AI BASED ATTENDENCE MANAGEMENT SYSTEM

Presented By Group 10

AI MINI PROJECT

INTRODUCTION

The Challenge of Manual Attendance

- Traditional attendance methods are inefficient, time-consuming, and prone to errors like proxy attendance.
- Existing systems like RFID or fingerprint scanners have limitations, including shared credentials and hygiene concerns.
- Our Goal: To create a secure, automated, and contactless solution.

PROJECT OVERVIEW

- Primary Objective: To develop a modern, automated attendance system using AI-powered facial recognition to replace inefficient and error-prone manual methods.
- Core Functionality: Employs real-time, contactless facial recognition to automatically identify registered students from a live camera feed and log their attendance.
- Web Application: The system is managed through a full-featured web application built with Python and Flask, providing a central hub for all operations.
- Role-Based Access Control (RBAC): Features two primary user roles with distinct permissions:
- Administrator: Has complete control over the system.
- Teacher: Has tools to manage their specific classes and students.

- Administrator Features:
- System-wide dashboard with key statistics.
- Full User Management (add/edit students, teachers, admins).
- Academic Setup for creating subjects and assigning them to teachers.
- Enrollment module to register students in specific subjects.
- Teacher Features:
- Personalized dashboard displaying assigned subjects and student counts.
- Ability to start "Live Attendance Sessions" for real-time marking.
- Manual Override: Full capability to manually mark students 'Present' or 'Absent'.
- Comprehensive Reporting: Generate daily and monthly reports with data visualization charts.
- View detailed attendance history for individual students.

- Advanced AI Security: Includes a Liveness Detection module that uses blink detection (via dlib) to ensure the face presented to the camera is a live person, preventing spoofing with static photos.
- Technology Stack:
  - Backend: Python, Flask, SQLite
  - Frontend: HTML, CSS, JavaScript, Bootstrap, Chart.js
  - AI Libraries: face_recognition, dlib, OpenCV

FUTURE ENHANCEMENTS

- Cloud Deployment: Migrate the application to a cloud platform (like AWS or Azure) for better scalability, accessibility, and reliability.
- Dedicated Mobile Application: Develop a companion mobile app for teachers to manage attendance directly from their phones.
- Automated Notifications: Integrate an email or SMS service to automatically notify parents or guardians of a student's absence.
- Student Portal: Create a dedicated login for students to view their own attendance records and statistics.

- Advanced Analytics & Insights:
- Develop an analytics dashboard to identify trends (e.g., frequent absentees, class attendance patterns over a semester).
- Generate printable, exportable PDF reports.
- Enhanced Security:
- Implement robust password hashing to securely store user credentials instead of plain text.
- Add more sophisticated anti-spoofing techniques beyond blink detection.
- API Integration: Develop a REST API to allow the system to integrate with other school management software (like Moodle or Blackboard)

THANK YOU