2025

PROJECT

Class Sphere

Proposal Submission Guidelines

Group Members & Roles

Ahmed Usama (Team Leader)	Automated Attendance System (Face Recognition)
Mohamed Soltan	Student Behavior Detection(Violence Detection)
Mustafa Mahmoud	Creating short quizzes with multiple-choice questions
Salma Mohamed	Summarizing content by correcting transcription errors
Ammar Yasser	Developing and designing the user interface (Front-End Development)
Wessal Ayman	Server-side logic and database integration (Back-End Development)

Project Description

Core Functionality

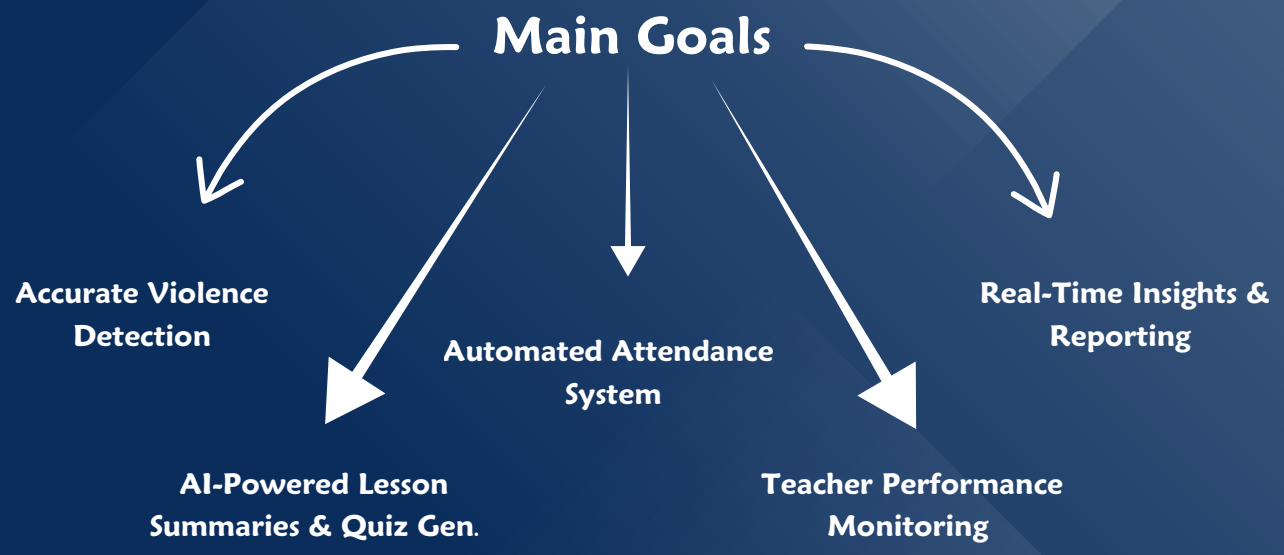
This AI-powered classroom management system uses cameras to automate attendance, analyze teacher performance, and summarize lectures

Behavioral Monitoring & Alerting

It also detects problematic student behavior (such as violence or disengagement) for real-time alerts to administration.

Its goal is to create a smarter, more transparent and efficient learning environment, connecting students, teachers, and administrators on a single platform

Objectives



- **Automated Attendance System** — Face recognition tracks student presence in real-time.
- **Teacher Performance Monitoring** — Captures teacher explanations and identifies lesson topics.
- **Real-Time Insights & Reporting** — Daily/weekly reports keep administrators and parents informed
- **AI-Powered Lesson Summaries** — Speech-to-text converts lectures into written form.
- **Accurate Violence Detection** — Alerts are sent immediately to school administrators for quick intervention.

About The Project

This project aims to transform traditional classrooms into intelligent learning environments powered by AI. By automating attendance, monitoring teaching quality, generating lesson summaries, and detecting student behavior the system creates a more transparent, efficient, and safe educational experience. It bridges the gap between students, teachers, administrators, and parents, ensuring everyone has access to real-time insights and actionable information.

Tools & Techologies

A Look at the Tools Used

1. Core (AI) Technologies

- Face Recognition for Automated Attendance
- Teacher Performance and Content Analysis
- Student Behavior Detection
- AI Lesson Summarization

2. Input Devices and Hardware

Cameras (Audio/Video Recording): The core sensor for the system. Cameras are used to capture the visual feed necessary for face recognition and behavior monitoring. They also serve to record the lectures through both video and audio.

3. Data Processing Technologies

Speech-to-Text Conversion: This technology is explicitly mentioned as the process used to convert the spoken content of the lectures into a written format. This written script is essential input for the AI to then generate the lesson summaries

4. Output and Reporting Tools

- Real-Time Dashboard
- Smart Reporting and File Generation
- Instant Alert System

Milestones & Deadlines

Milestone 1 ⇢ Deadline 16/9

- **Core Technology Validation**

  This phase successfully implemented the foundational AI technologies needed for the project's key features

- **Key Achievements:**

  1. Automated Attendance System (Face Recognition):

  Successfully integrated Face Recognition with the cameras to track student presence in real-time
  Validated the system's ability to automatically generate attendance reports (e.g., Excel/CSV).
  This eliminates the time-consuming and error-prone process of manual attendance tracking.

  2. Foundational AI Lesson Summaries (Text Summarization):

  Enabled the system to record lectures (audio/video).
  Successfully implemented Speech-to-text to convert the lectures into written form.
  Tested the process of converting the written lectures into easy-to-read notes for students, ready to be uploaded online.

These achievements validate the core technologies for efficiency and transparency, allowing the project to proceed to the monitoring and behavior detection features in Milestone 2.

Milestone 2 ⋯⋯⋯⋯⋯⋯⋯⋯⋯⋯→ Deadline 30/9

Key Features Completed:

- **AI-Powered Auto Quiz Generator:**
  - **The AI engine was developed to automatically generate assessment questions based on the main topics and lesson content covered by the teacher.**
  - **This significantly reduces the administrative workload for teachers**
- **Violence Detection:**
  - **The AI model was implemented to actively monitor the classroom and detect signs of violence, bullying, or disruption.**
  - **The system is successfully linked to send Instant Alerts to administrators for quick intervention, creating a safer learning environment.**

Next Steps

The next key project milestones include:

1.Full Project Deployment: Execute the comprehensive deployment of the final project solution.

2.Performance Dashboard Development: Create a project dashboard to visually represent and monitor key metrics, components, and status updates for all elements within the deployed solution.

3.Feature Development & Enhancement: Design and implement additional system features as defined in the project scope.

4.Integrated Project Testing: Conduct thorough testing of the entire solution, including the newly deployed features, to ensure stability, functionality, and performance.

These achievements expand the system's capabilities beyond simple attendance and summaries into academic support and critical safety monitoring

Key Performance Indicators

Data Quality

- Percentage of missing values handled: 100% of corrupted or missing files removed (Since image/video datasets don't usually have "missing values" like text or tables.)
- Data accuracy after preprocessing:
  98% of files successfully processed after cleaning, resizing, and normalization.
- Dataset diversity (representation of different categories): Approximately 95% balanced representation across all classes.

Model Performance

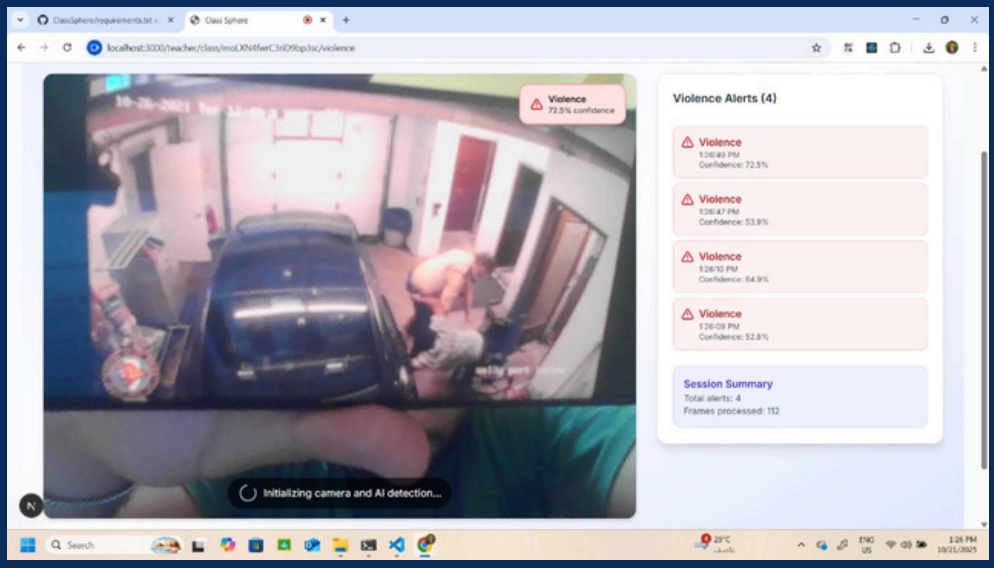
- Model accuracy (Accuracy/F1-Score): F1-Score: 92% (overall model accuracy on test set).
- Model prediction speed (Latency): Average latency: 50 milliseconds per frame.
- Error rate (False Positive/False Negative Rate): Overall error rate: 8%.

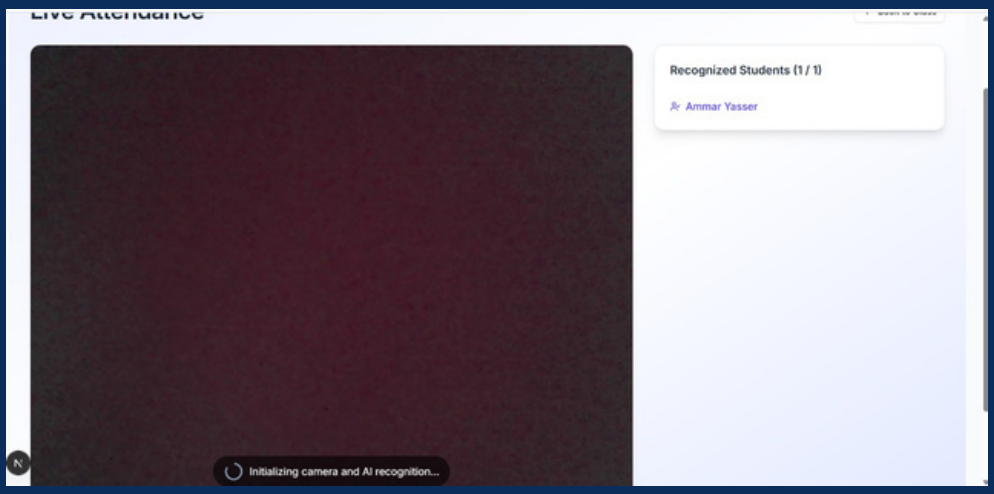
Deployment & Scalability

- Not Applied Yet (Next Milestone)

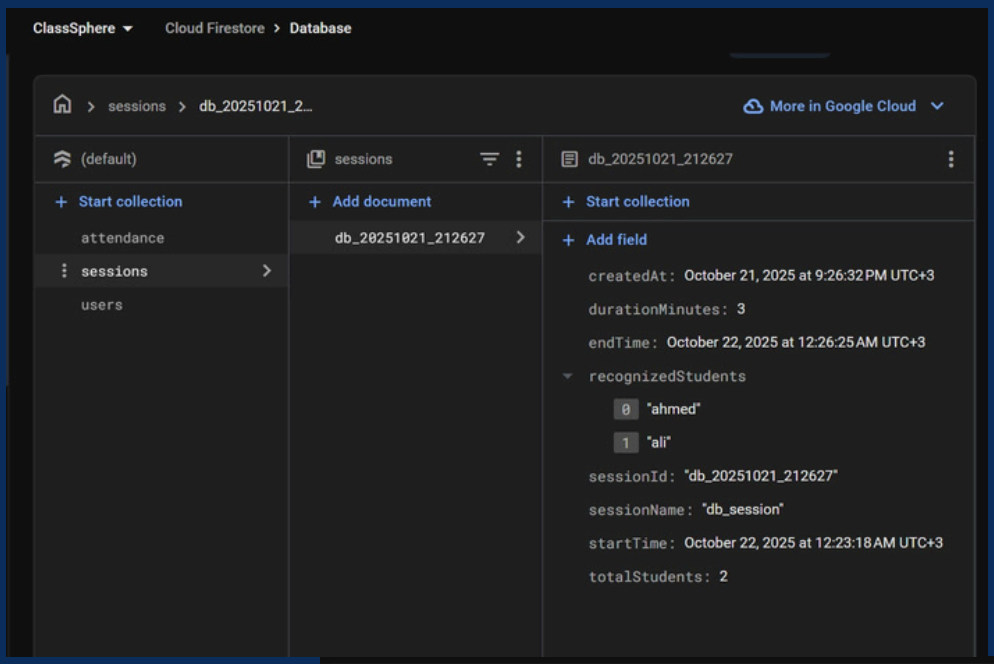
Deployment

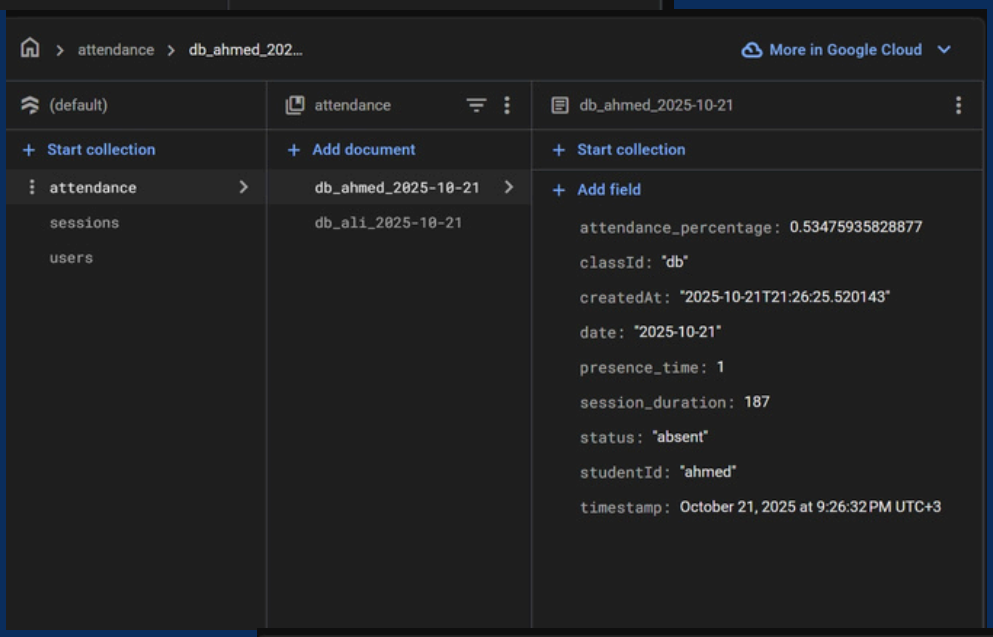
Frontend Sec

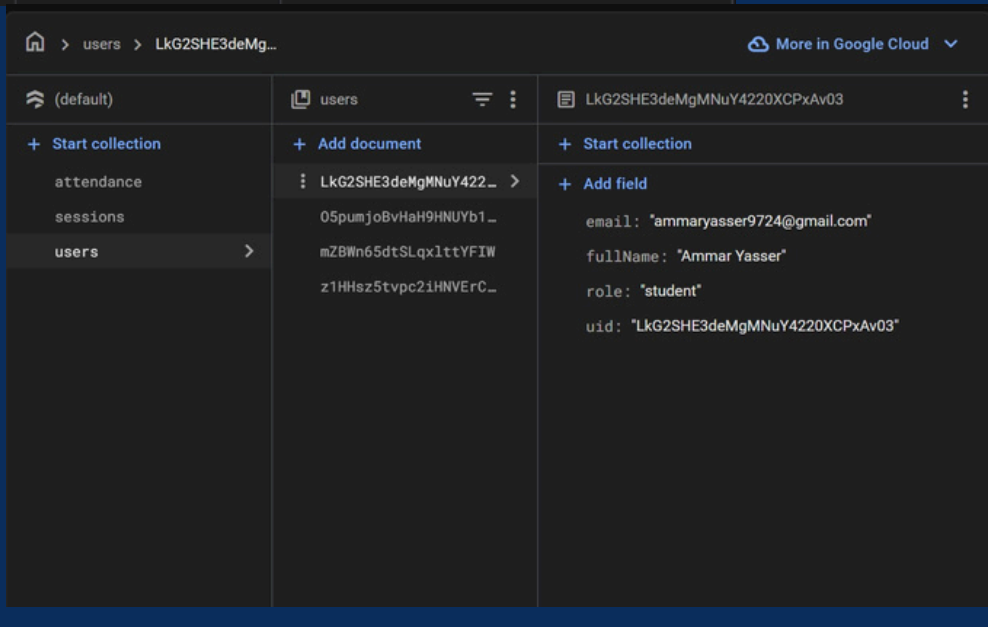




DataBase Sec







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THANK YOU FOR YOUR ATTENTION