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import cv2

# Load the pre-trained Haar cascades for face and smile detection

face_cascade = cv2.CascadeClassifier(cv2.data.harcascades + 'haarcascade_frontalface_default.xml')

smile_cascade = cv2.CascadeClassifier(cv2.data.harcascades + 'haarcascade_smile.xml')

# Load image

image = cv2.imread(r"C:\Users\SAIL\Downloads\CV\humansmile.jpg") # Replace with your image file
path

gray = cv2.cvtColor(image, cv2.COLOR_BGR2GRAY)

# Detect faces

faces = face_cascade.detectMultiScale(gray, scaleFactor=1.1, minNeighbors=5)

# Iterate over detected faces

for (x, y, w, h) in faces:

    cv2.rectangle(image, (x, y), (x+w, y+h), (255, 0, 0), 2)

    roi_gray = gray[y:y+h, x:x+w]

    roi_color = image[y:y+h, x:x+w]

# Detect smiles in the face region

smiles = smile_cascade.detectMultiScale(roi_gray, scaleFactor=1.7, minNeighbors=22)

for (sx, sy, sw, sh) in smiles:

    cv2.rectangle(roi_color, (sx, sy), (sx+sw, sy+sh), (0, 255, 0), 2)

# Display the result
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cv2.imshow('Smile Detection', image)
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cv2.waitKey(0)
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cv2.destroyAllWindows()
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