Human tracking

Note: This case needs to be run as root user, and administrator privileges are required to call the MIPI camera!

> **Switch to root user**

```
su root
```

Password: yahboom

1. Program function description

After the program is started, stand in front of the mipi camera, let the robot recognize the whole body, move the body slowly, and the robot will follow the human body.

You can view the recognition results in the PC browser.

Note: This case needs to be switched to the root user to run, and administrator privileges are required to call the MIPI camera!

2. Principle introduction

The human body following function is to control the robot to follow the human body. It consists of MIPI image acquisition, human body detection and tracking, human body following strategy, image encoding and decoding, and WEB display end. The process is as follows:
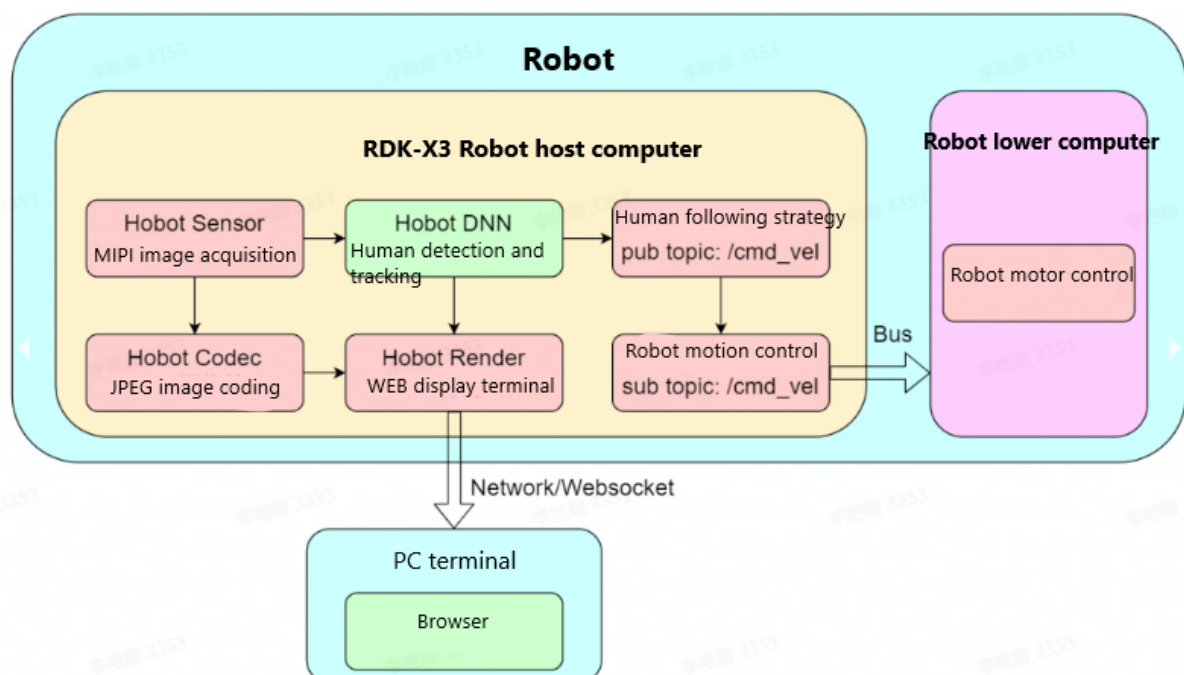
Human body detection and tracking algorithm example subscribes to pictures, uses BPU for algorithm reasoning, publishes msg containing human body, head, face, hand frame and human key point detection results, and realizes the tracking of detection frame through multi-target tracking (MOT) function. The websocket package is used to render and display the images released by the camera and the corresponding algorithm results on the PC browser.

The detection categories supported by the algorithm and the corresponding data types of different categories in the algorithm msg are as follows:

Category	Description	Data type
body	Human body frame	Roi
head	Head frame	Roi
face	Face frame	Roi
hand	Hand frame	Roi
body_kps	Human key point	Point

The index of the human key point algorithm result is as follows:

3. Program reference path

After SSH connects to the car, the source code of this function is located at,

```
#Do not recognize gestures
/home/sunrise/yahboomcar_ws/src/yahboomcar_deeplearning/body_tracking/launch/hobo
t_body_tracking_without_gesture.launch.py
#Recognize gestures
/home/sunrise/yahboomcar_ws/src/yahboomcar_deeplearning/body_tracking/launch/hobo
t_body_tracking.launch.py
```

4. Program startup

After SSH connects to the car, the terminal runs,

```
# Copy the configuration files needed to run the example from the installation
path of TogetherROS
cp -r /opt/tros/${TROS_DISTRO}/lib/mono2d_body_detection/config/ .
cp -r /opt/tros/${TROS_DISTRO}/lib/hand_lmk_detection/config/ .
cp -r /opt/tros/${TROS_DISTRO}/lib/hand_gesture_detection/config/ .

#Start launch file
#Do not recognize gestures
ros2 launch body_tracking hobot_body_tracking_without_gesture.launch.py
#Recognize gestures
ros2 launch body_tracking hobot_body_tracking.launch.py
```

The output log shows that the program runs successfully. The input and output frame rates of the algorithm during inference are 30fps, and the statistical frame rate is refreshed every second.

Open the browser on the PC (note that the computer and the Xuripai network must be in the same LAN), enter the URL: car IP:8000, for example, my car IP is 192.168.2.67, enter the URL in the browser on the virtual machine,
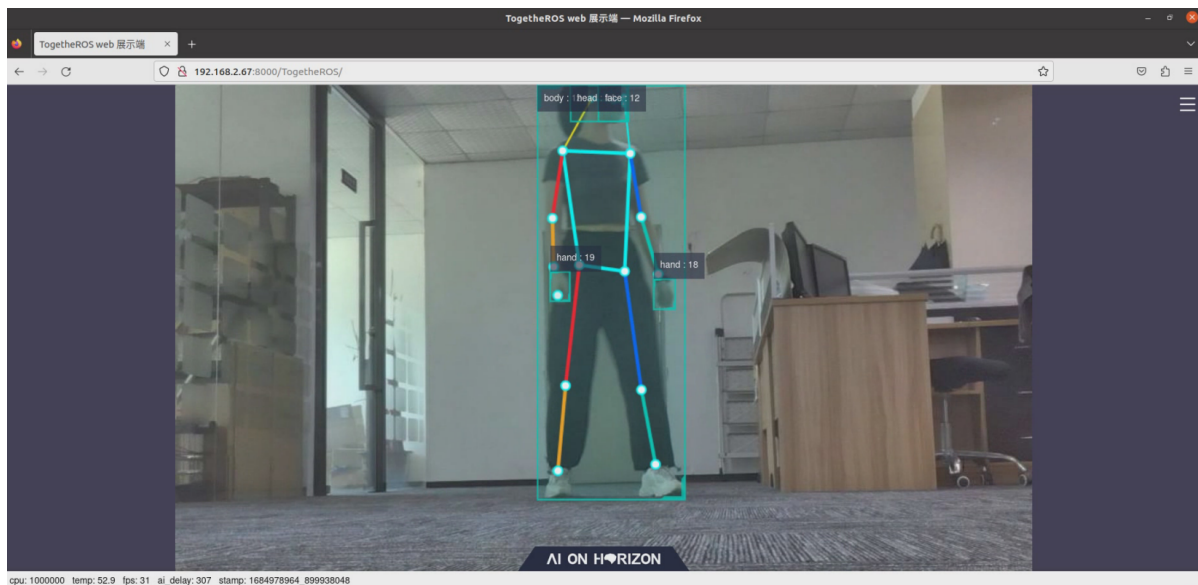
```
192.168.2.67:8000
```
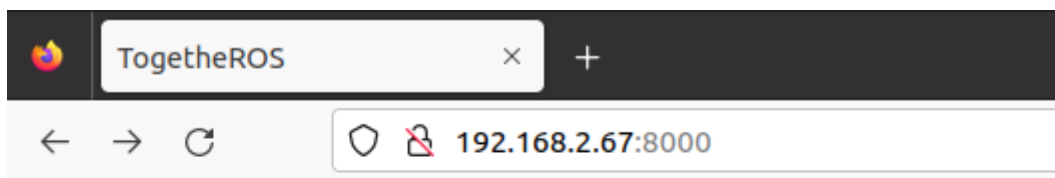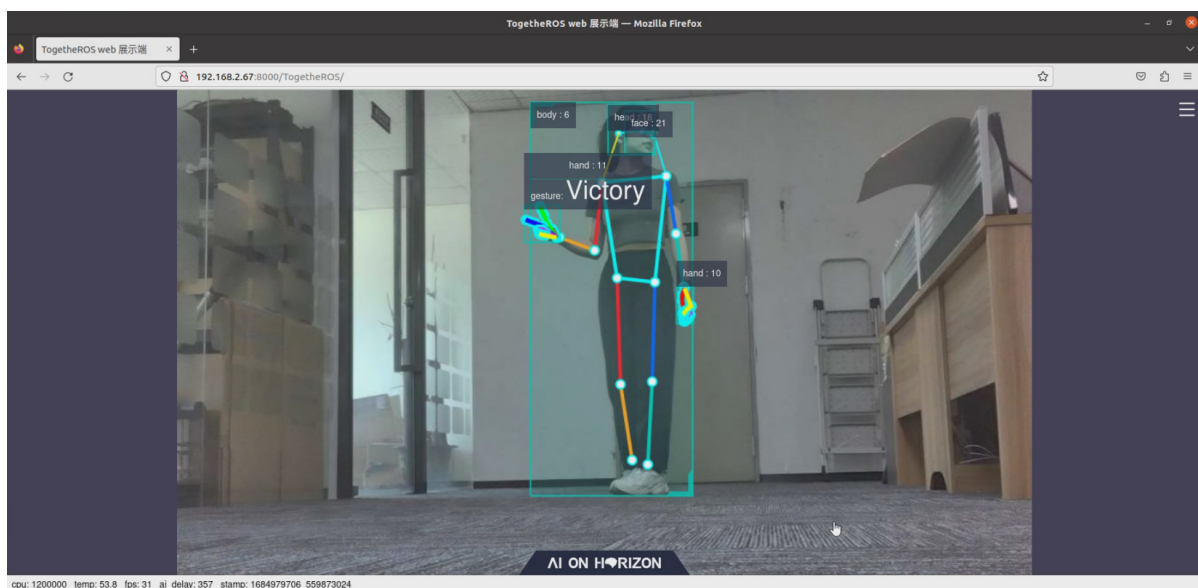
TogetheROS Web 展示端

- Web 展示端

Click to enter the Web display terminal, the display screen is as follows,

Do not recognize gestures:

Recognize gestures:

Adjust the camera angle, after recognizing the human body, the car will move with the human body and keep a certain distance.