

VELALAR COLLEGE OF ENGINEERING AND TECHNOLOGY (AUTONOMOUS)



THINDAL, ERODE-638012



DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Automated Classroom Attendance System Using Deep Learning

UNDER THE GUIDANCE OF:

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TITLE

AI-Based Automated Classroom Attendance System Using Deep Learning.

DOMAIN : Computer Vision and Deep Learning

ABSTRACT

- Attendance monitoring in educational institutions is traditionally a manual and time-consuming process, often prone to human errors and proxy attendance. This project proposes an **Automated Classroom Attendance System using Deep Learning** integrated with a smart notification mechanism.
- Future enhancements include the development of a cloud-based dashboard, mobile application integration, and student attention/liveliness analysis.

SCOPE AND OBJECTIVE

Scope and Objective :

- Works in any classroom with a camera setup.
- Can be integrated with existing school databases.
- Scalable to multiple classrooms and departments.
- Future enhancements: Cloud-based dashboard, Mobile app, Attention monitoring, AI-based analytics.
- To automate the student attendance process using AI and face recognition.
- To reduce classroom time spent in manual roll-call.
- To eliminate proxy attendance and human error.
- To auto-send attendance reports to faculty and departments.

EXISTING SYSTEM

(Technologies and Techniques)

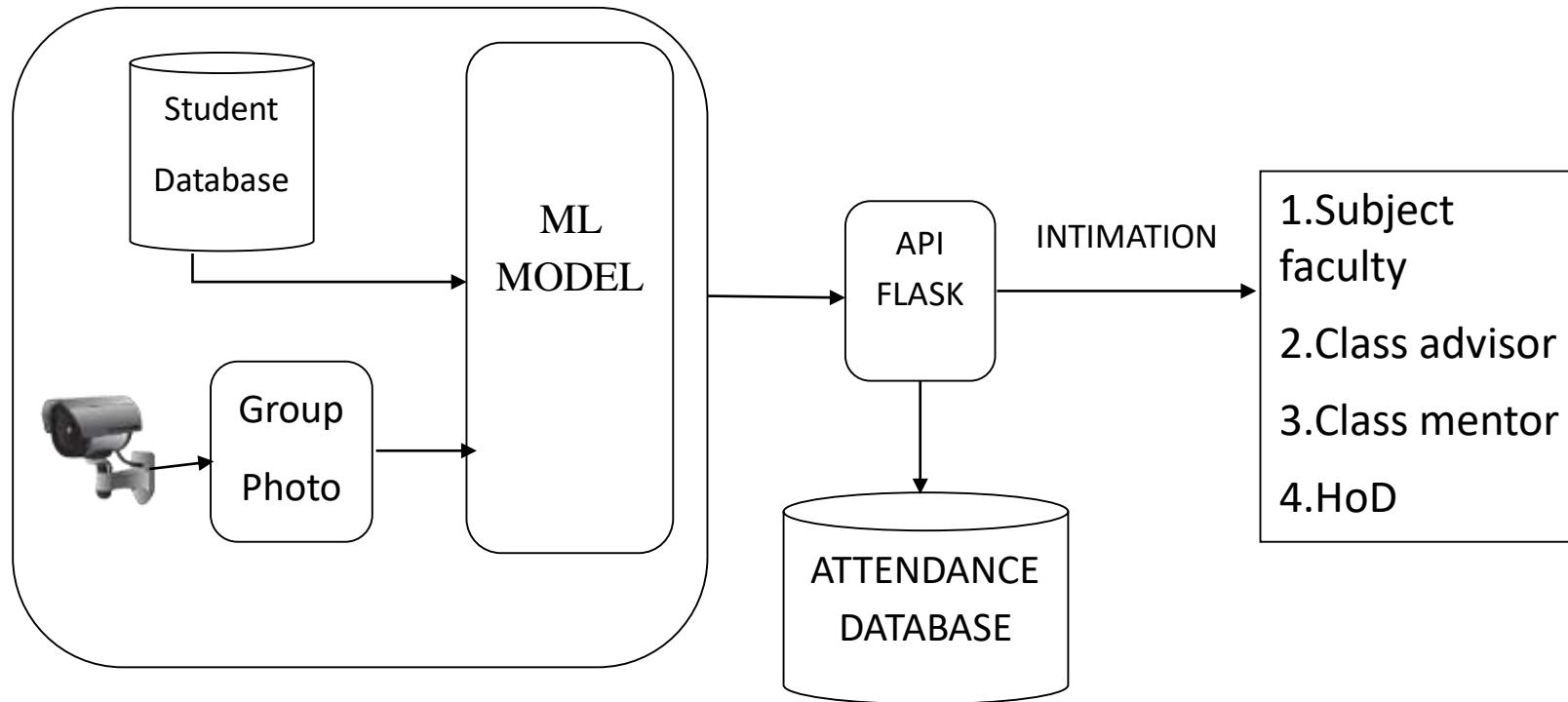
Problems in Current Manual Attendance System

- Time-consuming (5–10 minutes per class).
- Proxy attendance (friends answering for absentees).
- Errors in marking/recording.
- No immediate reporting to parents or staff.
- No digital records.

Existing Automated Systems (Based on Journal Paper)

- **Technology Used:**
 - CCTV cameras in classroom
 - Face detection using **Dlib MMOD**
 - Face recognition using **ResNet-29 with Triplet Loss**
- **Limitations of Existing System:**
 - No real-time alert before capturing images.
 - No SMS/WhatsApp/email notification to faculty/parents.
 - No options for late attendance or OD marking.
 - Limited to local system (no cloud or mobile app).

PROPOSED WORK



Hardware and software requirements

Hardware

- Camera (HD/IP)
- System (PC/Laptop)
- Server (optional / local)

Software

- Python
- OpenCV
- Deep Learning model (CNN)
- Database (MySQL/Firebase)
- OS

MODULES DESCRIPTION

Module 1: Student Registration & Dataset Creation

This module is used to register students by capturing multiple facial images through a camera. The collected images are labeled with student ID and stored in the student database for training the deep learning model.

Module 2: Face Detection Module

- In this module, the live classroom image or group photo is processed to detect human faces using computer vision techniques. Each detected face is cropped and forwarded for recognition.

Module 3: Face Recognition Module

- The detected faces are compared with the trained dataset using a deep learning (CNN) model. The system identifies students by matching facial features with stored records.

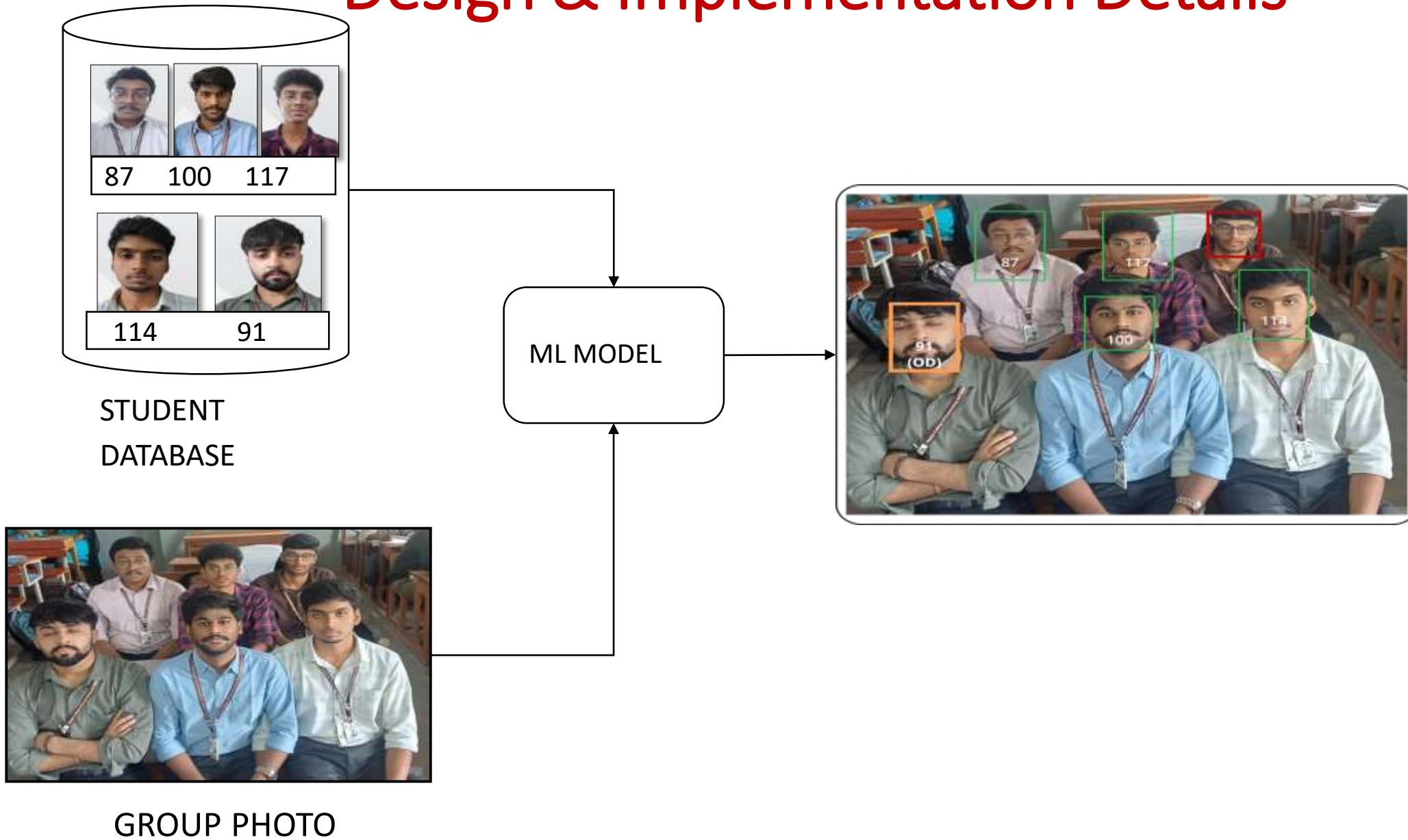
Module 4: Attendance Management Module

- Once a student is recognized, attendance is automatically marked in the attendance database with date and time, eliminating manual intervention and proxy attendance.

Module 5: Notification & Reporting Module

- This module sends attendance information to subject faculty, class advisor, mentor, and HOD through a smart notification mechanism. Reports can also be generated for further analysis.

Design & Implementation Details



THANK YOU