Smart Attendance System using Face Recognition

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Introduction

- Attendance is essential for accountability.
- Traditional methods are slow and prone to misuse.
- QR codes can be shared.
- Our solution: Face Recognition Smart Attendance System.
- Lecturers capture faces using a smartphone.
- Faster, accurate, and fraud-free.
- Initial testing in our classroom.

cheese!

SMART ATTENDANCE SYSTEM

Objective

01. Build a mobile app for face-recognition attendance.

02. Implement secure login with role-based access.

03. Integrate backend with database for attendance, profiles and reports.

04. Generate attendance reports

05. Test system for accuracy, usability and reliability.

Scope

In Scope

- Mobile app for lecturers to capture faces and log attendance.
- Face recognition via external API.
- Secure login and role-based access.
- Attendance storage, retrieval and reporting (MySQL).
- Pilot testing with classmates.

Out of Scope

- College-wide or multi-campus usage.
- LMS integration.
- Other biometrics (fingerprint, iris).
- Offline attendance.

Advantages

Smart Attendance System using Face Recognition

High Accuracy

Minimises errors and ensures precise records.

Time Efficiency

Records attendance within seconds.

Real-Time Analytics

Instant access to trends, punctuality, and absences alerts.

Scalability

Handles large groups without performance loss.

Contactless Operation

Promotes hygiene and safety.

Audit Trail

Timestamped logs for reference and compliance.

Tools and Technologies

Frontend

Flutter (mobile app development)

Backend

Python (server logic & API handling)

Database

MySQL (attendance data storage)

External API

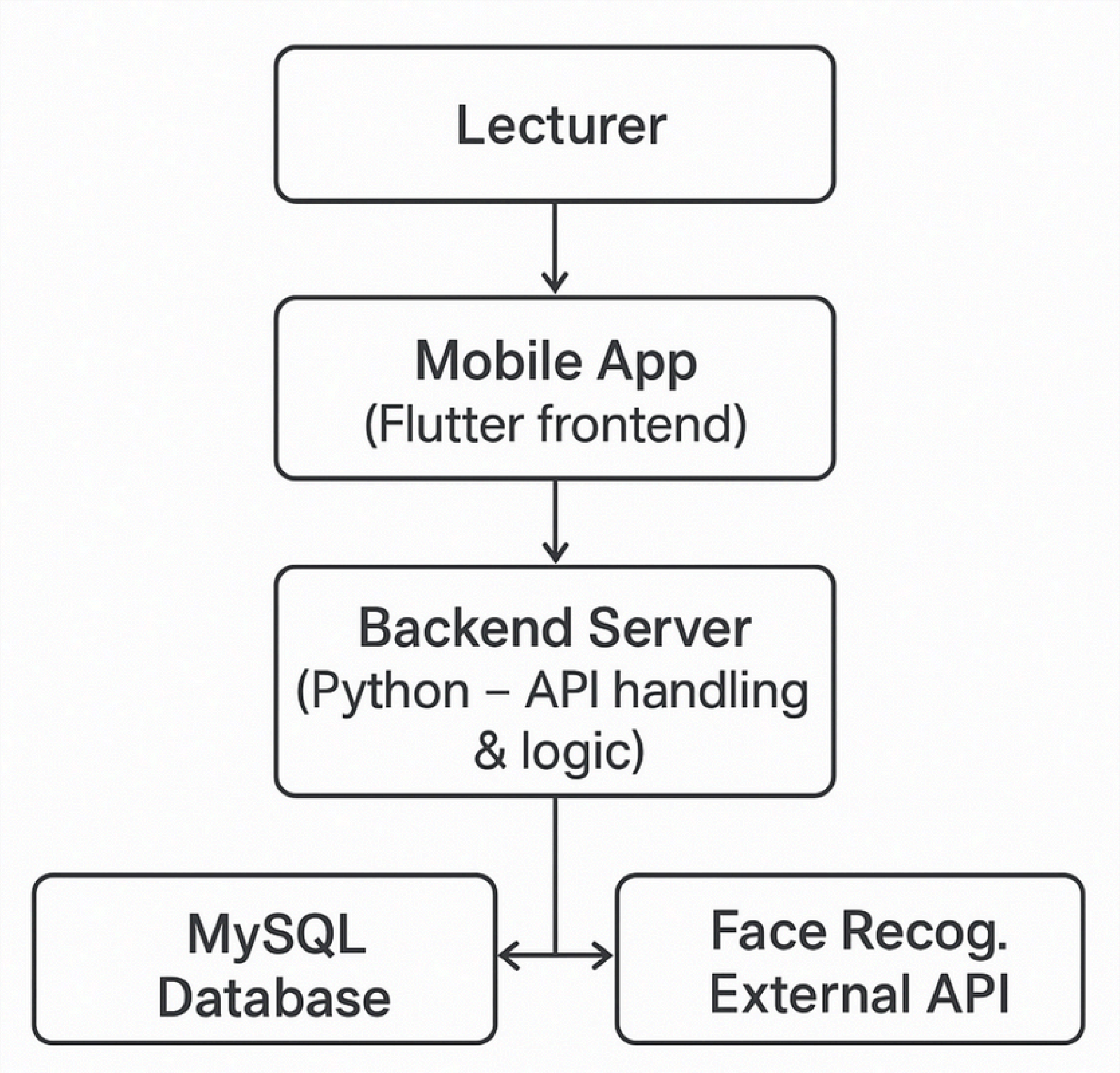
Face recognition (identity verification)

Version Control

GitHub (code management & collaboration)

System Design / Architecture

- Mobile App (Client): UI for lecturers to check in or out and view attendance.
- Backend Server: Handles authentication, API requests, and database communication.
- Database: Stores users, attendance logs, and reports.
- External API Service: Provides face recognition functionality.



Implementation Plan

Module 1: User Management – Registration, login, role access and add students & facial data.

Module 2: Attendance Logging – Record attendance via face recognition in class.

Module 3: Data Storage & Retrieval – Store in MySQL and retrieve for reports.

Module 4: Notification & Reporting – Send absence alerts and generate attendance percentages.

Module 5: Admin & Lecturer Dashboard – Monitor attendance, manage users, view reports, adjust settings.

Issue Faces

- Optimizing MySQL data integration for better reliability.
- Addressing dynamic IP changes to maintain stable system operation.
- Expanding our API development knowledge to enable advanced features.

Contribution

Terence Lim Chia Mao

As Team Leader

- Managed timeline, assigned tasks, led weekly reviews, and ensured focus on project goals.

As Programmer

- Built Google OAuth login, assisted on APIs, fixed bugs, and improved code quality.

Chai Yee Pei

As Programmer

- Built the face recognition backend, integrated it with the app, and set up the database.

As Analyst

- Analysed the workflow, proposed optimal Face++ integration, and planned the system architecture.

Joey Low Yan Hui

As Researcher

- Researched face-recognition APIs, analysed attendance issues, and suggested UI improvements.

As Programmer

- Built app features, integrated backend and APIs, and ensured smooth functionality.

Tan Jun Yee

As Designer

- Created prototypes, reusable UI components, and responsive layouts; improved navigation and user experience.

As Front-End Programmer

- Built Flutter code from prototypes, added charts, tables, and clear error notifications.

System Demo

Thank you very much!

Presented by Group 5

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