■ Face Recognition Security System

An intelligent security system that uses facial recognition technology to detect unknown faces and immediately trigger email alerts with a photo and video attachment. Built with Python, OpenCV, and SMTP integration for real-time monitoring.

■ Purpose

This project is ideal for automating surveillance in:
- Homes
- Offices
- Labs
- Classrooms

It leverages machine learning to provide an easy-to-use, AI-enhanced security solution.

■ Key Features

• Real-time face detection and recognition
• Captures intruder’s photo (thief.jpg) and video (outpy.avi)
• Sends email alerts with attachments
• User training with just one Python command
• Simple code-based interface (GUI optional)

■ How It Works

1. Run `face_dataset.py` to capture face samples.
2. Run `training.py` to train the face recognition model.
3. Run `face reco.py` to start real-time monitoring.

If an unknown face appears, it captures evidence and sends an email alert.

■■ Technologies Used

• Python
• OpenCV
• Haar Cascade Classifiers
• LBPH (Face Recognition Algorithm)
• SMTP Protocol for Emailing
• (Optional) Tkinter for GUI

■ Project Files

■ Email Alert System

When an unrecognized face is detected, the system:
- Captures a snapshot (`thief.jpg`)
- Records a short video (`outpy.avi`)
- Sends both as email attachments to the configured address

You must enable 'App Password' or 'Less Secure App Access' in your email account settings.

■ Step-by-Step Usage

1. Open terminal/IDLE.
2. Run: `python face_dataset.py` → Follow prompts to capture face images.
3. Run: `python training.py` → Train the model.
4. Run: `python face reco.py` → Start live detection and alerts.
5. Output: `thief.jpg`, `outpy.avi`, and email alert sent.

■ Future Scope

• Build a GUI using Tkinter or PyQt
• Add OTP verification before sending emails
• Integrate hardware (e.g., Arduino alarm, door locks)
• Deploy on Raspberry Pi or edge devices

■■■ Developer

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