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Smart Attendence System

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Abstract – The CCTV Based Attendance System is an advanced smart attendance management solution that uses CCTV cameras and face recognition technology to automatically mark student attendance. Traditional attendance systems require manual roll calls or biometric scanning, which consume time and may lead to proxy attendance.

This system captures live video through CCTV cameras installed in classrooms. The system detects and recognizes student faces using image processing and machine learning algorithms. Once a face is identified, attendance is marked automatically and stored in a centralized database.

The system reduces manual effort, prevents proxy attendance, saves time, and improves accuracy. It provides real- time attendance records and generates reports for teachers and administrators. This smart system supports digital transformation in educational institutions.

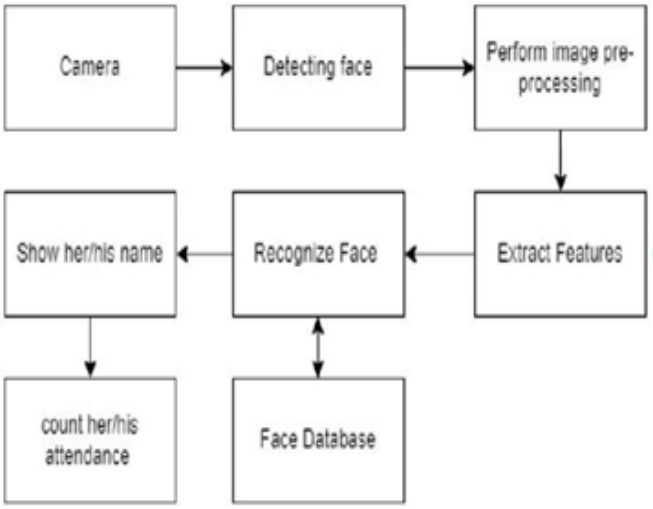
I. Introduction

Attendance management is an essential task in schools and colleges. Traditionally, attendance is recorded manually by calling roll numbers or using biometric systems. These methods consume classroom time and may allow fake or proxy attendance.

The CCTV Based Attendance System solves this problem by using existing CCTV cameras and face recognition technology. The system automatically detects and recognizes students present in the classroom and marks attendance without human intervention.

This approach improves efficiency, accuracy, and security. It ensures real- time monitoring and eliminates manual attendance registers. The system supports modern smart classroom infrastructure.

II. Block Diagram



III. Algorithm

1. Start
2. CCTV camera captures live classroom video
3. System extracts video frames
4. Detect faces in each frame
5. Compare detected faces with stored database images
6. If match found → Mark attendance
7. If no match → Ignore or flag as unknown
8. Store attendance data in database
9. Generate daily attendance report
10. Admin can view attendance records
11. Stop

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IV. METHODOLOGY

- *Image Capture Module*

  CCTV cameras capture live video from the classroom.

- *Face Detection*

  The system detects faces from video frames using computer vision techniques.

- *Face Recognition*

  Detected faces are compared with pre-registered student images using machine learning algorithms.

- Database Management Student details and attendance records are stored securely in a database.

- *Attendance Marking*

  If a student is recognized, the system automatically marks attendance with date and time.

- *Admin Panel*

  Teachers and administrators can log in to view attendance reports.

- *Report Generation*

  Daily, weekly, and monthly attendance reports can be generated.

- *Security*

  Only authorized users can access attendance records.

V. FUTURE SCOPE

* AI-Based Emotion Detection The system can detect student attentiveness using facial expressions.
* Cloud Integration Attendance data can be stored on cloud servers for remote access.
* SMS/Email Notification Parents can receive attendance alerts automatically.
* Multi-Classroom Integration System can monitor multiple classrooms simultaneously.
* Mobile App Integration Admin and teachers can check attendance using a mobile app.
* Integration with ERP Attendance can be directly connected to college ERP systems.

VI. CONCLUSION

The CCTV Based Attendance System is a smart and efficient solution for automated attendance management. It eliminates manual attendance processes and reduces the chances of proxy attendance.

By using face recognition technology and CCTV infrastructure, the system ensures accurate, fast, and secure attendance tracking. It supports digital transformation in educational institutions and improves classroom efficiency.

This project represents a step towards smart campus management and modern educational systems.

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