

Introduction

Face recognition offers a wide range of valuable applications in social media, security, and surveillance contexts. The software used for building facial recognition algorithms is Python and OpenCV. "Attendance using Face Recognition" is a method for tracking and managing attendance that makes use of facial recognition technology. By seamlessly integrating the 'Face Recognition' module, a native Python feature, and the OpenCV library, our system excels in accuracy and dependability. The system then stores attendance records in a database and provides real-time reports. In this project, we demonstrate how to create a face recognition system in Python utilizing the built-in "Face Recognition" module and the OpenCV library. Our results show that our system achieves high accuracy and robustness while being efficient and scalable, catering to a wide spectrum of educational institutions, organizations, and enterprises.

System Analysis

The hardware required includes a high-resolution camera, Intel i5 processor or above, 8GB RAM, and storage of at least 10GB. A webcam, keyboard, and mouse are necessary input devices. Software requirements include Python, Flask, OpenCV, NumPy, Pandas, scikit-learn, joblib, HTML, CSS, and JavaScript.

Design

The Smart Attendance System is designed to streamline and automate the attendance tracking process. The system architecture consists of cameras for capturing live video feeds, which are processed by facial recognition algorithms. The modules include dataset generation, preprocessing and feature extraction, model training, and real-time attendance logging. Data Flow Diagrams and modular breakdowns illustrate the workflow.

Implementation

The system is implemented using Python with Flask as the web framework. The backend uses OpenCV for face detection and KNN (K-Nearest Neighbors) for recognition. The system supports dataset creation, training, and attendance logging in CSV format. The frontend is built with HTML, CSS, and Bootstrap for a responsive interface.

Results

The Smart Attendance System showed significant improvements in accuracy, efficiency, and reliability compared to traditional methods. Students and faculty found the system faster and more secure. Privacy concerns were addressed through encryption and access control.

Conclusion

The Smart Attendance System represents a major step forward in modernizing attendance processes. It ensures accuracy, reduces administrative burden, and enhances security. Future enhancements

include integrating cloud databases, mobile applications, and deep learning-based recognition models.

Snapshot

Live Attendance Feed

Webcam feed and face recognition will be displayed here.

To connect this to your Python script, you would use a web framework like Flask or Django to serve this page and stream the video feed.

Status: System is ready.

Start System

Stop System

View Attendance Log

Snapshot

Smart Attendance System

Automated attendance using face recognition

Project Overview

This system is designed to automate attendance management, eliminating manual record-keeping and preventing proxy attendance. It uses face recognition technology to accurately identify students and update attendance records in real-time. This project was developed as a part of our Bachelor of Engineering program.