

Attendly – Face Recognition Attendance System

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Abstract—

The Face Recognition Attendance System aims to address several critical issues in traditional attendance tracking. Firstly, it eliminates the need for manual processes, reducing errors and saving valuable time for both educators and employers. This technology enhances security by ensuring that only authorized individuals can mark their attendance, thus preventing proxy attendance fraud. It also provides real-time data and analytics, allowing institutions and organizations to make informed decisions. Additionally, it minimizes the environmental footprint by reducing paper-based processes. Overall, this system enhances efficiency, security, and transparency, making attendance tracking more reliable and efficient for educational institutions and businesses. The Face Recognition Attendance System seeks to bridge critical gaps in the existing attendance tracking methods. Traditional methods, such as manual roll calls or card swiping systems, are prone to errors and proxy attendance, leading to inaccuracies. Our system leverages advanced facial recognition technology to provide a robust, accurate, and automated solution, thereby eliminating these gaps. It ensures real-time data accuracy, improves security by uniquely identifying individuals, and enhances administrative efficiency. Moreover, it offers data analytics and insights, enabling institutions and organizations to make data-driven decisions, which traditional methods lack. This innovation aims to modernize and optimize attendance management, revolutionizing the way we track attendance. Using Facial attendance System Teachers and students Time save.

A. Introduction

Attendance is prime important for both the teacher and student of an educational organization. So it is very important to keep record of the attendance. The problem arises when we think about the traditional process of taking attendance in class room.

Calling name or roll number of the student for attendance is not only a problem of time consumption but also it needs energy. So an automatic attendance system can solve all above problems.

There are some automatic attendances making system which are currently used by much institution. One of such system is biometric technique and RFID system. Although it is automatic and a step ahead of traditional method it fails to

meet the time constraint. The student has to wait in queue for giving attendance, which is time taking.

This project introduces an involuntary attendance marking system, devoid of any kind of interference with the normal teaching procedure. The system can be also implemented during exam sessions or in other teaching activities where attendance is highly essential. This system eliminates classical student identification such as calling name of the student, or checking respective identification cards of the student, which can not only interfere with the ongoing teaching process, but also can be stressful for students during examination sessions. In addition, the students have to register in the database to be recognized. The enrolment can be done on the spot through the user friendly interface.

The human face is a sophisticated multidimensional structure that can convey a lot of information about the individual, including expression, feeling, facial features. Effectively and efficiently analyzing the features related to facial information is a challenging task that requires lot of time and efforts. Recently, many facial recognition-based algorithms for automatic attendance management has been proposed, successfully implemented and used as in Refs. [1–4] and also new algorithms developed or some existing algorithms improved or combined with other methods, techniques, or algorithms to build facial recognition systems or applications as in Refs. [5–8]

The project features are as follows:

- College/School: Accurate identification of students for attendance tracking.
- Security: Enhanced access control by recognizing authorized personnel.
- Office: Secure entry by identifying employees for attendance and security purposes.

Tools and Technology used

1. Python:

Python is an interpreted, object-oriented, high-level programming language with dynamic semantics. Its advanced document creation process combined with dynamic typing and dynamic binding makes it very attractive for rapid application development and text or word generation to link existing products. Python's simple and easy-to-learn syntax emphasizes readability, reducing maintenance cost. Python supports modules and packages that support program modularization and code reuse. The Python interpreter and public libraries are freely available in source or binary form for all major platforms and can be freely distributed. [9]

Python uses OpenCV and dlib libraries using the LBPH (native binary mode histogram) algorithm for the real face. Using pad for graphics and Tkinter and ttk for GUI, developers can create facial recognition using algorithms, graphics, and user-friendly interface to improve performance and user experience.

2. Tkinter

Tkinter Tutorial provides a basic and advanced overview of Python Tkinter. Our Tkinter tutorials are designed for beginners and experts.

Python provides the Tkinter standard library for creating user interface graphics for desktop application.

Developing desktop applications using Python Tkinter is not a difficult task. You can use the following steps to create an empty Tkinter top-level window.

- Import Tkinter modules.
- Create a main application window.
- Add new labels, buttons, frames and other widgets to the window.
- Calls the main event loop to be displayed on the user's computer screen.

3. PILLOW

The Python Visualization Library (an extension of PIL) is the de facto visualization package for the Python language. It has lightweight photo manipulation tools that help you edit,

create and save photos. Support for the Python graphics library was discontinued in 2011, but a project called Pillow forked the original PIL project and added Python 3.x support to it. It was announced that the pillow would replace the PIL for future use. The pad supports many image file formats, including BMP, PNG, JPEG and TIFF. The support library provides support for new books in the library by creating new cutouts.

B. Literature

In our Attendly, it is divided into two main sections The first section concentrated substantially on perfecting the face recognition algorithm while the alternate section concentrated on the attendance operation system grounded on the honored mortal faces. In the first section, a digital live camera will be used at the entrance to capture images of Pupil/ staffs entering an office Classroom or a structure, which some advanced image processing ways, similar as discrepancy adaptation, noise reduction using bilateral sludge, image histogram equalization, are applied to the captured images to ameliorate their quality, also the Haar Algorithm will be applied to the captured images to descry individual faces, which will be used as an input to the Face Recognition System. And also the same advanced image processing ways over, plus Image Blending fashion will be applied, a previous, to the training/ tem plate face images, also the bettered input images will be compared with the advanced training images using the LBP algorithm, to yield an advanced LBP canons to fete faces, therefore the facial recognition delicacy will be bettered compared to the traditional LBP canons without our system. In the alternate section, the metadata of the honored facial images similar as date and time are automatically uprooted to automatically mark attendance of each existent.

RELATED WORK

Kohonen Ref.[12] is one of the early pioneers of the most famous face recognition system, which employed a simple neural net using network of Eigen faces by approaching

eigenvectors through face images but correlation matrix. Although, the system wasn't veritably successful to be virtually enforced in a real- life terrain due to associated high demand for normalization and positioning when run in a large database with numerous types of face conditions.

In employing and improving the work of Kohonen, Kirby and Sirovich in 1990 as in Ref.[13], directly calculated the Eigen faces using algebraic manipulation with smaller than 100 faces to apply facial recognition, which was further bettered by Turk and Pentland in 1991 as in Ref. [14] by determining the exact position and scales of faces and also the use of rendering residual error began from Eigen faces, but in a minimally constrained terrain. More and more new approaches than Kohonen approach for facial recognition using; star element Analysis(PCA), Fisher faces and the traditional Original double Patterns(LBP) were proposed, particularly the LBP, because it has a simple proposition with computational simplicity, steady with respect to any monotonic metamorphosis of argentine scale, has important gyration- steady analysis with a invariant pattern and discriminates excellently between different colorful kinds of texture as in Ref.[15], but It's known that the LBP isn't as robust as the viola- jones and other algorithms for face discovery as stressed in Refs.[16-18], because of issues similar as noise, illumination variation, background, disguise, scale and occlusion etc.

In addressing the issue of illumination variation, Ref.[19] eased illumination variation in facial recognition by combining the strengths of robust illumination normalization, original texture- grounded face representations, distance transfigure grounded matching and kernel- grounded point birth and multiple point emulsion, but the result addressed only illumination issues. To address issues of noise in facial recognition, Ref.[20] employed shearlets and LBP for dealing with heavy noise in face recognition, by taking advantage of robust features and edge discovery capabilities of shearlets in the presence of high position of noise. In this system, each face is divided into blocks, individual classifier

is used for each block and also combine the similarity scores from all the blocks for better performance, but the result is limited to noise only.

Lately, different styles, ways and algorithms were combined with either the traditional LBP or modified LBP to achieve facial recognition and enhance facial recognition delicacy. In Ref.[21] a Real- Time Multiple Face Recognition using Deep literacy on Bedded GPU System was proposed and the system used face discovery grounded on convolutional neural network(CNN) with face shadowing and state of the art deep CNN face recognition algorithm.

In addition, in Ref.[22] a Original Binary Pattern Histogram LBPH)- grounded Enhanced Real- Time Face Recognition was used to achieve real- time face recognition in low and high- position images and Ref.[23] proposes a system of perfecting the Recognition of Faces using LBP and SVM Optimized by PSO fashion, in this system, two point extraction algorithms videlicet star element Analysis(PCA) and Original double Pattern(LBP) ways are used to prize features from images. In the recognition process, it uses Support Vector Machine(SVM) for bracket combined with flyspeck mass Optimization.

In another approach in Ref.[24], facial recognition was achieved using Modified Original Binary Pattern and Random Forest, which the sign and magnitude features are combined for the enhancement of facial texture bracket performance and when compared with the traditional LBP for multiple patch variations on a grueling facial dataset, this system proven to be more accurate.

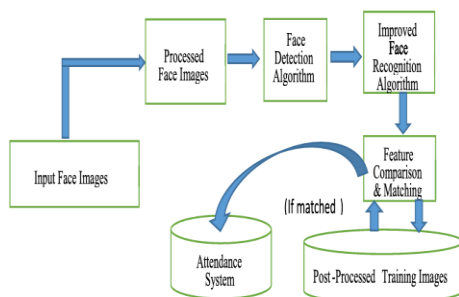
All these ways, styles, algorithms reviewed doesn't wholly addresses issues affecting facial recognition delicacy similar as illumination variation, noise, scale, sharp, pose in one shot, while our method was suitable to do that and also our system focuses on enhancing features of input and

training images, therefore bettered LBP canons and achieved better recognition results.



Attently Logo

FlowChart Diagram



Algorithm



Drawback Of the Existing System

1. Costly
2. No contactless System develop
3. Not so accurate
4. Slow

Result



C. Conclusion

- We have successful Completed the Front and Student mangament System.It is use to Store the Student Details And Photos.It is in working conditions.
- Also We Have Successfully Make Login and Sign-up.
- We have also Added Details View of Items. Also our site is more responsive.
- Here we have completed 60 % of our site. Our next goal before is to Combine all the modules and Test the all the modules

Future Scope

- We Will add more Features
- Users will be Able to get notification about their Attendance.
- We will make the Application more fast and accurate.

D. REFERENCES

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