Final Year Project Proposal

Project Title: Smart Attendance System using Facial Recognition

Abstract:
The Smart Attendance System automates the traditional attendance process by using facial recognition technology. It captures student images in real-time, detects and recognizes faces, and automatically records attendance in a secure database. This system eliminates manual attendance errors, saves time, and ensures high accuracy. It is suitable for universities, schools, and offices.

Objectives:
1. Automate attendance marking using computer vision.
2. Recognize faces accurately using AI-based image processing.
3. Maintain attendance records automatically in a database.
4. Generate attendance reports for teachers and administrators.
5. Eliminate proxy attendance and human errors.

Scope:
The project provides an automatic, contactless attendance system that functions using a laptop or desktop webcam. No external hardware is required. The application will detect, identify, and log attendance for each student in real-time. It is scalable for use in classrooms, offices, and online meeting environments.

Proposed Methodology:
1. Data Collection: Capture and store images of students (training dataset).
2. Feature Extraction: Convert each face image into a unique numerical encoding using theface_recognition library.
3. Face Detection: Detect faces from the live video stream using OpenCV.
4. Face Recognition: Compare live encodings with stored encodings to identify students.
5. Attendance Logging: Record recognized faces in a CSV or SQLite database with timestamps.
6. Report Generation: Export attendance data for the teacher/admin to review.

Tools and Technologies:

Component	Description
Programming Language	Python
Libraries	OpenCV, face_recognition, NumPy
Database	CSV / SQLite
IDE	VS Code / PyCharm
Hardware	Standard laptop webcam
Operating System	Windows or Linux

System Architecture Overview:
1. Input Layer: Captures live images using webcam.
2. Processing Layer: Performs face detection and recognition using AI.
3. Database Layer: Stores attendance data and student information.
4. Output Layer: Displays recognized names and generates attendance reports.

Expected Outcomes:

- Automated attendance system with 100% contactless operation.
- Reduction in manual errors and proxy attendance.
- Real-time attendance updates for administrators.- Exportable CSV/Excel reports.
- Demonstration of computer vision and AI in real-world academic environments.

Conclusion:
This project modernizes attendance management by integrating Artificial Intelligence and Image Processing techniques. It ensures speed, reliability, and transparency in attendance systems, aligning with the future of smart campus automation. The Smart Attendance System will serve as an efficient, scalable, and practical solution for universities and organizations

Submitted To: Mr Munawer Ahmad
Submitted By:
Name: Muhammad Shahzaib
Roll No: F22BINFT1E02081
Semester: 7th 1E