AI-Powered Confidence Analyser

Description

This project is a sophisticated tool that analyses a video of a person speaking to provide a quantitative "confidence score." It leverages computer vision and speech analysis to evaluate key indicators of presentation skills, offering objective, data-driven feedback on both visual and vocal performance.

Key Features:

- **Vocal Analysis:**
  - **Speech Rate:** Calculates words per minute to assess pacing.
  - **Filler Words:** Detects the use of common filler words (e.g., "um," "ah," "like").
  - **Pitch Variation:** Measures vocal intonation to gauge engagement.
  - **Volume:** Assesses the loudness and clarity of speech.
- **Visual Analysis:**
  - **Eye Contact:** Uses advanced iris tracking to determine if the speaker is looking toward the camera.
  - **Posture:** Evaluates shoulder alignment to detect slouching.
  - **Smile Quantity:** Measures the frequency and extent of smiling.
  - **Nervous Gestures:** Identifies and penalises nervous hand-to-face contact.
- **AI-Powered Transcription:** Utilises OpenAI's Whisper model for highly accurate, offline speech-to-text transcription.
- **Comprehensive Reporting:** Generates a detailed report with an overall confidence score, separate scores for vocal and visual performance, and a breakdown of each metric.

Purpose

The primary goal of this project is to help individuals improve their public speaking and presentation skills. By providing objective, numerical feedback, users can identify specific areas for improvement, whether they are preparing for a job interview, a business presentation, or a public speech. It replaces subjective human opinion with consistent, measurable data to track progress over time.

Setup

Follow these steps to set up and run the project on your local machine.

1. Prerequisites

- **Python 3.8+**: Make sure you have a modern version of Python installed.

- **FFmpeg**: This is a crucial dependency for audio extraction.
  - **Windows**: Download from the FFmpeg website and add the bin folder to your system's PATH.
  - **macOS (using Homebrew)**: brew install ffmpeg
  - **Linux (Debian/Ubuntu)**: sudo apt update && sudo apt install ffmpeg

2. Get the Code

Download or clone the analyzer.py script to a directory on your computer.

3. Create a Virtual Environment (Recommended)

It's best practice to create a virtual environment to manage project dependencies.

```
# Navigate to your project directory
cd path/to/your/project

# Create the virtual environment
python -m venv venv

# Activate it
# On Windows:
venv\Scripts\activate
# On macOS/Linux:
source venv/bin/activate
```

4. Install Dependencies

Install all the required Python libraries using pip.

```
# Install PyTorch first (CPU version)
pip install torch --index-url https://download.pytorch.org/whl/cpu

# Install the rest of the libraries
pip install opencv-python mediapipe numpy librosa noisereduce openai-whisper soundfile
```

5. Run the Analyser

1. **Open the analyzer.py file** in a text editor.
2. **Update the video path:** Go to the very bottom of the file and change the video_path variable to the full path of the video you want to analyse.
   # Change this line:
   video_path = r"C:\path\to\your\video.mp4"

3. **Execute the script** from your terminal:
   python analyzer.py

The analysis will begin, and upon completion, a detailed confidence report will be printed in the console.