Image Captioning System

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Project Overview

This project combines image classification and emotion detection.

Utilizes a webcam or image upload to analyze a person's emotion and predict objects in the image.

Employs MobileNetV2 for object detection and Deep Face for emotion analysis.

Tools & Libraries

TensorFlow – Deep learning model (MobileNetV2).

DeepFace – Facial analysis and emotion detection.

OpenCV & Matplotlib – Image processing and visualization.

NumPy – Array handling and preprocessing.

Google Colab & JavaScript – Webcam integration

Key Features

- Image Upload Option: Upload image manually for analysis Emotion.
- Webcam Integration: Capture real-time images
- Detection: Identifies dominant and sub-emotions Object Prediction.
- Predicts top 5 object classes from image using ImageNet

Working Process

Capture / Upload Image.

Predict Objects using MobileNetV2.

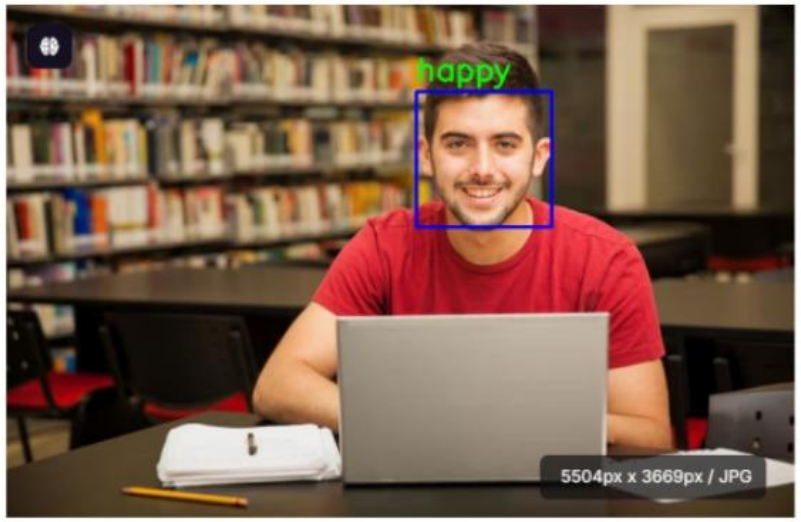
Detect Emotions using Deep-Face.

Visual Output displayed with bounding box and labels.

Output

```
Predictions from MobileNetV2:
1: laptop (0.52)
2: notebook (0.35)
3: library (0.08)
4: mouse (0.00)
5: projector (0.00)
```

Detected Emotion(s)




```
Top Emotion: happy
All Emotions:
angry: 0.00
disgust: 0.00
fear: 0.00
happy: 99.42
sad: 0.00
surprise: 0.00
neutral: 0.58
```

Conclusion

Successfully implemented a system capable of detecting faces and recognizing emotions in both static images and real-time video.

Demonstrated strong potential for practical applications in fields like surveillance, education, healthcare, and smart environments.

The modular, platform-independent design allows for easy integration and future scalability.

With further enhancements (e.g., trend tracking, multimodal analysis), this system can evolve into a powerful tool for emotion-aware technology.

Opens up new possibilities for emotionally intelligent systems and human-centered AI.

Thank You