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1 import cv2
2 from tensorflow.keras.models import load_model
3 from tensorflow.keras.utils import get_custom_objects
4 import numpy as np
5
6 # Load the pre-trained emotion detection model
7 get_custom_objects().update({'fbeta': lambda *args, **kwargs: None})
8 model = load_model('emotion_model.h5', compile=False)
9
10 # Emotion labels dictionary
11 emotion_dict = {
12     0: "Angry 😡",
13     1: "Disgust 🤢",
14     2: "Fear 😨",
15     3: "Happy 😊",
16     4: "Sad 😞",
17     5: "Surprise 😲",
18     6: "Neutral 😐"
19 }
20
21 # Start webcam capture
22 cap = cv2.VideoCapture(0)
23
24 # Load Haar Cascade face detector from OpenCV
25 face_cascade = cv2.CascadeClassifier(cv2.data.haarcascades + 'haarcascade_frontalface_default.xml')
26
27 while True:
28     # Read each frame from webcam
29     ret, frame = cap.read()
30     if not ret:
31         break
32
33     # Convert to grayscale
34     gray = cv2.cvtColor(frame, cv2.COLOR_BGR2GRAY)
35
36     # Detect faces in the frame
37     faces = face_cascade.detectMultiScale(gray, 1.3, 5)
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38
39 for (x, y, w, h) in faces:
40     roi_gray = gray[y:y+h, x:x+w]
41     cropped_img = cv2.resize(roi_gray, (48, 48))
42     img = cropped_img.astype('float32') / 255.0
43     img = np.reshape(img, (1, 48, 48, 1))
44
45     # Predict emotion
46     prediction = model.predict(img)
47     emotion_index = int(np.argmax(prediction))
48     emotion = emotion_dict[emotion_index]
49
50     # Show what the model is seeing
51     cv2.imshow("Cropped Face", cropped_img)
52
53     # Print prediction confidence
54     print("Prediction array:", prediction)
55     print("Predicted emotion:", emotion)
56
57     # Draw rectangle and emotion text
58     cv2.rectangle(frame, (x, y), (x+w, y+h), (0, 255, 0), 2)
59     cv2.putText(frame, emotion, (x, y-10),
60                 cv2.FONT_HERSHEY_SIMPLEX, 0.9, (255, 255, 255), 2)
61
62     # Display the video with emotion labels
63     cv2.imshow("Real-Time Emotion Detector", frame)
64
65     # Press 'q' to quit
66     if cv2.waitKey(1) & 0xFF == ord('q'):
67         break
68
69 # Release webcam and close window
70 cap.release()
71 cv2.destroyAllWindows()
72
```