Facial Recognition System

Goal

Build a real-time face recognition system that can automatically detect and recognize individuals using live webcam feed. It can identify known people The system also provides real-time verbal feedback using text-to-speech, making it accessible and user-friendly.

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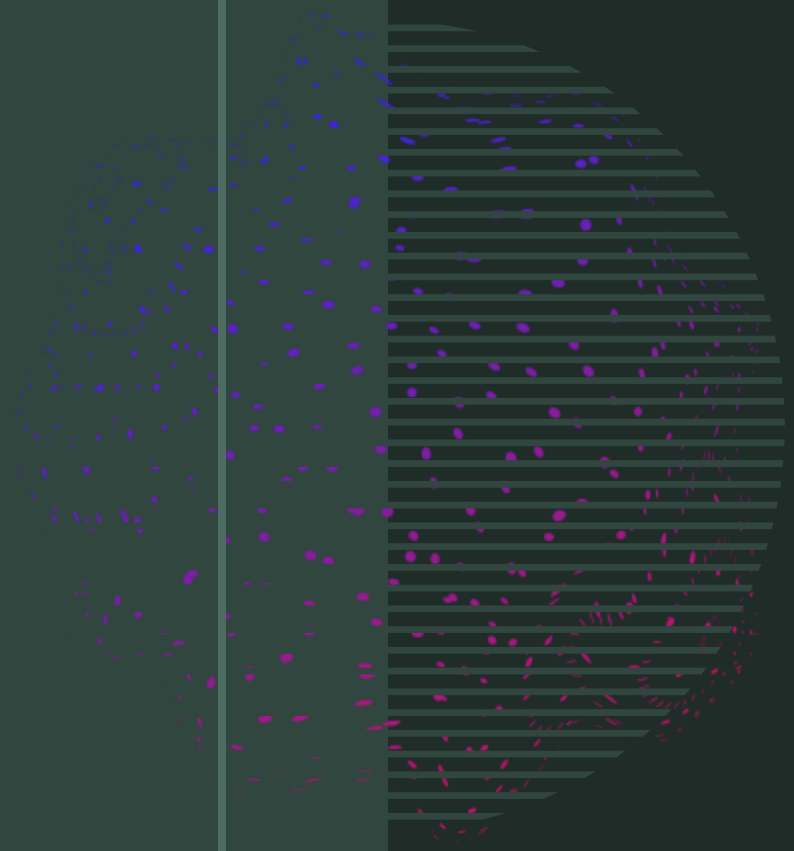

Technologies Used

- ***face_recognition*** for encoding and matching faces
- ***OpenCV*** for live video capture and drawing visuals
- ***pyttsx3*** for offline text-to-speech
- ***PIL*** and ***NumPy*** for image preprocessing

Functionality Overview

1. **Loading Face Data:**

   Loads and encodes all the faces stored in the data directory.

2.Camera Initialization:

Next, the code tries to initialize a webcam using OpenCV, checking multiple indices to ensure compatibility with different systems.

3.Live Video Processing:

Once the camera is ready, the system continuously reads frames from the video stream. It detects faces in each frame, extracts encodings, and compares them with the known dataset.

Functionality Overview

4 Recognition & Feedback:

If a match is found, the system shows a **green box** with the person's name else, **red box** labeled "Unknown".

It announces the names of known individuals and says:*"I am not trained with this person, so I cannot identify them"* for unknowns.

5.Smart Voice Output:

To avoid repetition, the system only speaks when there's a new face, or a change in who is visible, or after a short interval.

6.Exit Option:

Pressing q will safely stop the recognition, close the video window, and release the camera.

Real World Applications

- Smart attendance systems
- Home security & visitor recognition
- Retail or office access control
- Personalized customer interaction in stores

Thank you