

# Automatic Attendance Register And Monitoring System

<sup>[1]</sup> K.Yamuna, <sup>[2]</sup>M.Angelin Rosy

<sup>[1]</sup> Student: Department Of Mca, Er Perumal Manimekalai College Of Engineering(Autonomous) ,Hosur, Tamil Nadu, India

<sup>[2]</sup> Assistant Professor, Department Of Mca, Er Perumal Manimekalai College Of Engineering(Autonomous),Hosur, Tamil Nadu, India

---

*Abstract: The attendance maintenance can be a great burden for the teachers if it is done manually. Manual entering of attendance in logbooks turns into a troublesome errand and it additionally burns through the time. To resolve this problem, smart and auto attendance management system is being utilized. By implementing this framework, the problem of proxies and students being marked present even though they are not physically present can easily be solved. This system marks the attendance using live video stream. The frames are extracted from video using facial landmarks. The main implementation steps used are face detection and recognizing the detected face, by comparing the detected (captured) face with the faces in open cv and the database of students. This proposed system will be a successful technique to manage the attendance of students. By using this facial land mark algorithm its faster and authentic performance, this system is worthy enough to be integrated with any applications to boost up automation and user-friendliness.*

---

## I. INTRODUCTION

Attendance maintenance is a significant function in all the institutions to monitor the performance of the students. Every institute does this in its own way. Some of these institutes use the old paper or file based systems and some have adopted strategies of automatic attendance using some biometric techniques. A facial recognition system is a computerized biometric software which is suited for determining or validating a person by performing comparison on patterns based on their facial appearances. Face recognition systems have upgraded appreciably in their management over the recent years and this technology is now vastly used for various objectives like security and in commercial operations. Face recognition is a powerful field of research which is a computer based digital technology.

Face recognition for the intent of marking attendance is a resourceful application of attendance system. It is widely used in security systems and it can be compared with other biometrics such as fingerprint or eye iris recognition systems. The process can be compared to other biometrics like fingerprint or eye iris recognition systems due to having typical usage like access control in security systems. Its contactless and non-invasive nature makes it preferable, even though it lags behind iris and fingerprint recognition in accuracy. This groundbreaking yet controversial technology has many other usages such as advanced human computer interaction, video surveillance, indexing of images automatically, and video database etc.

## HARDWARE CONFIGURATION

### II. SOFTWARE ANALYSIS

- Processor : intel i5 (7<sup>th</sup> generation)
- RAM : 8 GB RAM
- Monitor : 20 color monitor
- Camera : 640x480 pixels (Distance coverage -10 to 15 ft)

### SOFTWARE SPECIFICATION

- Front end :Pyqt5
- Back end : python

- Software : Pycharm
- Platform : windows8

### VISUALCODE (PYTHON)

Visual Studio Code (VS Code) is a lightweight, open-source code editor developed by Microsoft. It supports multiple programming languages with features like debugging, syntax highlighting, and code completion. Extensions can be added to enhance functionality for various development tasks.

### VISUALCODE NAVIGATOR

Visual Studio Code Navigator is a tool that helps developers quickly navigate and explore their codebase. It provides features like **Go to Definition**, **Find References**, **Outline View**, and **Symbol Search**, allowing users to jump to specific functions, variables, or files efficiently. By enhancing code exploration, it helps increase productivity and code understanding.

### III. EXISTING SYSTEM

- This existing system designs and develops an attendance system based on RFID (Radio Frequency Identification Devices, RFID) and face recognition.
- By utilizing a composite authentication method with high recognition, the reliability of attendance management and the accuracy of attendance certification are enhanced.
- In this system, the attendance information of employees in enterprises and institutions can be intelligently managed. Moreover, the statistical efficiency of attendance data can also be effectively promoted, thus satisfying the daily attendance needs of enterprises and institutions.
- In this paper, the attendance system developed user interface using C# language on Microsoft Visual Studio 2017 platform.
- By using third-party OpenCV Sharp library and Arcsoft ArcFace2.0 C# SDK, attendance clock module realizes real-time face detection and recognition.
- We utilized high-frequency RFID equipment of Qiaoyouling Technology Company to realize operations of card punching and issuing.

### PROPOSED SYSTEM

- The Classroom Attendance System Based On Face Recognition Technology Uses The Camera To Monitor The Classroom In Live Video.
- First, The System Detects The Face From Input Image Captured From The Video Input, And These Detected Faces Are Cropped And Normalized To A Size Of 48×48.
- Then, These Face Images Are Used As Input To Facial Landmark Algorithm.
- In This Proposed System We Implement Face Detection And Recognition By Using Facial Landmark Algorithm, This Algorithm Will Recognize The Student Faces By Comparing The Faces With The Pretrained Faces In The Database Using Open Cv.

- It Attendance For Those Faces With Time Of Check-In And Also Ensures The Presence Of Students Throughout The Whole Class.

#### **IV. MODULES**

##### **1.Input module:**

The input camera module captures live video streams in the classroom. Facial landmark extraction and face detection algorithms identify and locate faces in the frames. Face recognition techniques compare detected faces with the OpenCV library and student database, determining individual identities. The system marks attendance dynamically based on recognized faces, and the information is stored in a database for future reference.

##### **2.Preprocessing module:**

In this module the features can be extracted from the input image. The input image can be segmented for separate the background and face regions of index. It begins with image segmentation to separate the background from the facial region.

Background removal isolates the facial features, enhancing subsequent analyses. Feature extraction identifies key characteristics, while normalization ensures standardized scales and orientations.

##### **3.Database module:**

The images can be trained for authorized and unauthorized student detection and the trained images can be stored in the database. Stored systematically, trained images come with metadata for efficient retrieval during real-time detection processes.

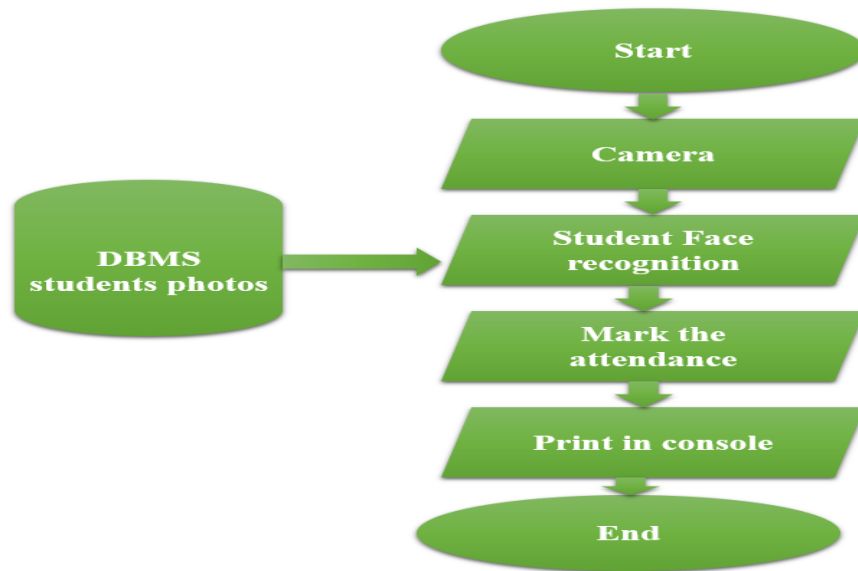
##### **4.Recognition module:**

In this recognition module the facial landmark algorithm will recognize the student whether it is authorized or unauthorized. The features extracted from the student's face are compared with the trained images stored in the database during the training phase.

If the features closely match those of an authorized person, the system recognizes the student as authorized. This allows seamless attendance tracking and ensures accurate identification of individuals with permission to access the premises.

##### **5.Output module:**

The Output Module displays real-time recognition outcomes, indicating whether a detected student is authorized or unauthorized. The module updates the user interface to reflect real-time attendance status, alerts, and system feedback for efficient monitoring.

**ARCHITECTURE DIAGRAM****V. CONCLUSION**

This project gives an idea to design a smart attendance management system in the classrooms using face detection and recognition technologies. The scheme is more effective by overcoming the limitations and offers characteristics like facial identification, facial extraction, and detection of extracted characteristics and analysis of student attendance. There are so many algorithms which can be used for face detection and recognition. Some of them are Eigen Faces Algorithm, Fisher Faces Algorithm, and Local Binary Pattern Algorithm (LBP) etc. Out of all these algorithms we choose facial landmark algorithm for automatic attendance management.

**REFERENCE**

- [1] A. Crawls, "Animetrics," 13 July 2019 Available: <http://www.animetrics.com/Technology/FRapplications.html>. [Accessed 29 February 2020].
- [2] Z. Jian, Y. Ke, H. Zhen-yu and X. Yong, "A Collaborative Linear Discriminative Representation Classification Method for Face Recognition.," in International Conference on Artificial Intelligence and Software Engineering, Lancaster, PA, 2014.
- [3] J. Lei, T. Lay, C. Weiland and C. Lu, "A Combination of Spatiotemporal ICA and Euclidean Features for Face Recognition," Artificial Intelligence in Theory and Practice, vol. 217, no. 2006, pp. 395-403, 2016.
- [4] P. Viola and M. Jones, "Robust Real-time Object Detection," in Second International Workshop on Statistical and Computational Theories, Vancouver, Canada, 2017.
- [5] E.T. Chin, W. J. Chew, and F. Choong, "Automated Attendance capture and Tracking System," Journal of Engineering Science and Technology, no. EURECA 2014 Special Issue, pp. 45-59, 2018.
- [6] A. Raghuwanshi and P. Swami, "An Automated Classroom Attendance System IEEE International Conference on Recent Trends in Electronics Information & Communication Technology, Bangalore, 2017.
- [7] N. D. Veer and B. F. Momin, "An automated attendance system using video," in IEEE International Conference on Recent Trends In Electronics Information Communication Technology, Bangalore, 2019.

- [8] B. Surekha, K. J. Nazare, S. V. Raju and N. Dey, "Attendance Recording System Using Partial face Recognition Algorithm," *Studies in Computational Intelligence*, vol. Intelligent Techniques in Signal Processing, no. 2017, pp. 293-319, 2018.
- [9] A. Patil and M. Shukla, "Implementation of Classromom Attendance System Based on Face Recognition in Class," *International Journal of Advances in Engineering & Technology*, vol. 7, no. 3, pp. 974-979, 2017.
- [10] M. Fuzail, H. Nouman, M. Mushtaque, B. Raza, A. Tayyab and M. Talib, "Face Detection System for Attendance of Class' Students," *International Journal of Multidisciplinary Sciences and Engineering*, vol. 5, no. 4, pp. 6-10, 2019.
- [11] A. Geitgey, "Medium," 13 July 2019 [Online]. Available: <https://medium.com/@ageitgey/machine-learning-is-fun-part-3-deep-learning-and-convolutional-neuralnetworks-> [Accessed 28 February 2020].
- [12] K. Rohini, S. Sanagala, V. Rathnam and C. R. Babu, "Face Recognition Based Attendance System for CMR College of Engineering and Technology," *International Journal of Innovative Technology & Engineering*, vol. 8, no. 452, pp. 127-129, 2019.
- [13] A. Jha, "Class Room Attendance System using Facial Recognition System," *International Journal of Mathematics, Science, Technology and Management*, vol. 2, no. 3, pp. 4-7, 2017.
- [14] N. K. Balcoh, M. Yousaf, W. Ahmad and M. Baig, "Algorithm for Efficient Attendance Management: Face Recognition based approach," *International Journal of Computer Science*, vol. 9, no. 4, pp. 146-150, 2018.
- [15] V. Shehu and A. Dika, "Using Real Time Computer Vision Algorithms in Automatic Attendance Management Systems," in *proceeding of the 32nd International Conference on Information Technology Interfaces*, Cavtat, 2019.
- [16] D. Sunaryono, J. Siswantoro and R. Anggoro, "An Android Based Course Attendance System using Face Recognition," *Journal of King Saud University–Computer and Information Sciences*, vol. 33, no. 3, pp 304- 312, 2019.