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Face Recognition Attendance System OpenCV

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Abstract. As we all know; attendance is quite crucial in today's generation. To take attendance, most businesses employ an iCloud- based biometrics system. However, as technology advances, many businesses are switching to face recognition, in which the software's camera captures an input image, and an algorithm detects a face from the input image, decodes it, and records the attendance in an excel sheet. The image is captured by the system's camera, which is identified by the database and used to record attendance. Hardware devices can be useful for facial recognition. However, keeping all of the sensors in good working order without causing harm is a difficulty.

Keywords- *School attendance, OpenCV python, face recognition*

1. Introduction

The advancement of man-made intelligence is currently in full swing, and it is presenting us with enormous prospective outcomes. With the use of man-made reasoning improvements, investigation, gauging, and detecting were taken to a new level. Computer vision has recently emerged as an extremely promising subject of study. It is the process of recognizing people's faces in photos & videos.

This capability is incredibly powerful, despite enormous variations in visual upgrades due to changing conditions, maturing, and interruptions such beards, glasses, and hairstyle changes. A numerical as well as computational method in face recognition system which speedy and is fast to take attendance. It can recognize the face of an individual with the help of the camera to mark attendance. The purpose is to calculate large amount of data at a time so that it will be speedy and help to reduce the effort and the time. The research will focus on face recognition attendance system bases on OpenCV library.

SURVEY STUDY

Shubham kadam, Sagar Khedkar applied algorithm LBPH, PCA algorithm using MATLAB GUI, Eigen Face algorithm, KNN algorithm, Histogram Algorithm, DRLBP algorithm. Its accuracy range is 70% to 97.35%.

Anju Das, Anjana Shyju, Thomas Varghese and Nisha Mohan applied algorithm CNN algorithm using Deep Learning-based AI/ML techniques, OpenCV, tensor flow using python. Its accuracy is 90% reaching maximum of 95%.

Mayur Surve, Priya Joshi, Sujata Jamadar, Minakshi Vharkate used GUI for storing the name of students or attendees and roll number of each student. It was very accurate from 60-80cm distance.

T.Praneeth , K. Rajesh , U. Naga Raju , Dr. Suneetha Manne used camera,applied face detection algorith,extracted the ROI(Region Of Interest) converting to gray scale and used histogram equalization.It’s accuracy was around 86.5%,87% and 98%.

Shervin Emami,Valentin Petrut Suciu used python programming in Hass Cascade Classifier. It was able to capture at least 50 images per person.It could verify one or more person in the scene.

J. Manikandan, S. Lakshmi Prathyusha, P. Sai kumar, Y. Jaya Chandra,M. Umaditya Hanuman used python programming,open CV applying Haar Cascades classifier,LBP classifier, applied Eigen Faces algorithm,Fisher Faces algorithm.

Smitha, Pavithra S Hegde, Afshin used python programming in face detection. It will directly help in increasing the speed and accuracy in real time attendance

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Nandhini R, Duraimurugan N, S.P.Chokkalingam used Python, Programming in Face recognition, Face detection, Deep Learning, Convolution Neural Network (CNN). It converted the video captured data into image and recognized it.

2. Objective of the study

The purpose of this is to make a system using OpenCV which will automatically take attendances using face recognition and it will convert it into the excel file to take record of the attendees. To develop smart attendance system which is handy. Parents will able to know their children attendance status. Develop a database for the attendance management system.

3. Materials and Methods

PYCHARM:

It is an IDE, which is designed for the python language.

PYTHON:

Its is a high-level and objected oriented language. As other language use punctuation but python uses English keywords. Python can be easily integrated with C, C++, COM, CORBA, JAVA.

COMPUTER VISION:

It is one of the field of artificial intelligence which enables computer to access a meaningful data from the image for further processing. Computer Vision works much as the human vision. As computer vision trains the machine to perform the task in less time through camera, data rather than retina, optic nerves.

OPENCV:

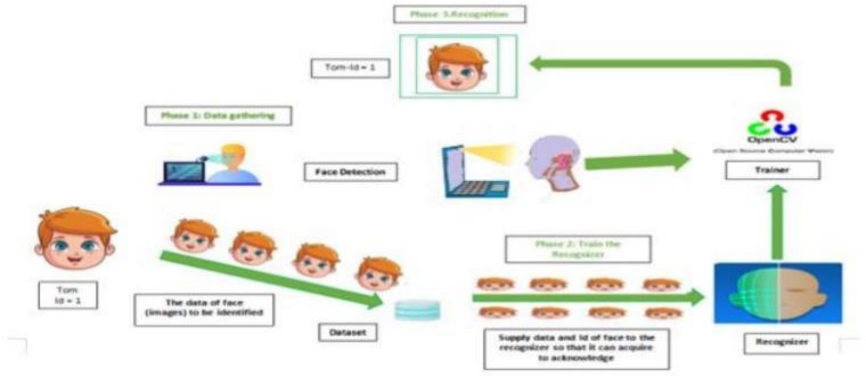
It is a library for computer vision. It was developed in 1999 at intel. In this library the image is converted into NumPy array. Here all the image will be defined in a matrix. After that OpenCV will read it as NumPy array.

DETECTION:

Detection will be done with the help of OpenCV.

REQUIREMENT GATHERING:

The researchers gathered the information that are required for making the software like doing survey and finding out the problem on the existing problems.



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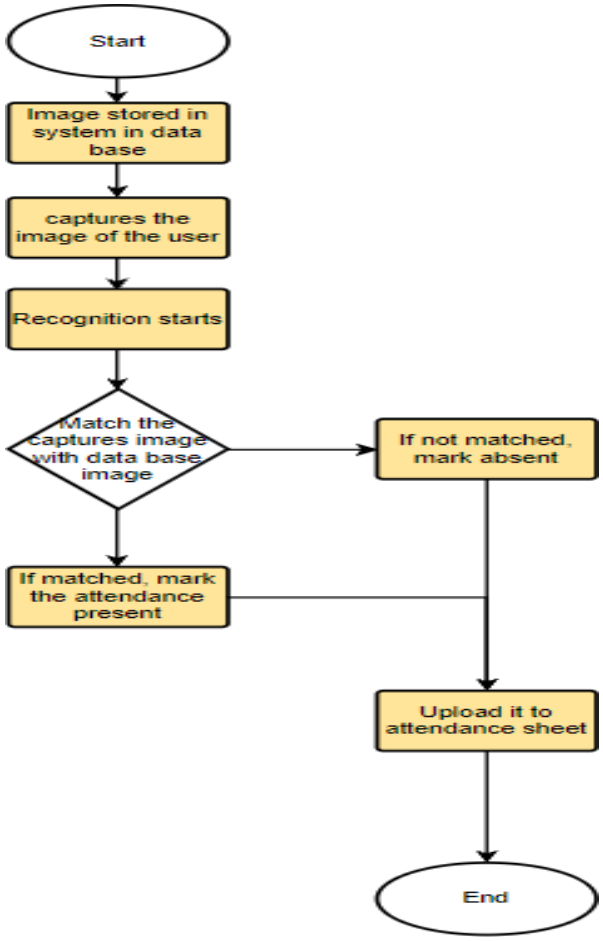
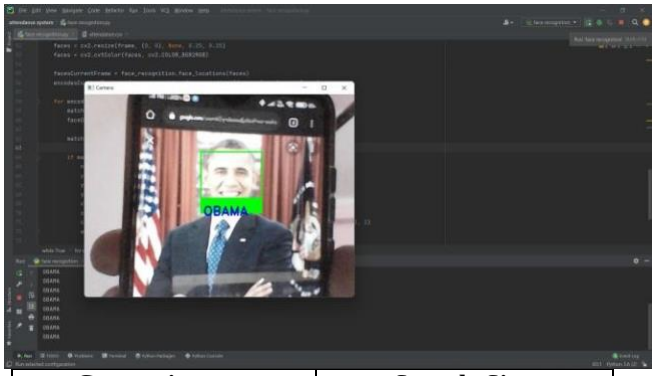
Quick Design/Build

The built-in OpenCV library tools were used for recognizing the system. So that the developer won't have to code it manually.





RESPONDENT OF THE STUDY

As we know that due to COVID19 all educational institution has been closed. That's why all the educational institution has been shifted to online class like, Zoom, Google Meet, etc. That's why the respondents of the study are for the students and the teachers who are attending their classes in online mode

Categories	**Sample Size**
Online Students	60
Teachers	6
Total	**66**

RESULT ANALYSIS

The interface for the attendance system will be created soon. With the help of interface, the image of the student and the teachers will be captured using detection and will be stored in the dataset. After their image is stored in the dataset. Then the detection steps start and try to find the unique thing in that image. So that it will make easy to recognize the attendees, and to take their attendance which will be stored in the excel.

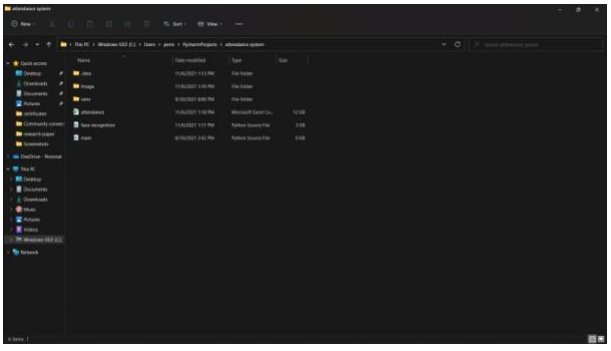


Fig 1: The different folders have been created

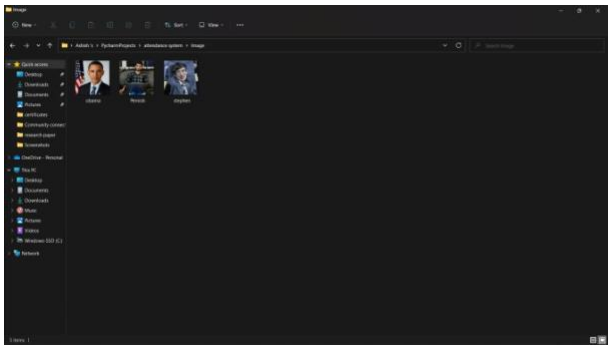


Fig 2: The images are stored in a folder

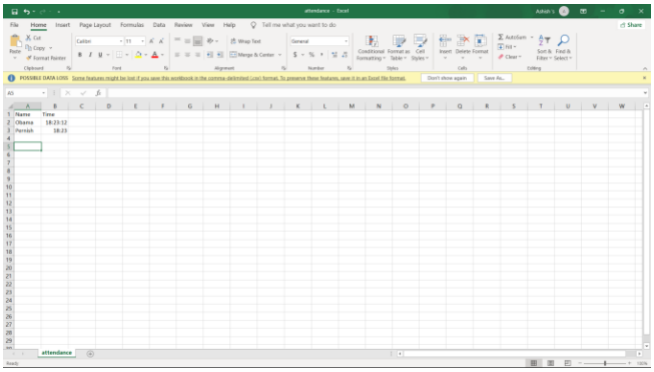


Fig 3: The name of the student has been stored in the Excel sheet

CONCLUSION

- It can be the best solution for taking the attendance while class are ongoing
- It can save money for the teachers or user who used to take attendance in the attendance sheet
- It can easily record the names of the attendees, who have joined the class, including the teacher.
- It can reduce the time and effort of the teachers or users.
- It can easily record the name of the student's and avoid misspelling

RECOMMENDATION

These types system can be develop in many purposes such as online registration for official verification and for taking the record of employee's using face recognition attendance system.

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