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Face Recognition Bot

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ABSTRACTION
Every person has a unique face and that is the crucial part of a person's body to identify them. This technology is currently very widely in use , in our phones which we use daily mostly people put the face detection lock for security purposes on their phone. Using the same face detection technology for the biometric purpose in an organization will be very helpful because maintaining attendance record with day to day activities can be hard. The conventional method of taking can be tedious and have chances for proxies, So the following system based on face recognition will be helpful and make our work easier to maintain attendance records and in this way this system will also provide security .First we will save the image and name of the student in our database then the student come in front of the camera(web camera, phone camera, laptop camera etc) and system take a snap and do face detection and face recognition method is used to compute and we compare the features which is extracted from the face to get the results. Our system is capable of identifying multiple faces in real time. After recognition of a student from the image system will mark the student present in the spreadsheet which will save in our local system. Other technology is time consuming and not very secure.

Keyword : OpenCV, camera, attendance, biometric, face recognition, spreadsheet, Image Processing , HOG

I. INTRODUCTION

In any organization to maintain the attendance of the candidate within a diary is quite challenging and time consuming nor does it provide security. If we want a record of a particular person of a particular day it gets difficult to find it in a limited time. In today's world where everyone is busy finding one or other way to make their work easier and with a warranty of security ,that is the best technology we want .Face detection technology is quite unique and can be counted as one of the best technologies.

To make the attendance work easier in a school we came up with the idea to take student attendance by using face recognition technology. This technology is making our work easier in many sectors so let's give it a try here alsoAttendance is a very important factor in school and college to tell the progress of a student so to maintain this is a difficult and challenging responsibility ,this will make our work easier and also take the attendance of a student easily .The fingerprint biometric system and voice recognition system are mostly used but they have their own flaws , this system is like an upgrade version of both of them .This system also provide the security as every person has its own unique facial feature,which make our work easier and provide the large percentage of security.

Face recognition is simple where the system matches our face with the already stored data of the system . Face detection involves basically two steps: first detection and second identification of detected images from existing data.It detects every feature of our face to identify a person's identity .We are using python and open cv technology to design our system and make it work efficiently to detect the student and record the data in sheet later .The number of students present in a lecture hall is observed, each person is identified and then the information about the number of students who are present is record in a excel sheet which is easy to maintain.

II. OVERVIEW

In face recognition we use a technique which is subsequent to the biometric technique. In this we compare the image of a person to any other image which is present in the database and if both are matching then we recognize. And it is tough to do that using any kind of automation because of the change in the position of the image , tilted aging and sometimes the lighting also affects that.

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Sometimes using face detection techniques is not very authentic but it has advantages sometimes over others.The expected system engages the face recognition approach for automating the attendance procedure of students or employees without their involvement. For capturing the image we will use web- cam . The faces which are captured are compared with the image which is already present in the database and if it matches then the attendance will be marked.

III. WORKING

We will use two algorithm for our face recognition:-

1.HOG (Histogram Of Gradient)

2.Face Landmarking System

Using HOG algorithm we detect the face in the image .In this process at first we will change it into black and white image.And then we will check this pixel by pixel in which what we do we draw an arrow showing the direction in which the image getting darker.We will repeat for all of them and then will call it a gradeint then we will create a Square matrix 16*16 and check the image's strongest colour and then it will detect the face in the image.

Sometimes the image is tilted and it is tough to recognize the image. That's why we use the Face Landmarking System. What it will do is we'll take the 68 specific points like distance between nose , eyes and chins .And then we will face to the middle by checking the exact position of the image

And after that we will compare the unknown image by using the same 68 points.And whichever having a lowest difference is called the same person.

* Find the face in the image

*Analyze the Facial Features

*Compare against known faces

*Make a prediction

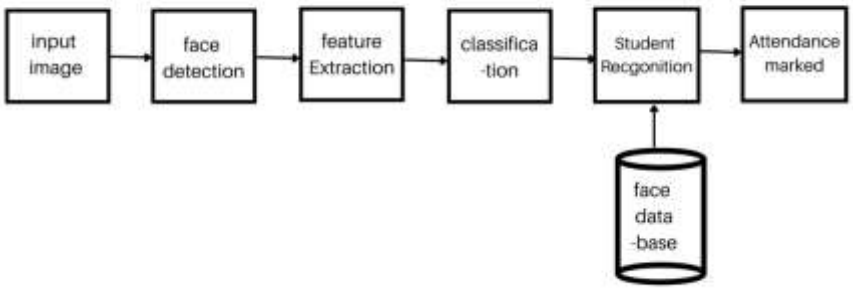

Fig : Working Model

Input Image-

The input image is taken and it is sent inside the algorithm for detection.

Face Detection-

In this we will detect if the face is present in the given picture or not **.** And for that we will use the HOG (Histogram of Gradient) algorithm over here.

Feature Extraction-

In this we extract the features of the image and by extracting the feature of the image we will be able to compare it from the unknown faces after that. We will use the Face Landmarking System over here and find the features of the face.

Classification-

We will classify the image that has been used for the face detection afterwards.

Student Detection-

Here we will detect a student by recognizing his face from the database. Here we will extract the features of the person face and compare it to the previous used case . And on which we will get the minimum difference . That is the identity of the person.

Attendance Marking-

And after identifying the student we will create a csv. File of it. And attendance of that student has been marked.

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That's how it goes.

IV. FLOW CHART

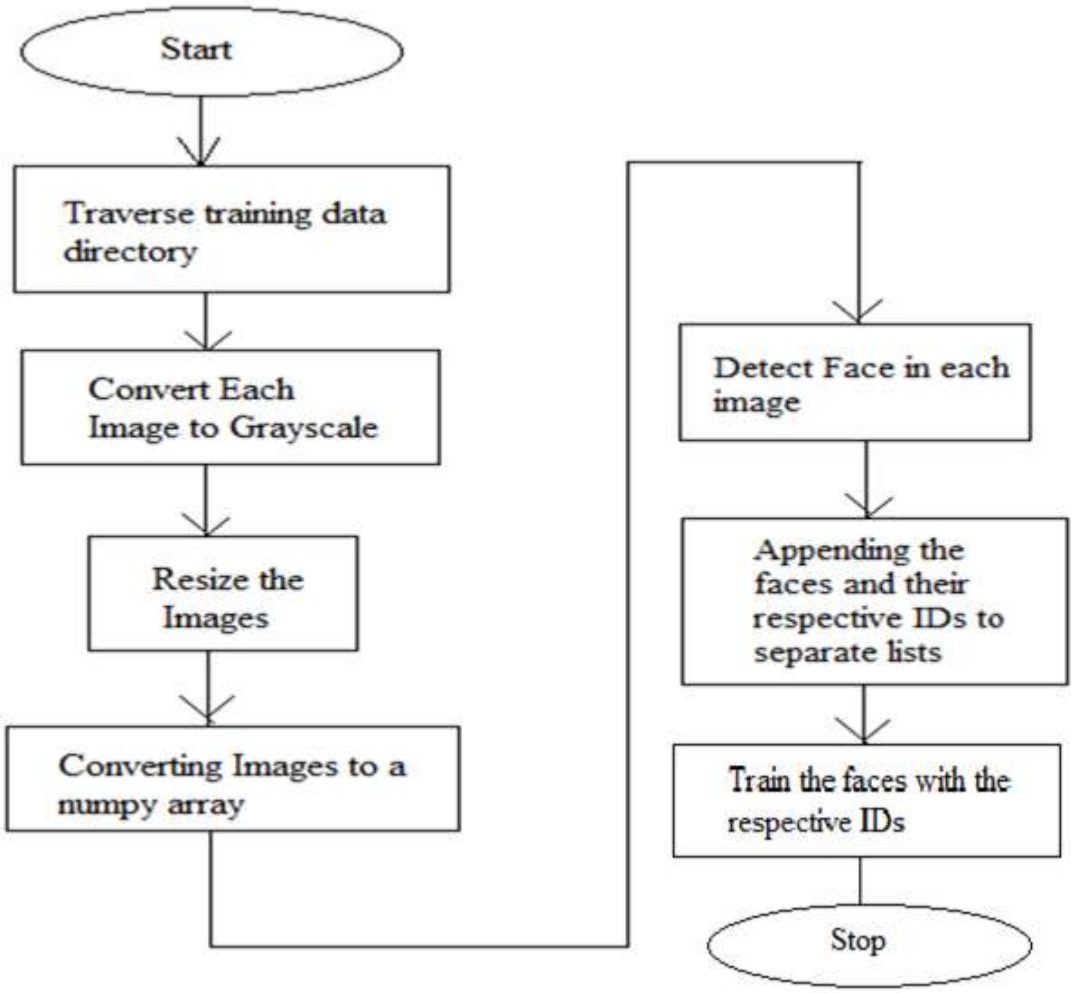

Fig : Flow-chart of the methodology used for Training Process

V. RESULT AND EXPERIMENT

The Smart Attendance Management System is simple and works efficiently. The system works automatically once the registration of individual student created by the administration.

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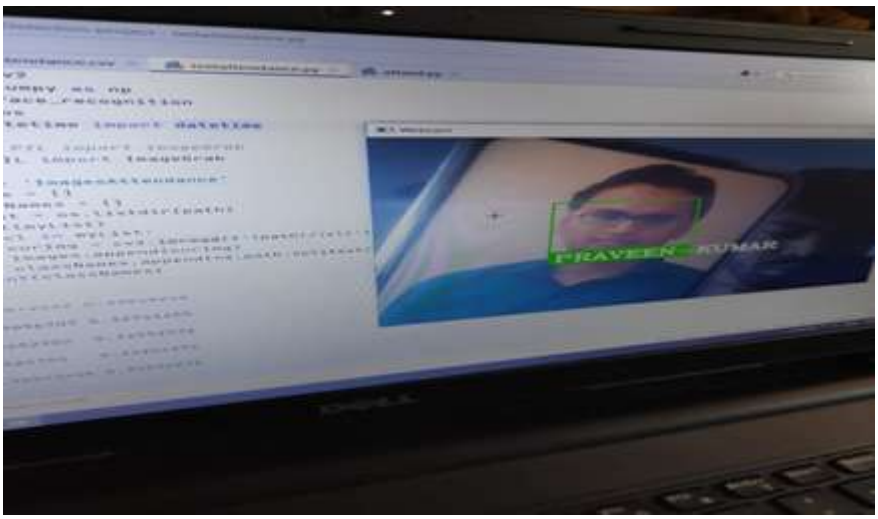

Fig : Detection of person from phone

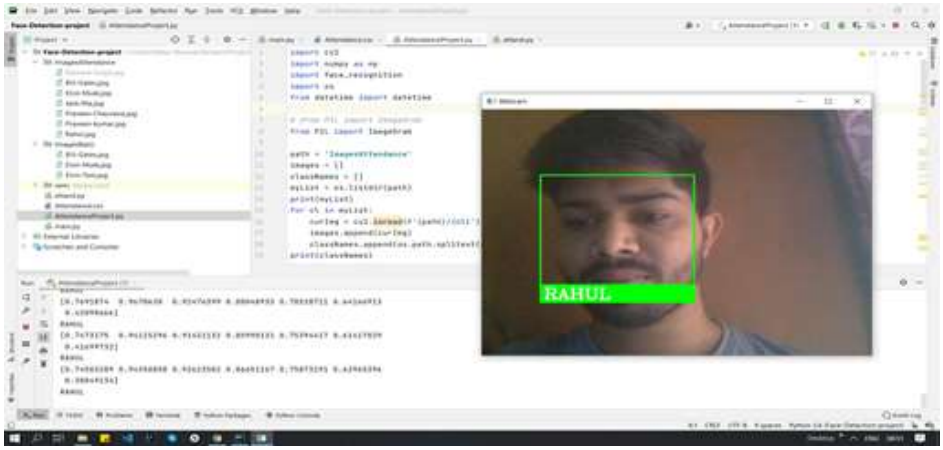

Fig : Single real person detection

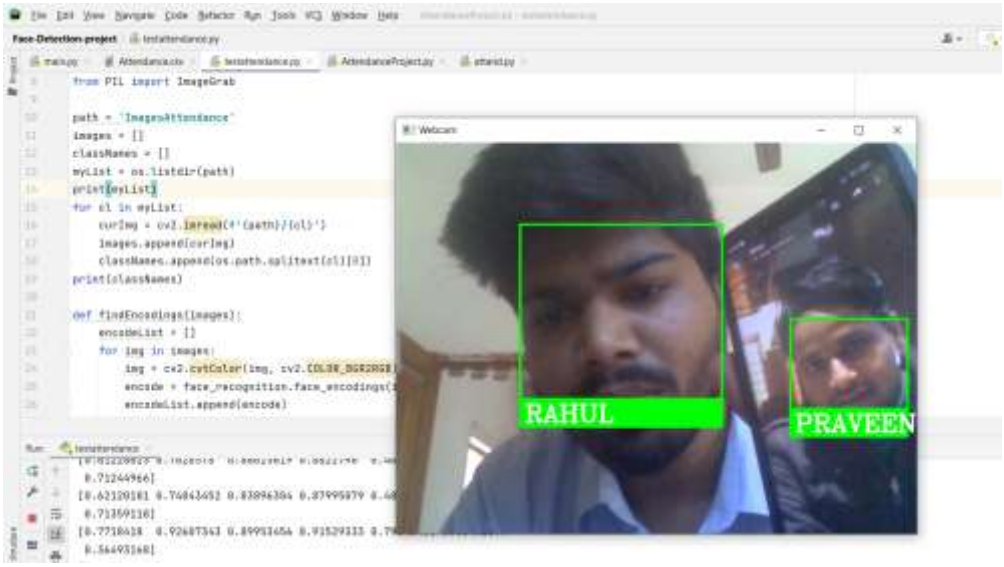

Fig : multiple person detection

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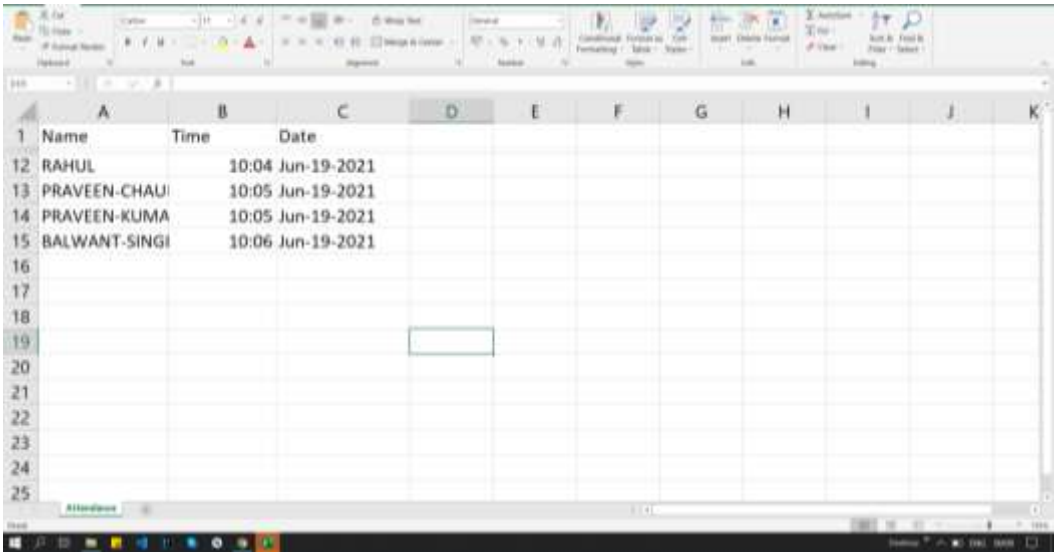

	A	B	C
1	Name	Time	Date
12	RAHUL	10:04	Jun-19-2021
13	PRAVEEN-CHAU	10:05	Jun-19-2021
14	PRAVEEN-KUMA	10:05	Jun-19-2021
15	BALWANT-SINGI	10:06	Jun-19-2021

Fig : data on spreadsheet after detection

VI. CONCLUSION

This paper shows the most effective way to use OpenCV for face detection and use it for attendance of the student in an effective manner.In this system we have implemented the HOG algorithm and Face Landmarking System. And this algorithm is better than other algorithms like Eigen face , Fisher faces . HOG(Histogram Of Oriented Gradient) is the most authentic and competent face recognition algorithm found in OpenCV for the identification of the students in an educational institute and marking their attendance adequately by averting proxies.

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