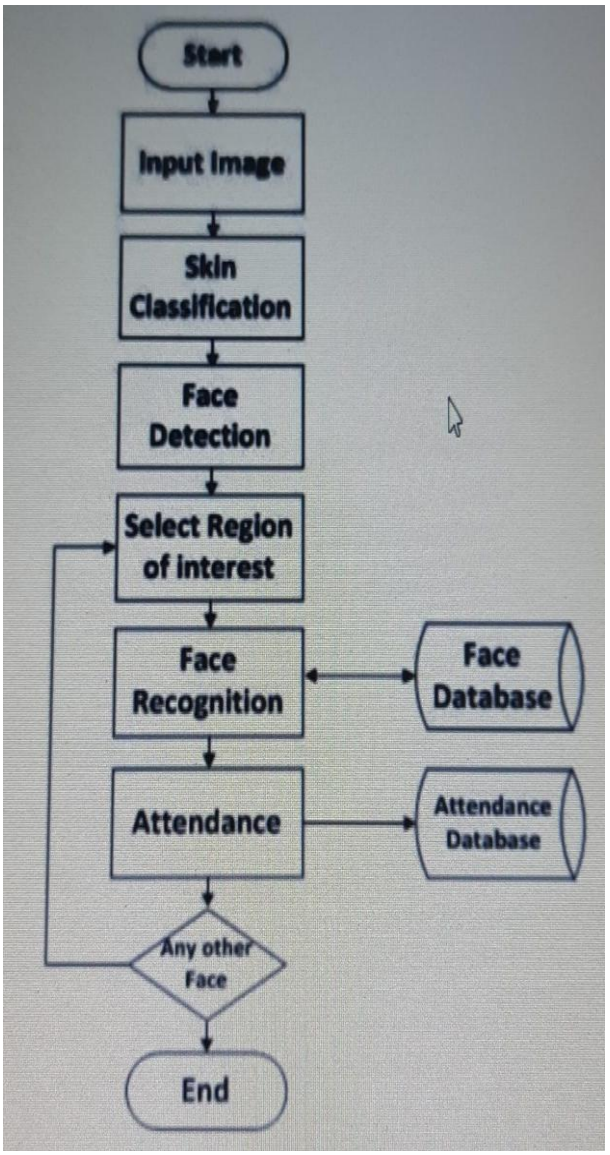

Fig -2: Workflow of Module

4. LITERATURE SURVEY

According to Literature Review papers for detection purpose we use Haar Cascade OpenCV technique. This technique can help to detect Objects like easily.

Haar Cascade is a machine learning object detection algorithm used to identify objects in an image or video and based on the concept of features proposed by Paul Viola and Michael Jones in their paper "Rapid Object Detection using a Boosted Cascade of Simple Features". It is a machine learning based approach where a cascade function is trained from a lot of positive and negative images. It is then used to detect objects in other images. The algorithm has four stages:

1. Haar Feature Selection
2. Creating Integral Images

3. Adaboost Training
4. Cascading Classifiers

It is well known for being able to detect faces and body parts in an image, but can be trained to identify almost any object.

Let's take face detection as an example. Initially, the algorithm needs a lot of positive images of faces and negative images without faces to train the classifier. Then we need to extract features from it.

5. RESULT

A. When we run the project then this window is open.

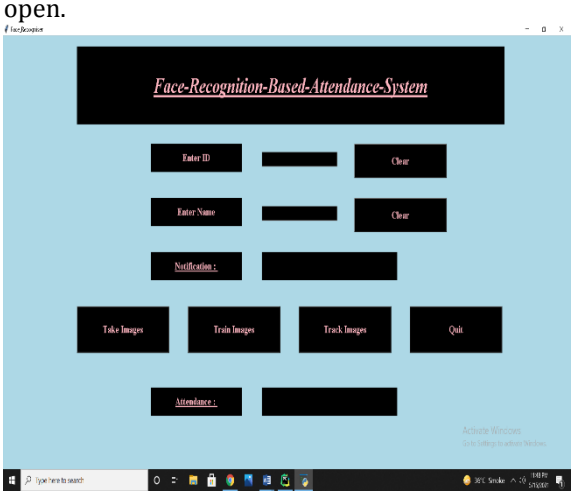

Fig -3: When we run the project

B. Then we have to add the id and name and click on take image after the taking image its show the notification images are save.

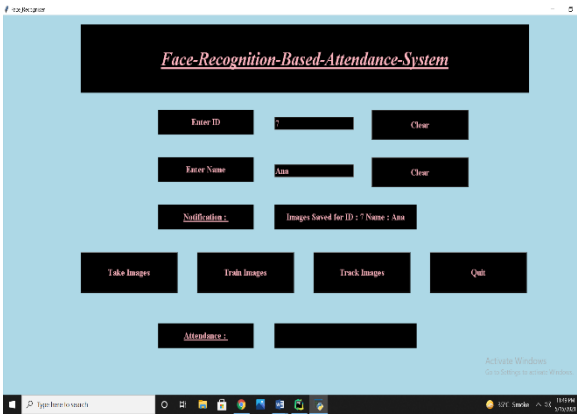

Fig -4: When we enter the details

C. Then we have to click on train images then it show the notification image is trained.

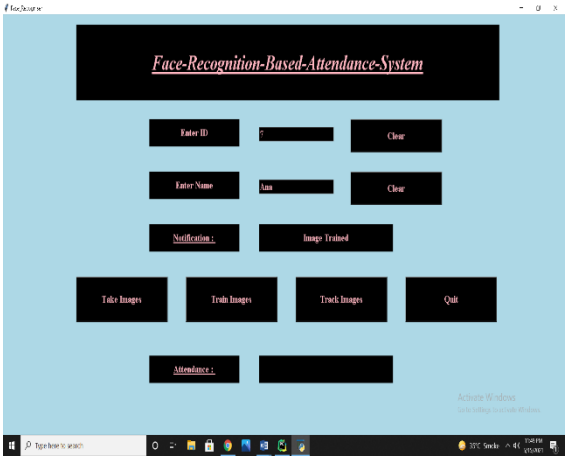

Fig -5: When we click on train image.

D. Then we have to click on the track images then the camera is open and try to find which person is this and name it.

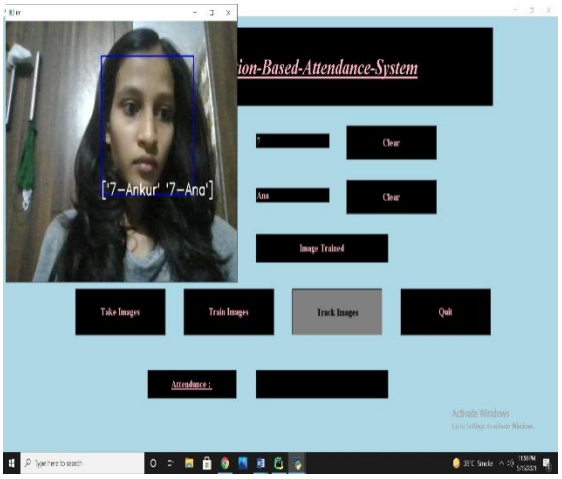

Fig -6: When we click on track image.

E. Then click on the quit and its mark the attendance and create new excel file with the name date and time.

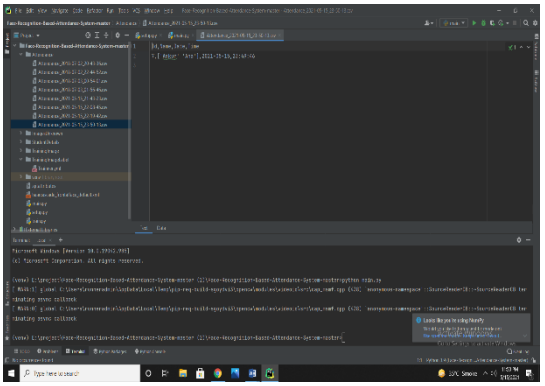

Fig -7: After click on quit.

6. CONCLUSIONS

In this approach, a face recognition based automated student attendance system is thoroughly described. The proposed approach provides a method to identify the individuals by comparing their input image obtained from recording video frame with respect to train image during the respective semester registration process. This proposed approach is able to detect and localize faces from an input facial images present in the database, which is obtained from the recording video frame. Besides, it provides a method in pre-processing stage to reduce the illumination effect and enhance the image contrast. From the challenges we faced, it can be concluded that the use of ordinary generic cameras for video replay attacks in a non- intrusive technique may lead us to some cost-effective face anti-spoofing systems. There is a need for designing,developing and deploying non-intrusive methods without using extra devices. As a conclusion, this proposed system replaces the manual system with an automated system which is fast, efficient, cost and time saving as it replaces the stationary material such as bulky registers and the paper work.

7. FUTURE SCOPE

Provide facility for the automated attendance of student. Use live face recognition to recognize each individual and mark their attendance automatically. Utilizes image processing to provide inputs to the system. Facility to marking manual attendance.

ACKNOWLEDGEMENT

Working on the project on **"Student Attendance System Using Face Recognition"** was a source of immense knowledge to us. However, this would not have been possible without the equal support of all members.
I sincerely express my deep sense of gratitude to our **Prof. Mrs. Neha Thakur**, HOD Of our department and Principal of our college for valuable guidance, continuous encouragement and support whenever required and timely help given to us throughout the course of this work.

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