AUTOMATED ATTENDANCE SYSTEM USING FACE RECOGNITION

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Abstract -This paper presents an enhanced automated attendance system that utilizes face recognition technology to improve efficiency, accuracy, and real-time communication in academic environments. The system is designed to integrate directly with the institution's timetable, ensuring attendance is taken only during scheduled class hours, excluding breaks or holidays. Additionally, it incorporates the Twilio API to send instant SMS notifications to the parents of absent students, promoting transparency and accountability. A unique feature of this system is a mask detection module, which prompts students to remove their masks temporarily for accurate facial recognition. This project demonstrates how combining biometric technology with real-time communication and schedule-aware logic can result in a robust, smart attendance system tailored for modern educational needs.

Keywords: Face recognition, automated attendance, Twilio API, SMS alert, mask detection, timetable integration.

1.INTRODUCTION

Managing student attendance efficiently and accurately remains a challenge for educational institutions. Traditional methods, such as roll calls or manual entry, are time-consuming and prone to human error. Biometric systems, especially those using facial recognition, have emerged as promising alternatives due to their contactless nature and reliability. In this project, we have developed an attendance system that not only leverages face recognition but also aligns attendance taking with the institution's academic timetable. By doing so, attendance is captured only during valid class periods.

2. BODY OF PAPER

PROPOSED STATEMENT

To design and develop an approach for face detection system from large scale image dataset using deep learning approach. This system is much useful large face dataset, to improve the accuracy of system

OBJECTIVE OF THE PROPOSED SYSTEM

To design and developed approach for face detection using deep learning to smart attendance system.

To design and developed an algorithm to detect and recognize the student face and update the attendance respectively.
To develop custom deep learning algorithm to enhance the system accuracy.
time dataset for attendance management. To explore and validate the proposed system on synthetic as well as real

METHODOLOGY

Module 1: Data Collection: We created various student faces using a camera and stored them on the hard drive.

Module 2: Data Training: We collect artificial and real using students' faces Train with time and any in-depth classification.

Module 3: Testing with deep learning: Using any deep learning classifier, we achieved weight system recommends the actual student id system automatically update the attendance for the respective student.

Module 4: Analysis: We demonstrate the accuracy of the proposed system and evaluate it with other existing methods.
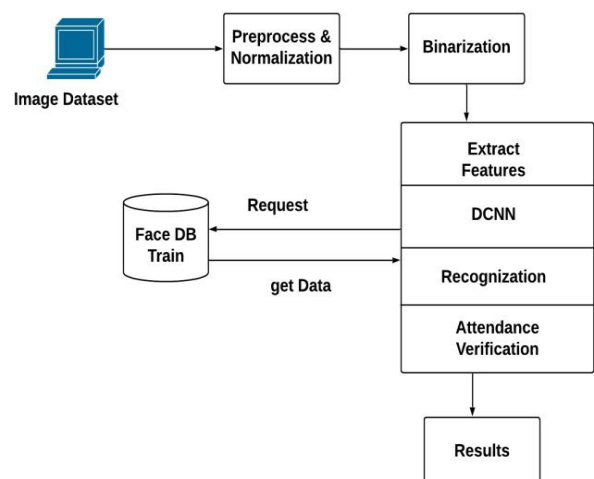
MATHEMATICAL MODEL

Let S is the Whole System Consist of
S = {I, P, D, O}
I = Input fake news data.
P = Process:
D = Dataset

STEP 1: User will enter the query.

STEP 2: After entering query the following operations will be performed.

STEP 3: Data Preprocessing
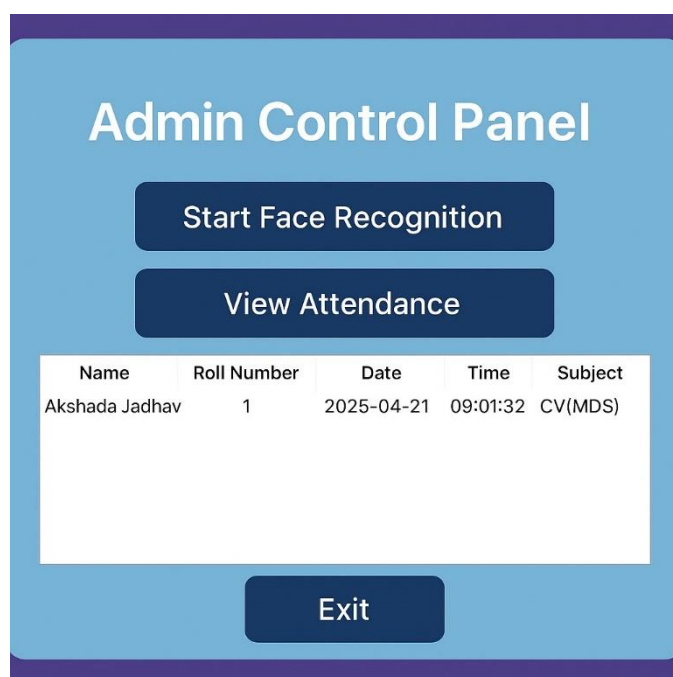
STEP 4: Feature extraction and feature selection.

STEP 5: Training and Testing dataset.

STEP 6: Detection process.

STEP 7: Final output optimized classifier and its performance indicator.
O = Output (Predicted class label)

BASIC MODEL

SYSTEM FEATURE 2

Reliability

Software Reliability is the probability of failure-free software operation for a specified period of time in a specified environment. Software Reliability is also an important factor affecting system reliability

Availability

Over-engineering, which is designing systems to specifications better than minimum requirements. Duplication, which is extensive use of redundant systems and components. 3. Security ensuring that the security controls are tested and validated during acceptance test phase

Maintability
The following steps should be undertaken to assess maintainability statically:

A list of maintainability factors to be included in the assessment should be devised e.g. structure, complexity.

3. CONCLUSIONS

This paper highlights a comprehensive approach to solving common attendance challenges using face recognition technology. With the added integration of class timetables, parental SMS alerts, and mask detection prompts, the system enhances not just efficiency but also accountability and health safety. It demonstrates how AI and automation can be practically applied in educational environments.

4.FUTURE SCOPE

Future improvements may include:
- Integration with cloud-based databases for centralized attendance storage.
- Admin dashboard for viewing attendance reports and analytics.
- Addition of voice or RFID features as multi-modal authentication.
- Sending automated emails alongside SMS.
- Detection of multiple faces simultaneously in group scenarios.

5.ACKNOWLEDGEMENT

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