

Emotion_AI_RealTime_Project

🔧 Overview

A **real-time emotion detection web application** built using **Streamlit**, **OpenCV**, **FER**, and **Mediapipe**.

It captures live video from your webcam, instantly detects facial emotions (😊 happy, 😞 sad, 😡 angry, 😰 fear, 😢 disgust, 😐 neutral), dynamically changes the background according to the dominant emotion, applies automatic lighting correction, and plots emotion intensity over time.

Perfect for interactive mood-based experiences, mental health monitoring demos, virtual backgrounds with feelings, or simply having fun watching AI react to your face in real time!

⚙️ Requirements

```
streamlit==1.38.0
opencv-python==4.10.0.84
Pillow==10.4.0
numpy==2.1.2
fer==22.5.1
mtcnn==0.1.1
tensorflow==2.17.0
mediapipe==0.10.18
playsound==1.3.0
requests==2.32.3
```

Setup

1. Install dependencies: `pip install -r requirements.txt`
 2. Create folders: `mkdir backgrounds alerts`
 3. Add your media:
 - `backgrounds/` → happy.jpg, sad.jpg, angry.jpg, ...
 - `alerts/` → happy.mp3, sad.mp3, angry.mp3, ...
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▶ How to Run

1. `streamlit run app.py`
 2. Click **Start Camera**
 3. Allow webcam access
 4. Smile / frown / get angry → background + sound changes instantly
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🛠️ Problems Faced & Solutions

- **First run was slow** → models download only once
- **Blurry background removal** → fixed using Mediapipe Selfie Segmentation
- **Sound spam** → fixed with cooldown + threading

- **Flickering in Streamlit** → fixed with `time.sleep(0.03)`

• **Result:** Runs super smooth on any laptop.

💡 Benefits & Applications

- Learn **real-time Emotion AI & Computer Vision**
- Mood-based virtual backgrounds
- Mental health demo tools
- Interactive games & installations