Facial Emotion Detection using AI

🧠 Project Overview

This project uses **Deep Learning** and the **DeepFace** library to detect and display human emotions in real-time using a webcam. It identifies emotions such as **happy, sad, angry, surprised**, and more by analysing facial expressions.

🚀 Features

- Real-time facial emotion detection via webcam
- Uses **DeepFace** for emotion recognition
- Displays the dominant emotion on screen
- Simple and user-friendly interface

🛠️ Technologies Used

- Python
- OpenCV
- DeepFace (built on TensorFlow/Keras & PyTorch)
- NumPy

📁 File Descriptions

Face.py

This is the main script for real-time emotion detection:

- Captures video feed from webcam
- Analyzes each frame using DeepFace.analyze()
- Displays the detected emotion on the screen
- Exits on pressing the q key

main.py

A basic OpenCV webcam preview script. This was likely used for testing webcam access.

🔧 Installation & Setup

1. **Clone the repository**
2. git clone https://github.com/your-username/Facial-Emotion-Detection-AI.git
3. cd Facial-Emotion-Detection-AI
4. **Install required libraries**
5. pip install deepface opencv-python numpy
6. **Run the application**
7. python Face.py

🎯 How It Works

- Captures frames from the webcam.
- Each frame is analyzed by the DeepFace model.
- The most dominant emotion is displayed in real-time.
- Useful in fields like **healthcare, education, marketing**, and **security** to understand user emotions.

📸 Sample Output:

Displays video feed with a text overlay showing:
Emotion: happy (or any other detected emotion)

🧪 Use Cases:

- Emotion-based feedback in online learning platforms
- Customer sentiment analysis in retail or marketing
- Patient mood tracking in healthcare & Smart surveillance and security systems.

🔒 Note:

Make sure your webcam is connected and accessible. This script runs in real-time and requires decent lighting and facial visibility for accurate detection.

👷 Author

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