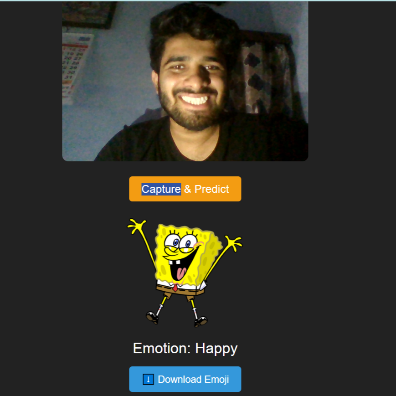
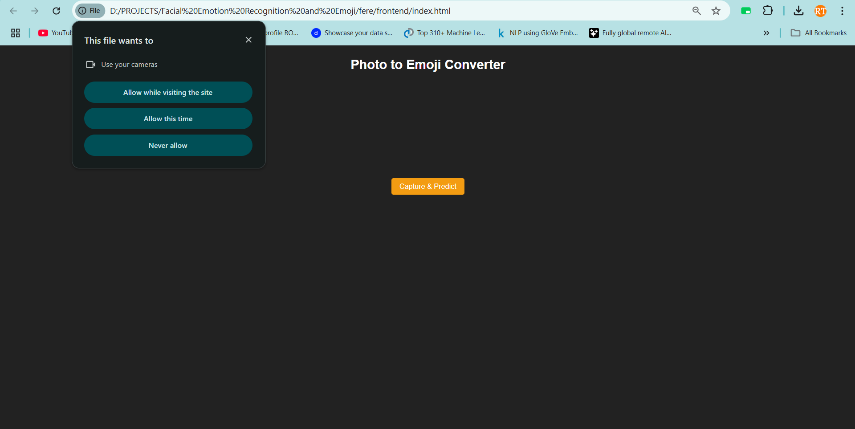
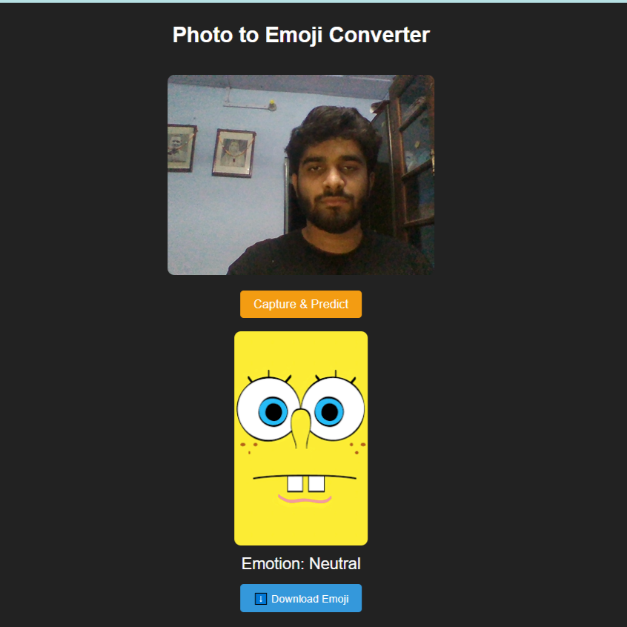
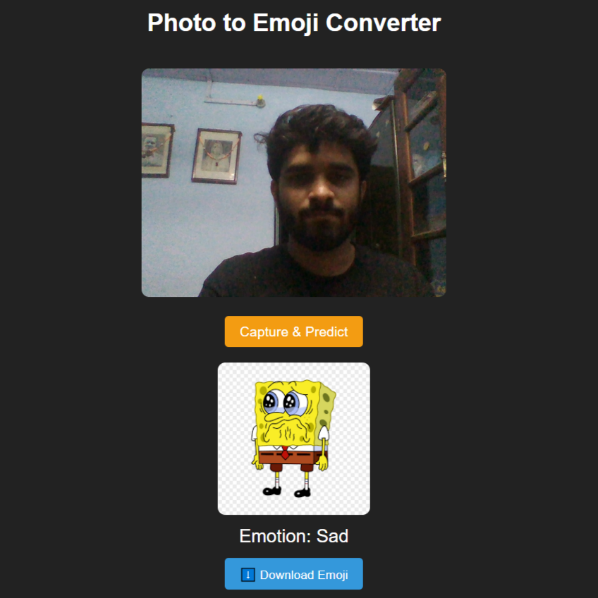
**FaceFeel 🎭**

**FaceFeel is an AI-powered web application that captures a user's facial expression in real time using their webcam and maps it to an appropriate emoji using a deep learning emotion recognition model. It's a fun and practical demonstration of computer vision, deep learning, and full-stack integration.**

**📸 Demo**

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**🌟 Features**

* **🎥 Real-time webcam integration**
* **🧠 Emotion detection with a trained CNN model**
* **😊 Emoji generation based on predicted emotion**
* **💾 Downloadable emoji output**
* **⚡ FastAPI backend with REST API**
* **🌐 Clean frontend built with HTML/CSS/JavaScript**

**🧰 Tech Stack**

* **Frontend: HTML, CSS, JavaScript**
* **Backend: FastAPI, Python**
* **ML Framework: TensorFlow, Keras**
* **Computer Vision: OpenCV**
* **Other: PIL (Pillow), NumPy, Base64 Encoding**

**📁 Project Structure**

**facefeel/**

**├── backend/**

**│ ├── app.py # FastAPI backend API**

**│ ├── emotion\_model.keras # Trained CNN model**

**│ └── emojis/ # Emotion-based emoji PNGs**

**│ ├── happy.png**

**│ ├── sad.png**

**│ └── ...**

**├── frontend/**

**│ ├── index.html # UI to interact with webcam and API**

**│ ├── style.css # Page styling**

**│ └── scripts.js # Webcam capture, POST request handling**

**🚀 Getting Started:**

**🔧 Backend Setup**

**cd backend**

**pip install -r requirements.txt**

**uvicorn app:app --reload**

**Make sure emotion\_model.keras and the emojis/ folder are present.**

**🌐 Frontend Setup**

**cd frontend**

**python -m http.server 8080**

**Then visit http://localhost:8080 in your browser.**

**📮 Postman Testing**

1. **Run backend.**
2. **Use Postman to send a POST request to http://127.0.0.1:8000/process-image**
3. **Body:**

**{**

**"image": "data:image/jpeg;base64,/9j/4AAQSkZJRgABA..."**

**}**

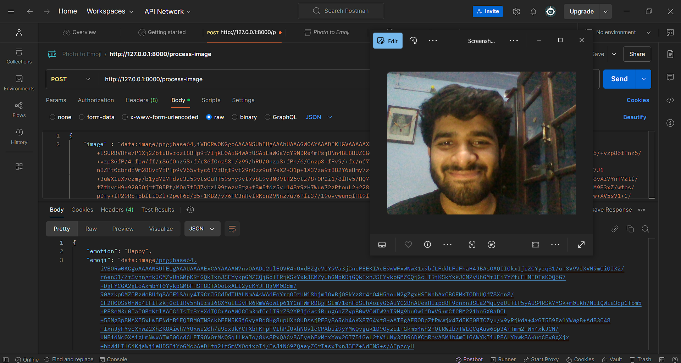
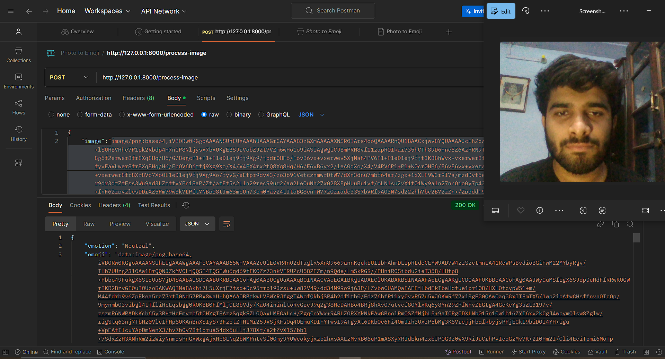
1. **Response:**

**{**

**"emotion": "Happy",**

**"emoji": "data:image/png;base64,iVBOR..."**

**}**

****

**🧠 Model Training**

* **Trained on 48x48 grayscale facial emotion dataset**
* **Classes: Angry, Disgusted, Fearful, Happy, Neutral, Sad, Surprised**
* **Data augmentation applied**
* **Softmax output for 7 emotion classes**

**📦 Dependencies**

**fastapi**

**uvicorn**

**pillow**

**numpy**

**opencv-python**

**tensorflow**

**keras**

**Install with:**

**pip install -r requirements.txt**

**✨ Future Enhancements**

* **Add multi-face support**
* **Display model confidence**
* **Use transfer learning for higher accuracy**

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