Emotion Music Player

This Python application captures your live webcam feed, detects your facial emotion in real time using DeepFace, and plays a random song matching your mood. Emotions and song durations are logged to a CSV file for review.

Setup Instructions

1. **Clone or Download** the project folder containing `emotion_music.py` and the `songs/` subdirectories.
2. **Create song directories** under

   `songs/`:

   ```
   happy/ sample_happy_song.mp3
   sad/ sample_sad_song.mp3
   angry/ sample_angry_song.mp3
   neutral/ sample_neutral_song.mp3
   ```

3. **Place your audio files** (`.mp3` or `.wav`) into each emotion folder.
4. **Install Python 3.10**+ if not already installed.
5. **Create and activate a virtual environment** (optional but recommended):

   ```
   python -m venv env
   source env/bin/activate    # macOS/Linux
   env\Scripts\activate     # Windows
   ```

6. **Install required libraries**:

   ```
   pip install opencv-python deepface pygame
   ```

7. **Run the application**:

   ```
   python emotion_music.py
   ```

8. **Usage**:

    o   A window will appear showing your webcam.

    o   Every few seconds, the app analyzes your facial expression.

    o   It plays a random track from the corresponding emotion folder.

    o   Press **Q** to exit.

Used Libraries

- **OpenCV** (`opencv-python`): Capture webcam video and overlay text.

- **DeepFace**: Pre-trained AI models for emotion analysis.

- **Pygame**: Audio playback and mixer control.

- **Python Standard Library**:

    o   `os`, `random`, `time`, `csv`, `datetime` for file and time management.

How the System Works

1. **Initialization**:

    o   Pygame mixer is initialized for audio.

    o   The code scans each `songs/<emotion>/` folder and collects audio files.

    o   A CSV log file `emotion_log.csv` is created (if missing).

2. **Main Loop**:

    o   Webcam frames are captured via OpenCV.

    o   At a fixed interval (default: every 2 seconds), the frame is converted to RGB and

        passed to `DeepFace.analyze` for emotion detection.

    o   The dominant emotion (`happy`, `sad`, `angry`, `neutral`) is extracted.

- A random track from the matching folder is selected (avoiding repeats) and played in a loop.

- The application overlays an emoji and emotion label on the video feed.

- Each detected emotion, its duration, and song name are logged to `emotion_log.csv`.

3. **Exit and Cleanup**:

- On pressing **Q**, the loop terminates.

- The final emotion's duration is logged.

- Resources (webcam, audio mixer, windows) are released.

- A session summary prints to the console, listing all emotions detected and songs played.