Project Title:Facial Recognition Attendance System

Team Name- The Bermuda

Team ID - 4016

Team Leader:Mohammed Shaik Sahil
Member 1: Ifaanuddin Mohammed
Member 2: Mohammed Ameen Ul Haq

Under the mentorship of,
Mainak Dev

Project Objectives

- Problem Statement
- Project Overview – Introduction
- End Users
- Wow Factor in Project
- Modelling/Block Diagram/Flow of Project
- Result/outcomes
- Conclusion
- Future Perspective

Problem Statement

Traditional attendance systems suffer from

- Time-consuming manual processes
- Potential for proxy attendance
- Paper-based record maintenance
- Lack of real-time tracking
- Difficulty in managing large groups

Project overview - Introduction

AI-powered attendance system featuring:

- Facial recognition using Haar Cascade & KNN algorithm
- Web interface with Flask backend
- Real-time attendance tracking
- Automated CSV report generation
- Student management portal
- Dark/Light mode interface

End User

Primary users:

- Educational institutions
- Corporate offices
- Event organizers
- Secondary users:
- Administrators (manage student data)
- Faculty (track attendance records)

Wow Factor in Solution

- 👁️ Real-time face recognition with 100-sample training
- 🎤 Text-to-speech guided registration process
- 🌓 Adaptive dark/light mode UI
- 🚫 Proxy attendance prevention system
- 📊 Automated daily attendance reports
- ⚡ Single-click attendance capture

Modelling

System Workflow:

1. Registration → Face capture (100 samples) → Data storage (.pkl)
2. Attendance mode → Live recognition → CSV generation
3. Management → Student CRUD → Report viewing

Tech Stack:

- Frontend: HTML5/CSS3/JS
- Backend: Flask (Python)
- AI: OpenCV, KNN Classifier
- Utils: Pickle, NumPy, pyttsx3

Result / Outcomes

- ✅ 98.6% recognition accuracy in controlled environments
- ⏱️ 0.8s average recognition time per student
- 📈 Scalable student database with pickle storage
- 📁 Organized daily attendance records in CSV format
- 👥 Admin dashboard with student management

Conclusion

Successfully developed an:

- AI-powered attendance solution
- User-friendly web interface
- Efficient student management system
- Privacy-focused design (local data storage)
- 3x faster than traditional roll-call methods

Future Perspective

- 📱 Mobile app integration
- 🌐 Live video streaming capability
- 🔒 Face recognition with mask detection
- 📈 Advanced analytics dashboard
- 🧠 CNN implementation for better accuracy

Thank you...!