

THE AUTOMATED TRACKER OF FACULTY ATTENDANCE

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Abstract: The Attendance Management System Project In Python is a fully functional desktop application developed in Python. These can be helpful articles and projects that you are looking for. This Attendance Management System In Python With MYSQL Database is one of the best system for schools, colleges that were having trouble keeping track of their teachers attendance. This Attendance Management System Using Python main purpose is to keep track of each person's daily attendance, workhours, breaks, and the times they log in and log out. It stops employees from stealing time. A system for managing attendance works with smart cards, biometrics, and devices that recognize faces in real time. Attendance Management simply works by keeping track of how long your employees work. It's the way you keep track of how much time your employees spend working and how much time they take off. This system helps alot with managing and storing real-time data and capturing real-time attendance. When it comes to time tracking, automated attendance systems have eradicated such concerns and are known for their reliability and accuracy. They capture and log data in real-time, which means your staff are less likely to tamper with the system. Modern systems even allow your employees to punch in early and late, and they are automatically notified. You may save a lot of time and effort keeping track of your employees if you use an automatic attendance tracking system. You can focus on your business and boost its production with the time you

save. A paper-based method, as previously indicated, might lead to erroneous time reporting by your staff. However, this can be avoided by implementing a high-quality attendance monitoring system.

I. INTRODUCTION

An automated tracker of faculty attendance is a software application designed to monitor and record the attendance of faculty members in an educational institution. This system eliminates the need for manual attendance tracking, which can be time-consuming and prone to errors. The automated tracker uses biometric identification, such as fingerprint scanning or facial recognition, to accurately record the attendance of each faculty member. The system can also generate reports on attendance records, which can be useful for tracking absences, identifying trends, and analyzing faculty performance. Additionally, the automated tracker of faculty attendance can send automated notifications to faculty members in case of unexcused absences, which can help to improve accountability and ensure that faculty members are fulfilling their obligations. Overall, an automated tracker of faculty attendance can be an effective tool for educational institutions to manage faculty attendance, improve productivity, and enhance accountability.

II. PROBLEM STATEMENT

At present the teacher attendance process of teaching at some schools has not yet taken the form of an application, where school officials who attend the teacher entering the classroom by going around to each class at each change of subject bring a list of attendance, then the teacher at the class and the hour signs the file. Based on the current system of teacher attendance, there are a number of shortcomings: 1) The attendance system is still a teacher signature file that can be manipulated. 2) Staff to make teacher attendance must come to each class for schools with a lot of school land and classes require a lot of time and energy. 3) The officer has difficulty in recapitulating the presence of the teacher. 4) The principal is difficult to supervise teachers who enter and are absent during their hours, due to late reporting from the officer.

III. LITERATURE REVIEW

There are multiple ways to do this project such as using a real-time computer vision algorithm in automatic attendance management system. The system installed the camera with non-intrusive, which can snap images in the classroom and compared the extracted face from the image of the camera capturing with faces inside the system. This system also used machine learning algorithm which are usually used in computer vision. But in this project we work on HaarCascade classifier which used to extract the features of faces. This is mainly a object detection algorithm used to identify faces in an image or a real time video. The model created from this training is available at the OpenCV .These models includes eyes detection, face detection etc...

The main purpose is the features on the image makes it easy to find out the edges or the lines in the image, or to pick areas where there is a sudden change in the intensities of the pixels. The haar feature continuously traverses from the top left of the image to the bottom right to search for the particular feature that means edges traversing. The advantage of the edges featurebased approaches is to integrate the structural information by grouping pixels of face edge map to line segments. After comparing those pixel calculations and done the further process.

IV. REQUIRED TOOLS

- Visual Studio Code
- Python
- Html, CSS, Java script

V. METHODOLOGY

1. Requirement Analysis:

At present the teacher attendance process of teaching at some schools has not yet taken the form of an application, where school officials who attend the teacher entering the classroom by going around to each class at each change of subject bring a list of attendance, then the teacher at the class and the hour signs the file. Based on the current system of teacher attendance, there are a number of shortcomings: 1) The attendance system is still a teacher signature file that can be manipulated. 2) Staff to make teacher attendance must come to each class for schools with a lot of school land and classes require a lot of time and energy. 3) The officer has difficulty in recapitulating the presence of the teacher. 4) The principal is difficult to supervise teachers who enter and are absent during their hours, due to late reporting from the officer.

2. System Design:

It actually done 2 methods: 1)Face recognition: It recognizes the facial images which are already resized and converted to gray scale image.

2)Face detection: It is used to find the face And face recognition does 2 methods such as: Verification: It basically compares the input facial image with the facial image related to the user which is requiring the authentication. Identification: It basically compares the input facial image with all facial images from a dataset The working of the project is : At first it captures the images of student then store it in a training dataset module when we click on the take attendance button by using LBP it compares the integrated image with the original image if it matches then it marks the attendance otherwise it doesn't marks or records the attendance.

3. Technology Selection:

- Select the appropriate technologies for front-end development, such as HTML, CSS.Improve AI facial recognition using DEEP LEARNING.

4. Testing :

1. Data Collection: You need to collect a dataset of faces for your system. This dataset should include images of each person's face you want to recognize.

2. Data Preprocessing: The images in the dataset should be preprocessed to ensure that they are properly aligned and normalized for training the face recognition model. This involves techniques such as resizing, cropping, and grayscale conversion.

3. Feature Extraction: Once the images are preprocessed, you need to extract the features that will be used to identify the faces. There are several techniques for feature extraction, including Local 12 Binary Patterns (LBP), Histogram of Oriented Gradients (HOG), and Convolutional Neural Networks (CNNs).

4. Model Training: The next step is to train a face recognition model using the extracted features. There are several algorithms that can be used for face recognition, including Support Vector Machines (SVM), k-Nearest Neighbors (k-NN), and deep learning models such as Convolutional Neural

Networks (CNNs).

5. Attendance System Integration: Once the model is trained, you can integrate it with an attendance system to recognize and log the attendance of each individual based on their face.

5.Future Enhancement:

In all the biometric modalities — fingerprint, expression, gait, behavioral, DNA, and others — face is gaining adoption faster. Because, it is not only convenient for almost all to use, but a face provides a sensor (here, camera) and device with too much “signal” or data as any other tool. For example, fingerprints can not suit the many differences in the forms, sizes, distinctive marks, and other distinguishing features of a qualified A.I. program, for all their simplicity and apparent sophistication. More commonly, the face is often simpler to use in several situations where sunlight, temperature, social restrictions, and physical access to a mobile device will preclude a person from talking to their phone or utilizing a fingerprint reader. Once the technology is fully developed, implemented, and introduced, facial recognition and face authentication can be taken to new heights. There are several potential future enhancements for face recognition technology when it comes to automated attendance. One possibility is the integration of more advanced algorithms that can accurately identify individuals under varying lighting conditions, distances, and angles. Another potential enhancement is the integration of multiple cameras to capture a 360-degree view of a person's face, which can improve accuracy and decrease false positives. Additionally, the use of artificial intelligence and machine learning can help improve the overall performance of the system over time, as it adapts and learns to recognize faces more accurately. These are just a few potential enhancements that could improve the performance and reliability of automated attendance face recognition systems in the future.

VI. EXPERIMENT RESULTS

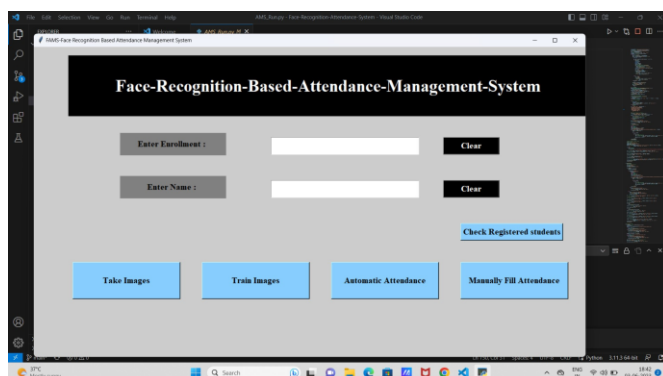


Fig: Login page

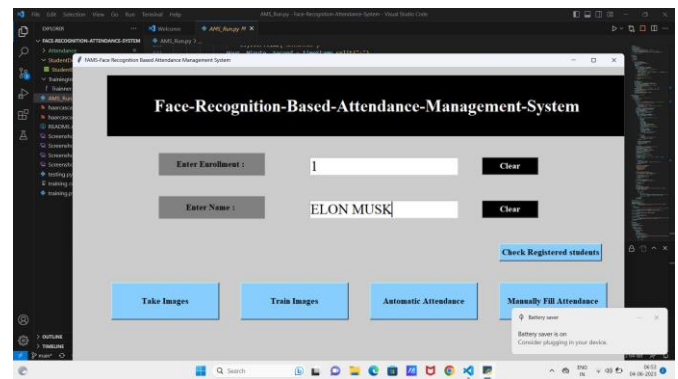


Fig: Login with details

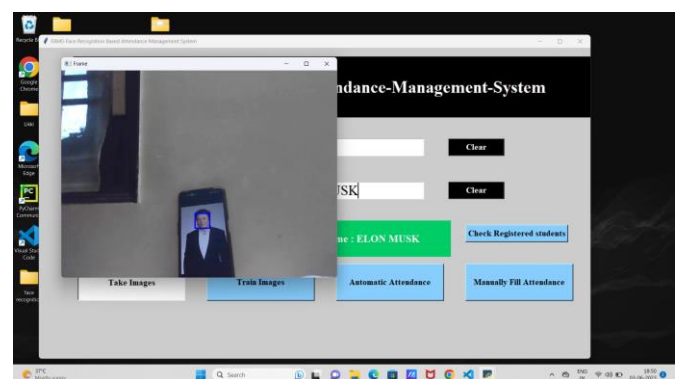


Fig :Capturing the image

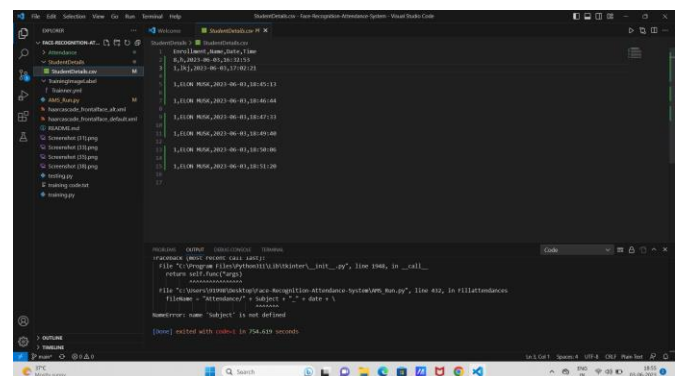


Fig: User login database demonstration

VII. PROPOSED SYSTEM

The main aim of our system is to extract the face of the teacher and perform comparison with the data stored in prior in our system. The system also authenticates the user that prevents the trespasser to operate it. The face of the teacher is captured in such a way that all characteristics of teacher is identified uniquely and even the position of them is identified separately. By using this system, manual attendance is not necessary as the system captures the image through the camera attached to the computer. By further procedures, the data is changed or updated. 1. Face Authentication 2. Face recognition 3. Attendance sheet.

VIII. ARCHITECTURE DIAGRAM FOR PROPOSED METHOD

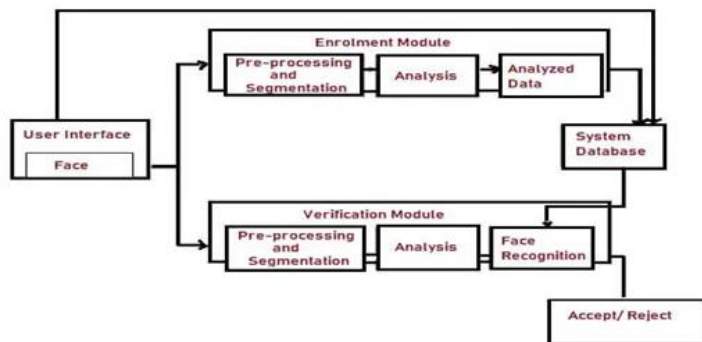


Fig: Architecture

IX. CONCLUSION:

Face recognition systems are part of facial image processing applications and their significance as a research area are increasing recently. Implementations of system are crime prevention, video surveillance, person verification, and similar security activities. Face recognition is done based on geometric invariance. This contains two parts of face detection and face recognition. The algorithm that has been used is of a facial landmark associated with anatomical landmark was extracted automatically. A series of area triplets was constructed and sorted in a formal order. A geometric invariance including area ratio and angle are then used in feature vector. A feature vector comparison is then used in facial recognition. The result of person identification using proposed techniques demonstrates promising results. And finally after these processes we are able to recognize a person face. Proposed algorithm is capable of detect multiple faces, and performance of system has acceptable good results.

X. FUTURE ENHANCEMENT

In all the biometric modalities — fingerprint, expression, gait, behavioral, DNA, and others — face is gaining adoption faster. Because, it is not only convenient for almost all to use, but a face provides a sensor (here, camera) and device with too much “signal” or data as any other tool. For example, fingerprints can not suit the many differences in the forms, sizes, distinctive marks, and other distinguishing features of a qualified A.I. program, for all their simplicity and apparent sophistication. More commonly, the face is often simpler to use in several situations where sunlight, temperature, social restrictions, and physical access to a mobile device will preclude a person from talking to their phone or utilizing a

fingerprint reader. Once the technology is fully developed, implemented, and introduced, facial recognition and face authentication can be taken to new heights. There are several potential future enhancements for face recognition technology when it comes to automated attendance. One possibility is the integration of more advanced algorithms that can accurately identify individuals under varying lighting conditions, distances, and angles. Another potential enhancement is the integration of multiple cameras to capture a 360-degree view of a person's face, which can improve accuracy and decrease false positives. Additionally, the use of artificial intelligence and machine learning can help improve the overall performance of the system over time, as it adapts and learns to recognize faces more accurately. These are just a few potential enhancements that could improve the performance and reliability of automated attendance face recognition systems in the future.

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