



Attendance System using Face Recognition

Payal Pujari¹, Amit Bhillare²
Narayan Gawade³, Trupti Patil⁴
¹(EXTC, VIVA Institute of technology, Virar)
²(EXTC, VIVA Institute of technology, Virar)
³(EXTC, VIVA Institute of technology, Virar)
⁴(EXTC, VIVA Institute of technology, Virar)

Abstract : We live within the 21st century that is that the era of contemporary technology, several ancient problems being resolved using new innovative technologies. In educational system, regular category attending of students' plays a big role in performance assessment and quality observation the standard strategies practiced in most of the establishments square measure by names or sign on papers, that is very long and insecure, we have a tendency to measure presenting this Automatic attending System Face Recognition to beat the standard issues of getting manual attending, the automated attending management system for convenience or information responsibility. The system is developed by the combination of present elements to form a portable device for managing the scholars attending Face Recognition technology.

Keywords – Face Recognition, Attendance System, Attendance Management, Face capturing, Programing Language.

I. INTRODUCTION

Attendance plays a pivotal role in determining academic performance of children and youth in schools and colleges. The regularity of attendance shows that the students are less likely to engage in delinquent or destructive behaviour. In the traditional attendance system, a person has to check one by one if someone is absent or not which is very time consuming. In other ways, everyone puts their signature on an attendance sheet which is not also appropriate as anyone can easily copy signatures for others. An automatic attendance system can reduce all the complexities, so based system that will be advantageous in educational/official sectors where regular attendance is greatly needed. A facial recognition system is a technology which can identify or authenticate a person from a digital image or a video stream from a video source. These systems operate indifferent methods, they compare extracted facial features from an input image of human face within a database to recognize a person. In recent years, face recognition from stationary and moving images has been an active and demanding research area in the field of image processing, pattern recognition and so on. At first images with different postures of an individual are collected as a training database. Face recognition is done for input facial images depending on their intensity value estimation. Attendance system using face recognition consists of two steps: The first step will be to detect the face and the second step will be to compare the detected face with the databased which is saved or will be saved in the systems.

II. LITERATURE SURVEY

An automatic student attendance system was proposed that can be utilized in small and crowded classrooms. The implemented system detects the faces in the images and recognizes which students are present in order to mark the attendance [1]. Designed and develop an automatic attending Management System (AMS) supported face detection and face recognition techniques. The system employs modified Viola-Jones algorithm for face detection, and alignment- free partial face recognition algorithm for face recognition. After successful recognition of a student, the system automatically updates the attendance in the excel sheet. The planned system improves the performance of existing attending management systems by eliminating manual vocation, marking and entry of attending in institutional websites[2].

Design an automatic attendance management system for convenience or data reliability. The system is developed by the integration of ubiquitous components to make a portable device for managing the students' attendance using Face Recognition technology. The system can communicate via a wireless communication device such as Bluetooth and an android cell phone app is used to convert text to speech [3]. This system is based on face detection and recognition algorithms, which automatically detect the student when he enters the classroom and marks the attendance by recognizing him. We used Viola-Jones Algorithm for face detection which detects human faces using cascade classifier and PCA algorithm for feature selection and SVM for classification [4]. The system's accuracy rate of the face recognition in the actual check-in, the stability of the face recognition attendance system with real-time video processing. A face recognition attendance system based on real-time video processing is designed, and two colleges in a province are selected for real-time check-in and inspection of student attendance [5].

III. PROPOSED METHODOLOGY

The different parts of the system can be grouped into four main stages. These are: i. Data Entry. ii. Dataset Training. iii. Face Recognition. iv. Attendance Entry. These stages are discussed in the following section.

1. Data Entry: The first step is to include the faces of the students in the system for creating a dataset, which is shown in Fig. 1. For this, continuous photos of each of the enrolled students are taken by the system from a live video stream one person at a time, along with their names and IDs. The default setting is set to take 20 pictures at a 2-second interval from a live video stream. It is preferred that the students have different head positioning during this time to create a better dataset. The setting can be changed to increase the number of pictures taken to make a more accurate dataset. A folder for each student is created with the corresponding student's name and ID as the label. Each of the pictures of faces is then saved in that student's designated folder. Besides this process, previously taken pictures of the enrolled students can be added to the dataset for making it more diverse. In this case, the new photos will be saved in that student's previously created folder. After every data entry, the system is automatically trained using the currently available dataset.

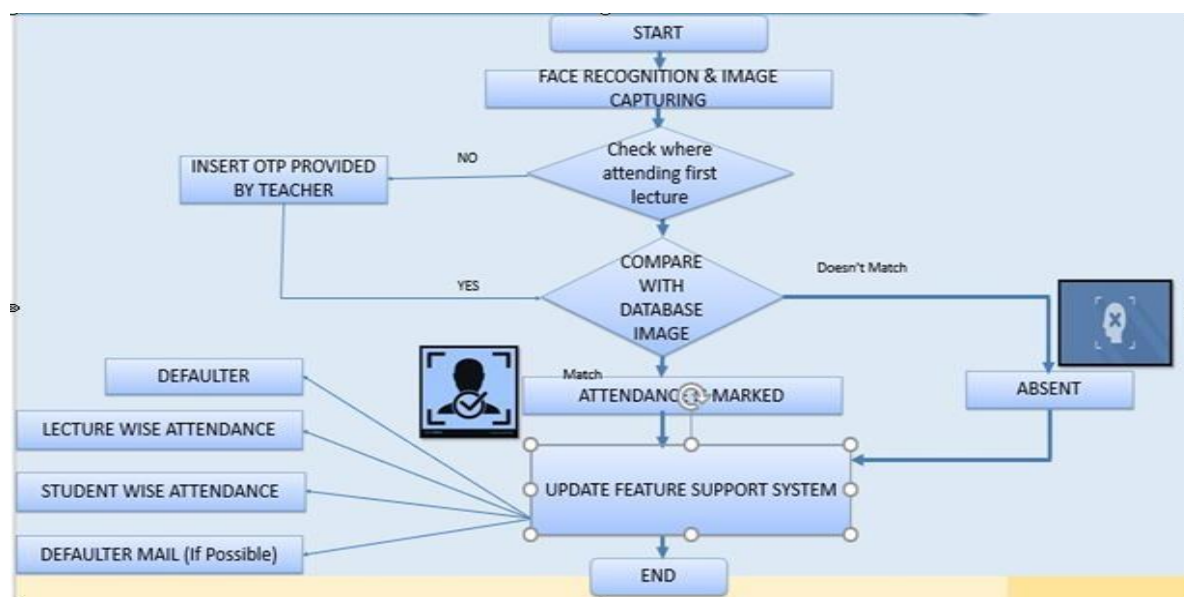


Fig. 1: Flowchart

2. Dataset Training: This step is automatically done after the Data Entry stage. These are stored as 128-d vectors. For the two images belonging to the same person, this whole process is done using the face encodings function of the face recognition library. The extracted data is then stored as a pickle file, which is used later for comparing and recognizing faces in the next stage. This step also automatically creates a spreadsheet that contains the names and IDs of all the students of the class, whose data has been entered in the previous stage.

3. Face Recognition: In this step, the system can be set up by putting a video camera on a good position, preferably on the doorway faces of the students from the ongoing video stream of the camera. The detected faces are then

compared to the trained dataset. A confidence value is assigned to each of the matches. The match with the highest confidence is selected and the label, which is the name and ID of the student, is extracted. If there is not a match of a high enough accuracy, then the student is labelled as 'Unknown'.

4.Attendance Entry: Steps of attendance entry are shown in Fig. 3. In each session of the video stream, which would be each period of classes, the names and IDs of the recognized students are automatically logged on a daily attendance spreadsheet along with the date, time and period name. There is also the option to calculate the total attendance during a specific time span, which can be a semester or month or year depending on the time range. The system can automatically calculate the total number of classes and also show the total attendance of the enrolled students for those classes.

IV. RESULT AND DISCUSSION

First we have to open Python 3.8.5 then we have to open Idle. We have already save the program in document. After running the program there are two tables appear the first table for already registered students and second for new registration. For registration we have to enter our ID and Name then click take image camera will start automatically and capture the photos then click save profile for saving the profile we have to enter the password and press ok Profile saved successfully. we can go to the next table taking the attendance click on take attendance the web camera well automatically Capture the images and face detected successfully. all registered student details and attendance record with Id no, Date and Time are Stored in Excel sheet.

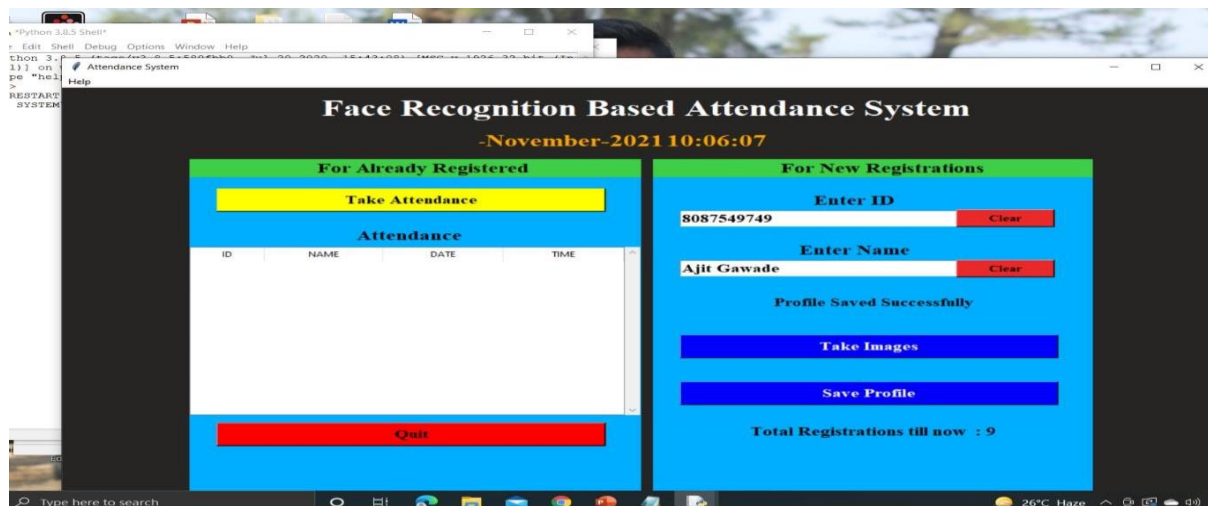


Fig.1: New Registration

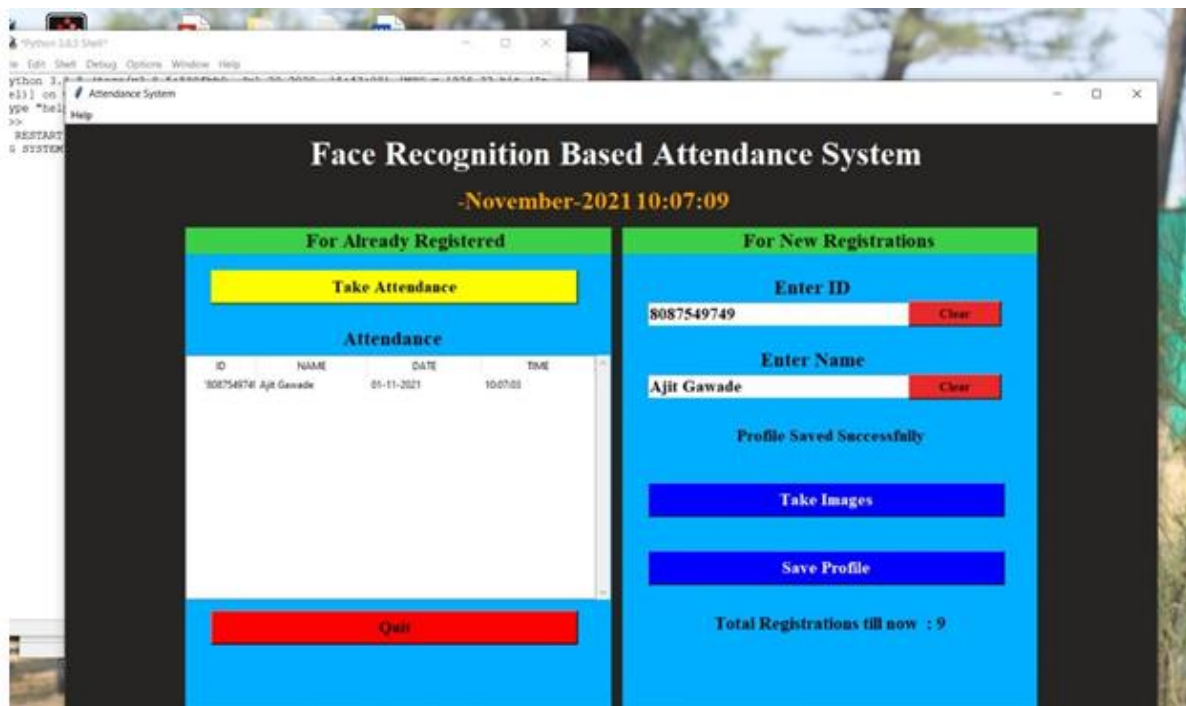


Fig. 2: Camera detects the Face

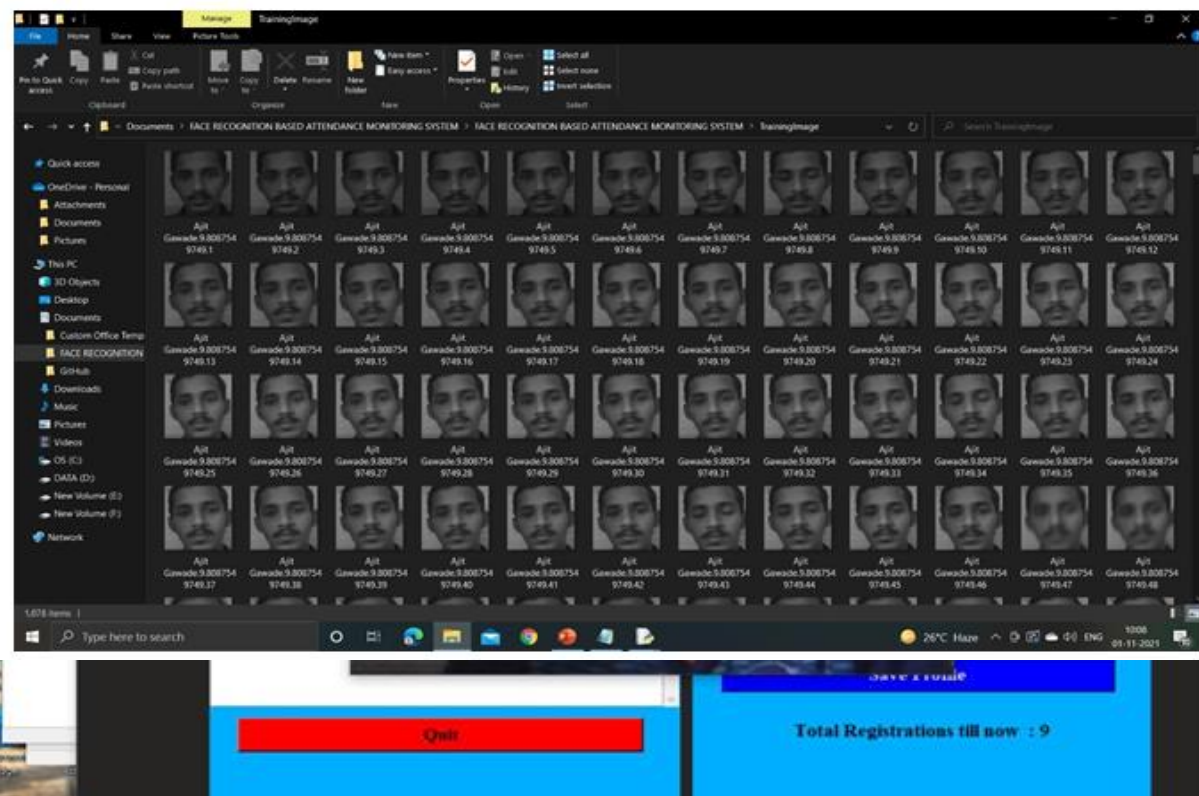


Fig.3: Attendance Recorded

Fig.4: Photos capture by the camera gets save in the folder

| SERIAL NO. | ID | NAME |
|------------|----------|----------------------|
| 1 | 1 | Darshan Kumar Das |
| 2 | 2 | Ujjali Das |
| 3 | 19201043 | Narayan Gawade |
| 4 | 19201043 | Narayan Gawade |
| 5 | 19201043 | Narayan Gawade |
| 6 | 123456 | Narayan Arjun Gawade |
| 7 | 123456 | Narayan Arjun Gawade |
| 8 | 1234567 | Narayan Gawade |
| 9 | 8.09E+09 | Ajit Gawade |

Fig. 5: Automatically Attendance saved in Excel sheet

V. CONCLUSION

We are proposing this system to get familiar with the advance attendance system technology for having accurate attendance record within the system as well as for introducing and adaptings new digital technology.

Face recognition is a crucial application of Image process due to its use in several fields. The planned system aims to beat the pitfalls of the prevailing systems and provides options like detection of faces, extraction of the options, detection of extracted options, and analysis of students' attending

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REFERENCES

- [1] B. Surekha, K. Nazare, S. Viswanadha Raju and N. Dey, "Attendance Recording System Using Partial Face Recognition Algorithm", *Intelligent Techniques in Signal Processing for Multimedia Security*, vol. 660, pp. 293-319, 2016. doi: 10.1007/978-3-319-44790-2_14.
- [2] D. Joseph, M. Mathew, T. Mathew, V. Vasappan and B. S Mony. "Automatic Attendance System using Face Recognition", *International Journal for Research in Applied Science and Engineering Technology*. vol. 8, pp. 769-773, 2020. doi: 10.22214/ijraset.2020.30309.
- [3] Dr.R.S Sabeenian, S. Aravind, P. Arunkumar and P.Joshua, and G. Eswarraj. "Smart Attendance System Using Face Recognition", *Journal of Advanced Research in Dynamical and Control Systems*. vol. 12, pp. 1079-1084, 2020. doi: 10.5373/JARDCS/V12SP5/20201860.
- [4] G. Al-Muhaidhri and J. Hussain, "Smart Attendance System using Face Recognition", *International Journal of Engineering Research & Technology (IJERT)*, vol 8, pp. 51-54, 2017. doi: 10.17577/IJERTV8IS120046.
- [5] P. Chakraborty, C.Muzammel, M. Khatun, Sk. Islam and S. Rahman, "Automatic Student Attendance System Using Face Recognition", *International Journal of Engineering and Advanced Technology (IJEAT)*, vol. 9, pp. 93-99, 2020. doi: 10.35940/ijeat.B4207.029320.
- [6] S. Saypadith and S. Aramvith, "Real-Time Multiple Face Recognition using Deep Learning on Embedded GPU System", 2018 Asia-Pacific Signal and Information Processing Association Annual Summit and Conference (APSIPA ASC), Honolulu, HI, USA, pp. 1318-1324, 2018. doi: 10.23919/APSIPA.2018.8659751. [7] K. Bertók and A. Fazekas, "Face recognition on mobile platforms", 2016 7th IEEE International Conference on Cognitive Infocommunications (CogInfoCom), Wroclaw, pp. 000037-000042, 2016. doi: 10.1109/CogInfoCom.2016.7804521.

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- [7] K. Bertók and A. Fazekas, "Face recognition on mobile platforms", 2016 7th IEEE International Conference on Cognitive Infocommunications (CogInfoCom), Wroclaw, pp. 000037-000042, 2016. doi: 10.1109/CogInfoCom.2016.7804521
- [8] E. Indra et al., "Design and Implementation of Student Attendance System Based on Face Recognition by Haar-Like Features Methods," 2020 3rd International Conference on Mechanical, Electronics, Computer, and Industrial Technology (MECnIT), Medan, Indonesia, pp. 336-342, 2020. doi: 10.1109/MECnIT48290.2020.9166595.
- [9] M. A. Rahman and S. Wasista, "Sistem Pengenalan Wajah Menggunakan Webcam Untuk Absensi Dengan Metode Template Matching," Jur. Tek. Elektron. Politek. Elektron. Negeri Surabaya, pp. 1–6.
- [10] R. Virgil Petrescu, "Face Recognition as a Biometric Application", Journal of Mechatronics and Robotics, vol. 3, no. 1, pp. 237-257, 2019. doi: 10.3844/jmrsp.2019.237.257.
- [11] M. Bramer, "Artificial Intelligence in Theory and Practice", IFIP 19th World Computer Congress, TC 12: IFIP AI 2006 Stream, August 21- 24, 2006, Santiago, Chile, Berlin: Springer Science+Business Media, p. 395. ISBN: 9780387346540.
- [12] D. Mery, I. Mackenney and E. Villalobos, "Student Attendance System in Crowded Classrooms Using a Smartphone Camera", 2019 IEEE Winter Conference on Applications of Computer Vision (WACV), Waikoloa Village, HI, USA, pp. 857-866, 2019. doi: 10.1109/WACV.2019.00096.