import cv2  
import mediapipe as mp  
import numpy as np  
  
  
mp\_drawing = mp.solutions.drawing\_utils  
mp\_pose = mp.solutions.pose  
  
cap = cv2.VideoCapture(0)  
  
counter = 0  
stage = None  
  
with mp\_pose.Pose(min\_detection\_confidence=0.5, min\_tracking\_confidence=0.5) as pose:  
 while cap.isOpened():  
 ret, frame = cap.read()  
 image = cv2.cvtColor(frame, cv2.COLOR\_BGR2RGB)  
 image.flags.writeable = False  
  
 results = pose.process(image)  
  
 image.flags.writeable = True  
 image = cv2.cvtColor(image, cv2.COLOR\_RGB2BGR)  
  
 try:  
 landmarks = results.pose\_landmarks.landmark  
 shoulder = [landmarks[mp\_pose.PoseLandmark.LEFT\_SHOULDER.value].x,  
 landmarks[mp\_pose.PoseLandmark.LEFT\_SHOULDER.value].y]  
 elbow = [landmarks[mp\_pose.PoseLandmark.LEFT\_ELBOW.value].x,  
 landmarks[mp\_pose.PoseLandmark.LEFT\_ELBOW.value].y]  
 wrist = [landmarks[mp\_pose.PoseLandmark.LEFT\_WRIST.value].x,  
 landmarks[mp\_pose.PoseLandmark.LEFT\_WRIST.value].y]  
 shoulder1 = np.array(shoulder)  
 elbow1 = np.array(elbow)  
 wrist1 = np.array(wrist)  
 radians = np.arctan2(wrist1[1] - elbow1[1], wrist1[0] - elbow1[0]) - np.arctan2(shoulder1[1] - elbow1[1],  
 shoulder1[0] - elbow1[0])  
 angle = np.abs(radians \* 180.0 / np.pi)  
  
 if angle > 180.0:  
 angle = 360 - angle  
  
 cv2.putText(image, str(angle),  
 tuple(np.multiply(elbow, [640, 480]).astype(int)),  
 cv2.FONT\_HERSHEY\_SIMPLEX, 0.5, (255, 255, 255), 2, cv2.LINE\_AA  
 )  
  
 if angle > 160:  
 stage = "down"  
 if angle < 30 and stage == "down":  
 stage = "up"  
 counter = counter + 1  
 # print(counter)  
 except:  
 pass  
  
 cv2.rectangle(image, (0, 0), (250, 73), (245, 117, 16), -1)  
  
 cv2.putText(image, 'REPS', (15, 12),  
 cv2.FONT\_HERSHEY\_SIMPLEX, 0.5, (0, 0, 0), 1, cv2.LINE\_AA)  
 cv2.putText(image, str(counter),  
 (10, 60),  
 cv2.FONT\_HERSHEY\_SIMPLEX, 2, (255, 255, 255), 2, cv2.LINE\_AA)  
  
 cv2.putText(image, 'STAGE', (75, 12),  
 cv2.FONT\_HERSHEY\_SIMPLEX, 0.5, (0, 0, 0), 1, cv2.LINE\_AA)  
 cv2.putText(image, stage,  
 (100, 60),  
 cv2.FONT\_HERSHEY\_SIMPLEX, 2, (255, 255, 255), 2, cv2.LINE\_AA)  
  
 mp\_drawing.draw\_landmarks(image, results.pose\_landmarks, mp\_pose.POSE\_CONNECTIONS,  
 mp\_drawing.DrawingSpec(color=(245, 117, 66), thickness=2, circle\_radius=2),  
 mp\_drawing.DrawingSpec(color=(245, 66, 230), thickness=2, circle\_radius=2))  
  
 cv2.imshow('Mediapipe Feed', image)  
  
 if cv2.waitKey(10) & 0xFF == ord('q'):  
 break  
  
 cap.release()  
 cv2.destroyAllWindows()