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Research Article

Attendance management system using face recognition

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ABSTRACT

A properly maintained attendance system for recording attendance has a more time-consuming process. Security, authentication, and identification are only a few applications for it. It is widely used since it is a non-invasive, contact less method despite having lower accuracy than iris and fingerprint identification. Even though there are already many models available, there are many ambiguities. This essay introduces automatic attendance management, which will take the place of the manual system, which is time- consuming and challenging to maintain. It is simple yet highly accurate and cost-effective.

Keywords: Face Recognition, Face Detection, Optimal Separating Hyperplane (OSH), Region of Interest (ROI)

1. Introduction

In the rapidly evolving landscape of educational technology, traditional attendance management methods are becoming obsolete. The manual process of recording attendance using paper sheets is time-consuming, error-prone, and inefficient, especially when dealing with large groups of students in a classroom. As we embrace the digital age, it is essential to adopt smarter solutions that enhance efficiency and accuracy Our research on the development of a class attendance management system that leverages facial recognition technology. The primary objective is to create an automated system that eliminates the need for manual data entry and reduces administrative overhead.

Our project proposed to create an attendance system using face recognition as improvement method than register of attendance like pen and paper is very time tiling process also proxies and manipulation our aim to developing this project is to make attendance system more efficient.

We are proposing techniques for classroom monitoring that can track students' attention and generate such data as part of our system. The main goal of our attendance management system to take attendance in a less time and accurate.

3. Methodology

I. Objective:

-The primary goal is to create an automated attendance system that eliminates manual data entry and reduces administrative workload.

-Achieving high accuracy in recognizing students' faces during class sessions.

I.   Face Detection and Recognition Algorithms:

11. Haarcascade Classifier:

Used to determine positive and negative characteristics of faces. Detects face of student such as eyes, nose, and mouth.

I.   Implementation Tools:

11.   Python:

Is used for coding and easy to download libraries.

i.   OpenCV Library:

OpenCv is a Library of python mainly for computer vision. Used for face detection and recognition.

i.   Tkinter GUI Interface:

Tkinter is a python binding to the TK GUI toolkit and enables user interaction with the system.

1.   Real-Time Processing:

During class sessions, the system captures snapshots of individuals' faces. Real-time analysis ensures immediate attendance marking.

I.   Workfl.ow:

11.   Face detection:

o   -Haarcascade classifier identifies faces in the captured images.

iii. Feature extraction:

o   - LBPH algorithm extracts unique facial features.

iv. Face recognition:

o   - Compares extracted features with registered student profiles.

- Determines if the face corresponds to a known student.

1.   Attendance recording:

o -Authorized students are marked present.

4. Result

We use a variety of library types that we need to recognize faces in our project.Three different options, such as student login, roll No. and mark attendance, will be available to users.Students fill out a student login form.The web camera will start automatically, the window will be displayed, and the faces in the frame will be detected after clicking on the register button.
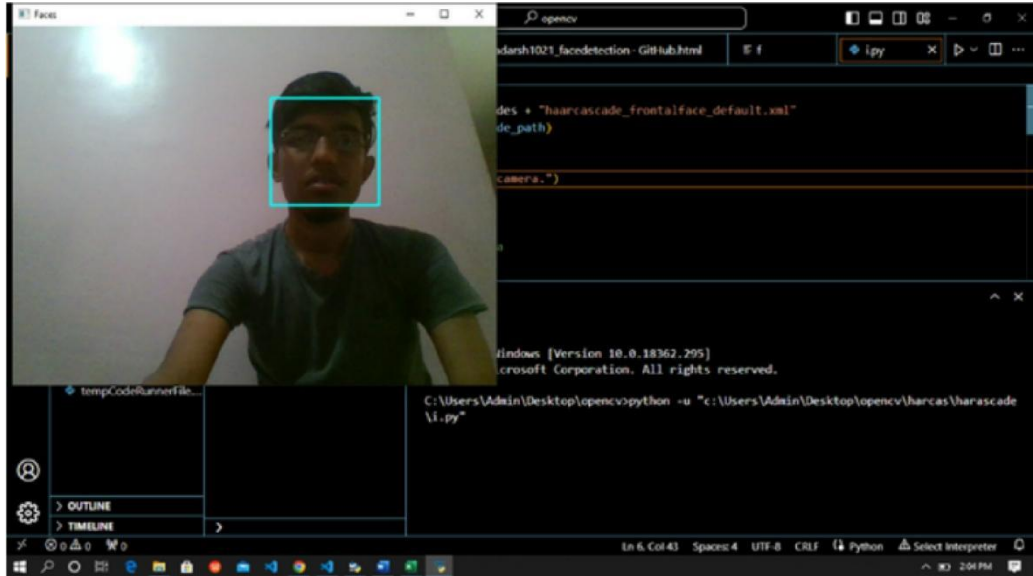
Faculty shall check the attendance which has been marked with an excel sheet and record it in his student registry.

5. Discussion

The main points of the paper should be summarized in a conclusion to this Research Paper, which will help readers make sense of information.

The attendance system is taken with the roll call. Face recognition is also one of the roll call ways of improving system. Face detection is to be an improvement method for taking student attendance. though conclusions are not usually presented with new information which was not

mentioned in the article, they can be recasting issues or offering a different perspective on an issue. First camera is needed for face showing, then detect face with the face detection and finally attendance will be marked in excel.

Future work: Face recognition capabilities allow users to instantly recognize faces in videos or images and identities

6. Conclusion

In this study, we have successfully designed and implemented automated attendance management system that leverages facial recognition technology. The system addresses the limitations of traditional manual methods and offers several advantages for educational institutions.

This paper concludes that a new method for attendance system and with the help of a face recognition system, attendance in each class will be determined on an automated basis. Face recognition techniques are not as accurate as they should be, and sometimes the system is unable to distinguish between students or incorrectly identify them. The accuracy of the face recognition algorithm may be affected by external factors, e.g. whether students' faces are facing each other or not at certain times in a school attendance management system. The proposed system benefits from the improved performance of facial recognition algorithms, which are more reliable and flexible in different situations as a result of new research.

Conflicts of interest

The authors do not have any conflicts of interest.

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