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Face Recognition and Attendance System

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ABSTRACT: Daily attendance marking is a common and important activity in schools and colleges for checking the performance of students. Manual Attendance maintaining is difficult process, especially for large group of students. Some automated systems developed to overcome these difficulties, have drawbacks like cost, fake attendance, accuracy, intrusiveness. To overcome these drawbacks, there is need of smart and automated attendance system. Traditional face recognition systems employ methods to identify a face from the given input but the results are not usually accurate and precise as desired. The system described in this we aims to deviate from such traditional systems and introduce a new approach to identify a student using a face recognition system, the generation of a facial Model. This describes the working of the face recognition system that will be deployed as an Automated Attendance System in a classroom environment

KEYWORDS: Attendance system ,Simple User Interface , Time saver.

I. INTRODUCTION

Nowadays Attendance is considered as an important factor for both the student as well as the teacher of an educational organization. With the advancement of the deep learning technology the machine automatically detects the attendance performance of the students and maintains a record of those collected data by using some face-recognition library in Python . In general, the attendance system of the student can be maintained in two different forms namely, Manual Attendance System, Automated Attendance System .

Manual attendance may be considered as a time-consuming process or sometimes it happens for the teacher to miss someone or students may answer multiple times on the absence of their friends. So, the problem arises when we think about the traditional process of taking attendance in the classroom. To solve all these issues we go with Automatic Attendance System using face-recognition. Automated Attendance System is a process to automatically estimate the presence or the absence of the student in the classroom by using face recognition technology.

II. RELATED WORK

[1]Face Detection and Recognition using OpenCV and Python Tejashree Dhawle1, Urvashi Ukey2, Rakshandha Choudante3 1-3Student, Department of Computer Engineering, Dr. Babasaheb Ambedkar Technological University Raigad, IndiaThis research paper gives an ideal way of detecting and recognizing human face using OpenCV,and python which is part of deep learning .This report contained the way in which deep learning an important part of computer science field can be used to determine the face using several libraries in open CV along with python. This report will contain a proposed system which will help in the detecting the human face in real time. This implementation can be used at various platforms in machines and smartphones, and several software application

[2]Automatic face recognition (AFR) technologies have made many improvements in the changing world. Smart Attendance using Real-Time Face Recognition is a real-world solution which comes with day to day activities of handling student attendance system. Face recognition-based attendance system is a process of recognizing the students face for taking attendance by using face biometrics based on high - definition monitor video and other information

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technology. In my face recognition 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.

[3]Because of image-databases and ―live‖ video information is growing more and more widespread, their intelligent or automatic examining is becoming exceptionally important. People, i.e. human faces, are one of most common and very specific objects, that we try to trace in images. Face detection is a difficult task in image analysis which has each day more and more applications. We can define the face detection problem as a computer vision task which consists in detecting one or several human faces in an image. It is one of the first and the most important steps of Face analysis. In this paper we presented various methods of face detection, which are commonly used. The seminal Viola-Jones face detector is first reviewed.

[4]In modern times, Automatic Face recognition (AFR) technologies have seen dramatic improvements in performance over the last few years. There are two reasons for this trend; the first is for saving the time in the classroom and accuracy in attendance will be maintained, and the second is availability of advanced technology it is more useful for the future generation. In simple words, it was a computer implementation for recognizing automatically whether the student is present in the classroom or not with the help of still image or video frame. We proposed an automatic attendance management system. It was completely based on face recognition and the face detection. This both detection and recognition will automatically detect the students in the classroom and mark the attendance by recognizing the person. This research includes for Face detection Students and system is based on CNN perspectives and algorithms. Keywords: Face Recognition, Face Detection, CNN, AFR, Deep Learning.

III. PROPOSED METHODOLOGY

1. Pre-Processing Images
   The system captures around 50 images of every individuals face. The images are converted into grey scale as LBPH operates using images in greyscale and the images are stored in a folder. The stored images will be saved with a name and ID unique to that person.

2. Face Detection
   When a person appears in front of the camera, the camera detects that a face is present and a frame appears around the face. The entire frame is converted to greyscale as LBPH works only on greyscale images. A scale factor is used to compensate for multiple faces present in front of the camera.

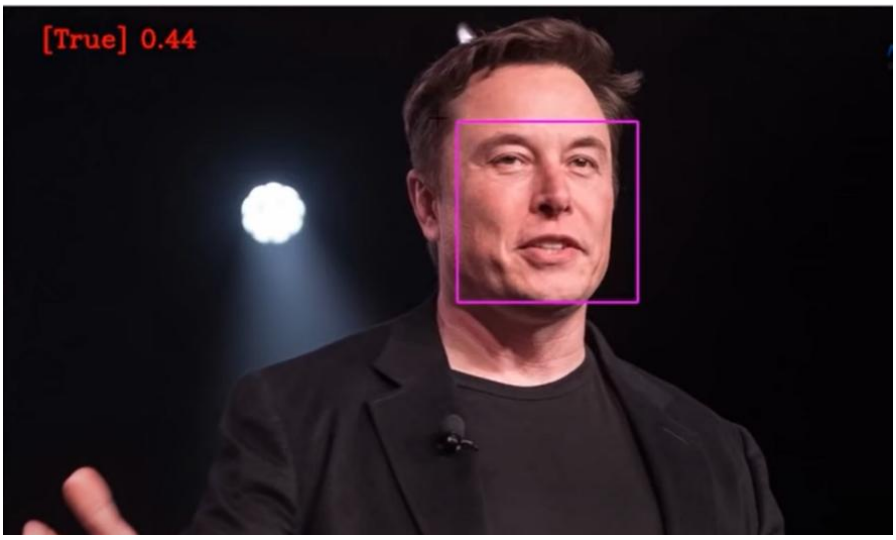

Fig 1:Face Detection

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3. Feature Extraction

The LBPH algorithm makes use of binary values and stores the data in a file. The binary values are different for each face. The Region of Interest (ROI) [12][13] are parts of the face from where features are extracted. Information about the gradients in the face is captured. The image of a person's face is divided cells comprising of 8 pixels. Each pixel present has a gradient and compares itself with its neighbor pixels.

Fig 2:Feature Extraction

4. Face Recognition

In the comparison module, face recognition process is carried out. When a face is detected by the camera it checks the corresponding values of the current visible face with values stored in the file. If the values are a match, then the face is recognized and the name associated with that face is displayed

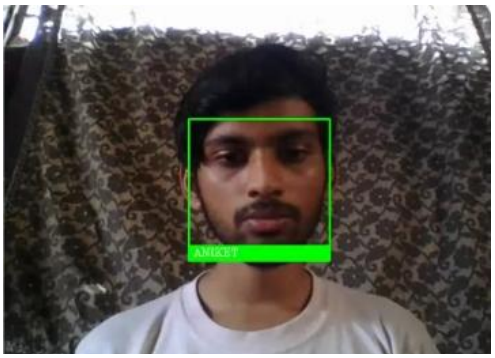

Fig 3:Face Recognition

5. Attendance marked in excel

Attendance of person will get filled in excel sheet if his/her face will be recognised successfully.

	A	B	C
1			
2			
3	ATHARVA	21-06-2014 16:40	Clock In
4	ANIKET	21-06-2014 16:41	Clock In
5	ANIKET	21-06-2014 16:46	Clock In
6	ATHARVA	21-06-2014 16:46	Clock In
7	ANIKET	21-06-2014 16:47	Clock Out
8	ATHARVA	21-06-2014 16:47	Clock Out
9	ANIKET	21-06-2020 13:31	Clock In
10	ANIKET	21-06-2020 13:31	Clock Out
11			

Fig4 : Attendance

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IV. SOFTWARE REQUIEMENT

1. Python.
2. Visual Studios.
3. PyCharm.

V. RESULT AND ANALYSIS

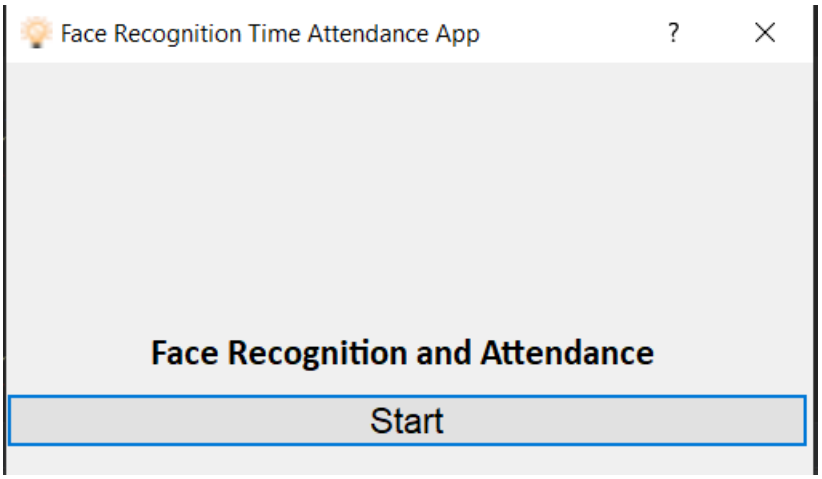

Fig 5 : interface

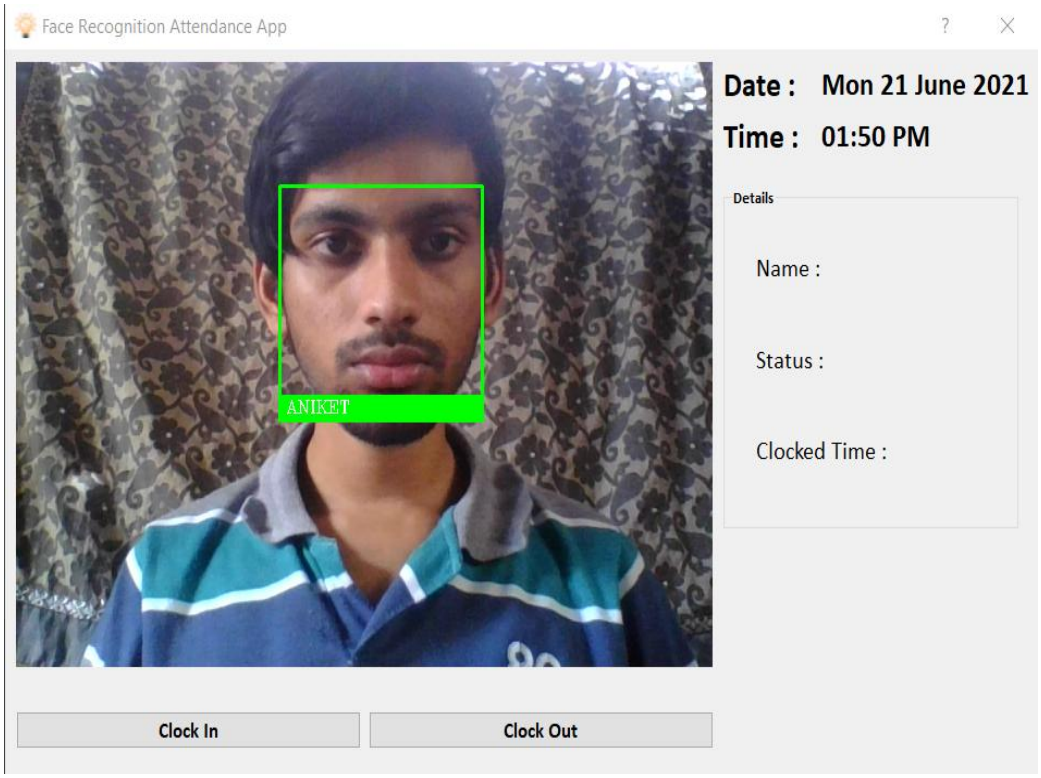

Fig 6 : Face recognition

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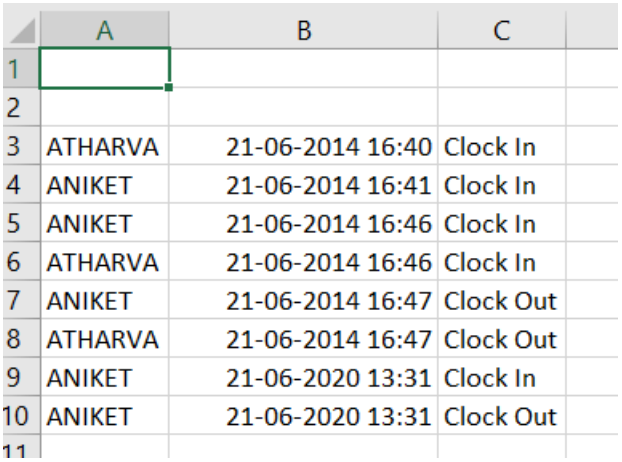

	A	B	C
1			
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8	ATHARVA	21-06-2014 16:47	Clock Out
9	ANIKET	21-06-2020 13:31	Clock In
10	ANIKET	21-06-2020 13:31	Clock Out
11			

Fig 7 : Attendance marked

VI. DISCUSSION AND FUTURE SCOPE

Facial recognition technology is a system or software which is capable enough to verify the identity of a person from analyzing an image or video footage. Some of the technologies or software are so advanced that even blurred pictures are sometimes rendered enough and analyzed to know the identity of the person. So much are the advantages of this system that it would take a long article to note down each and every one of them. But today, our prime focus will be on one of the many applications of facial recognition technology, and that is using face recognition based attendance system.

Recently Deep learning has been highly explored for computer vision applications. Human brain can automatically and instantly detect and recognize multiple faces. But when it comes to computer, it is very difficult to do all the challenging tasks on the level of human brain. The face recognition is an integral part of biometrics.

VII. CONCLUSION

Automated Attendance System has been envisioned for the purpose of reducing the errors that occur in the traditional (manual) attendance taking system. The aim is to automate and make a system that is useful to the organization such as an institute. The efficient and accurate method of attendance in the office environment that can replace the old manual methods. This method is secure enough, reliable and available for use. No need for specialized hardware for installing the system in the office. It can be constructed using a camera and computer.

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[2] Divya Pandey, Priyanka Pitale, Kusum Sharma Research Scholar, Assistant Professor, Assistant Professor, Department of computer Science and Engineering, RSR Rungta College of Engineering and Technology, Bhilai, Chhattisgarh, India.

[3] A Study of Various Face Detection Methods Ms. Varsha Gupta1 , Mr. Dipesh Sharma Research Scholar, Department of Computer Science and Engineering, RITEE, Raipur, India1 Associate Professor, Department of Computer Science and Engineering, RITEE, Raipur, India.

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