Subscriber.py

⚙ Status	Not Started
👥 Assign	
📅 Due	
≡ Description	

This scipt receives image stream from Unitree Go1 head cameras and perform human detection with YOLOv8.

It is also written as a ROS node for future use.

```python
#!/usr/bin/env python3
import sys

import rospy
from std_msgs.msg import String
import cv2
from ultralytics import YOLO
import os

def receive_unitree_image():
    print(cv2.getBuildInformation())
    #rospy.init_node('publisher')

    #chatter_pub = rospy.Publisher('chatter', String, queue_size=1000)
    #rate = rospy.Rate(10)

    IpLastSegment = "123"
    cam = 1
    if len(sys.argv) >= 2:
        cam = int(sys.argv[1])
    udpstrPrevData = "udpsrc address=192.168.123." + IpLastSegment + " port="
    # 端口：前方，下巴，左，右，腹部
    udpPORT = [9201, 9202, 9203, 9204, 9205]
    udpstrBehindData = " ! application/x-rtp,media=video,encoding-name=H264 ! rtph264depay ! h264parse ! avdec_h264 ! videoconvert ! appsin
    udpSendIntegratedPipe = udpstrPrevData + str(udpPORT[cam - 1]) + udpstrBehindData

    print("udpSendIntegratedPipe:", udpSendIntegratedPipe)
    cap = cv2.VideoCapture( udpSendIntegratedPipe ,cv2.CAP_GSTREAMER)
    if not cap.isOpened():
        print("Cannot open camera")
        exit()
    index = 1

    while True:
        ret, frame = cap.read()
        if not ret:
            break
        #savingName = "/home/kangni/Desktop/images_saved_for_pr3/" + str(index) + ".jpg"
        #cv2.imwrite(savingName, frame)

        frame = cv2.rotate(frame, cv2.ROTATE_180)
        results = model.predict(source=frame, classes=0)
        # results = model(frame)

        # Visualize the results on the frame
        annotated_frame = results[0].plot()

        # Display the annotated frame
        #cv2.imwrite(savingName, annotated_frame)
        cv2.imshow("YOLOv8 Inference", annotated_frame)
        #msg = String()
        #msg.data = savingName

        #rospy.loginfo(msg.data)
        #chatter_pub.publish(msg)

        #rate.sleep()

        #index += 1
        cv2.waitKey(10)
```

```python
        cap.release()   # 释放资源


def callback(data):
    rospy.loginfo(rospy.get_caller_id() + "I heard %s", data.data)
    frame = data.data
    cv2.rotate(frame, cv2.ROTATE_180)
    results = model.predict(source=frame, classes=0)
    # results = model(frame)

    # Visualize the results on the frame
    annotated_frame = results[0].plot()

    # Display the annotated frame
    cv2.imwrite(data.data, annotated_frame)


def listener():
    # In ROS, nodes are uniquely named. If two nodes with the same
    # name are launched, the previous one is kicked off. The
    # anonymous=True flag means that rospy will choose a unique
    # name for our 'listener' node so that multiple listeners can
    # run simultaneously.
    rospy.init_node('subscriber', anonymous=True)

    rospy.Subscriber("chatter", String, callback)

    # spin() simply keeps python from exiting until this node is stopped
    rospy.spin()


if __name__ == '__main__':
    # Get the directory where the script is located
    script_dir = os.path.dirname(os.path.abspath(__file__))

    # Get the path to the file located next to the script
    yolo_path = os.path.join(script_dir, 'yolov8n.pt')

    model = YOLO(yolo_path)
    name = model.model.names
    print(name)
    #rospy.loginfo("listening from py")
    #listener()

    receive_unitree_image()
```