

1. Robot information release

1.1. Node subscription and release topics

1.1.1. Function package path:

```
/home/yahboom/YBAMR-COBOT-EDU-00001/src/yahboom_navrobo_bringup/yahboom_scout_mini/scout_bringup
```

NAUROBO chassis driver will release radar, imu and other sensor data. You can run commands in the matching virtual machine/jetson to query this information, and you can also release speed control data.

1.2. Look over node data

1.2.1. Start

Stop the self-start chassis service

```
sudo supervisorctl stop ChassisServer
```

Start the chassis driver

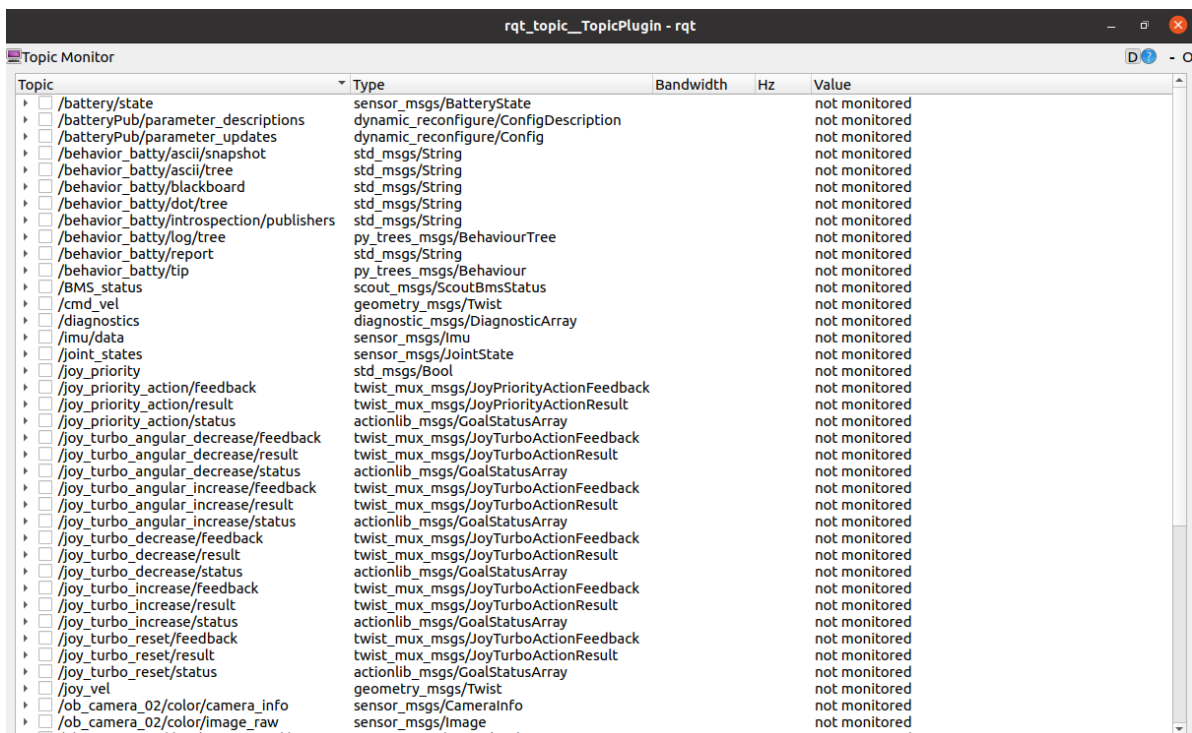
```
sudo supervisorctl restart LaserServer #start/stop Start radar service (indoor version)
roslaunch scout_bringup scout_mini_robot_base.launch#(Indoor version)
roslaunch scout_bringup scout_mini_robot_base_wlr720.launch#(Outdoor version)
```

1.2.2. View the topic list

```
rostopic list
```

```
yahboom@ubuntu:~$ rostopic list
/BMS_status
/battery/state
/batteryPub/parameter_descriptions
/batteryPub/parameter_updates
/behavior_batty/ascii/snapshot
/behavior_batty/ascii/tree
/behavior_batty/blackboard
/behavior_batty/dot/tree
/behavior_batty/introspection/publishers
/behavior_batty/log/tree
/behavior_batty/report
/behavior_batty/tip
/cmd_vel
/dashboard/cancel
/dashboard/scan
/diagnostics
/imu/data
/input_joy/cmd_vel
/joint_states
/joy_priority
/joy_priority_action/cancel
/joy_priority_action/feedback
/joy_priority_action/goal
```

roslaunch rqt_topic rqt_topic #Graphical view of topics



| Topic | Type | Bandwidth | Hz | Value |
|--|--|-----------|----|---------------|
| /battery/state | sensor_msgs/BatteryState | | | not monitored |
| /batteryPub/parameter_descriptions | dynamic_reconfigure/ConfigDescription | | | not monitored |
| /batteryPub/parameter_updates | dynamic_reconfigure/Config | | | not monitored |
| /behavior_batty/ascii/snapshot | std_msgs/String | | | not monitored |
| /behavior_batty/ascii/tree | std_msgs/String | | | not monitored |
| /behavior_batty/blackboard | std_msgs/String | | | not monitored |
| /behavior_batty/dot/tree | std_msgs/String | | | not monitored |
| /behavior_batty/introspection/publishers | std_msgs/String | | | not monitored |
| /behavior_batty/log/tree | py_trees_msgs/BehaviourTree | | | not monitored |
| /behavior_batty/report | std_msgs/String | | | not monitored |
| /behavior_batty/tip | py_trees_msgs/Behaviour | | | not monitored |
| /BMS_status | scout_msgs/ScoutBmsStatus | | | not monitored |
| /cmd_vel | geometry_msgs/Twist | | | not monitored |
| /diagnostics | diagnostic_msgs/DiagnosticArray | | | not monitored |
| /imu/data | sensor_msgs/Imu | | | not monitored |
| /joint_states | sensor_msgs/JointState | | | not monitored |
| /joy_priority | std_msgs/Bool | | | not monitored |
| /joy_priority_action/feedback | twist_mux_msgs/JoyPriorityActionFeedback | | | not monitored |
| /joy_priority_action/result | twist_mux_msgs/JoyPriorityActionResult | | | not monitored |
| /joy_priority_action/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_turbo_angular_decrease/feedback | twist_mux_msgs/JoyTurboActionFeedback | | | not monitored |
| /joy_turbo_angular_decrease/result | twist_mux_msgs/JoyTurboActionResult | | | not monitored |
| /joy_turbo_angular_decrease/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_turbo_angular_increase/feedback | twist_mux_msgs/JoyTurboActionFeedback | | | not monitored |
| /joy_turbo_angular_increase/result | twist_mux_msgs/JoyTurboActionResult | | | not monitored |
| /joy_turbo_angular_increase/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_turbo_decrease/feedback | twist_mux_msgs/JoyTurboActionFeedback | | | not monitored |
| /joy_turbo_decrease/result | twist_mux_msgs/JoyTurboActionResult | | | not monitored |
| /joy_turbo_decrease/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_turbo_increase/feedback | twist_mux_msgs/JoyTurboActionFeedback | | | not monitored |
| /joy_turbo_increase/result | twist_mux_msgs/JoyTurboActionResult | | | not monitored |
| /joy_turbo_increase/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_turbo_reset/feedback | twist_mux_msgs/JoyTurboActionFeedback | | | not monitored |
| /joy_turbo_reset/result | twist_mux_msgs/JoyTurboActionResult | | | not monitored |
| /joy_turbo_reset/status | actionlib_msgs/GoalStatusArray | | | not monitored |
| /joy_vel | geometry_msgs/Twist | | | not monitored |
| /ob_camera_02/color/camera_info | sensor_msgs/CameraInfo | | | not monitored |
| /ob_camera_02/color/image_raw | sensor_msgs/Image | | | not monitored |

1.2.3. Use rostopic pub command to send control commands

Before issuing control commands, you need to turn the SWB key of the aircraft remote control to **up key**, enter the command control mode, and turn off the aircraft control.

```
#Speed ••control
rostopic pub /cmd_vel geometry_msgs/Twist "linear:
x: 0.0
y: 0.0
z: 0.0
angular:
```

```

x: 0.0
y: 0.0
z: 0.5" #The car moves at an angular velocity of 0.5

#Light control
rostopic pub /scout_light_control scout_msgs/ScoutLightCmd "
{enable_cmd_light_control: True, front_mode: 3, front_custom_value: 100,
rear_mode: 0,rear_custom_value: 0}" #Turn on the headlights, the light
brightness is maximum
rostopic pub /scout_light_control scout_msgs/ScoutLightCmd "
{enable_cmd_light_control: True, front_mode: 2, front_custom_value: 0, rear_mode:
0,rear_custom_value: 0}" #Turn on the breathing light
rostopic pub /scout_light_control scout_msgs/ScoutLightCmd "
{enable_cmd_light_control: True, front_mode: 3, front_custom_value: 0, rear_mode:
0,rear_custom_value: 0}" #Turn off the headlight

```

1.2.4. Use the rostopic echo command to view information

The main topics published are,

/imu: imu module data

/odom_wheel: odometer data

/scan: radar module data

/scout_status: chassis information data

```

#imu data
rostopic echo /imu/data
rostopic echo /wit/mag

```

The image shows two terminal windows side-by-side. The left window displays the output of 'rostopic echo /imu/data', showing a sequence of IMU data messages with fields like header, orientation, angular_velocity, and linear_acceleration. The right window displays the output of 'rostopic echo /wit/mag', showing a sequence of magnetic field data messages with fields like header, magnetic_field, and magnetic_field_covariance.

```

yahboom@ubuntu: ~$ rostopic echo /imu/data
header:
  seq: 49785
  stamp:
    secs: 1715254025
    nsecs: 231037378
  frame_id: "imu_link"
orientation:
  x: -0.004464958027099708
  y: -0.005904951071402227
  z: 0.4043322800618948
  w: 0.9145822013370969
orientation_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
angular_velocity:
  x: 0.0
  y: 0.0
  z: 0.0
angular_velocity_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
linear_acceleration:
  x: -0.03828125
  y: -0.10048828125
  z: 9.96748046875
linear_acceleration_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
---
header:
  seq: 49786
  stamp:
    secs: 1715254025
    nsecs: 236045122
  frame_id: "imu_link"
orientation:
  x: -0.004464958027099708
  y: -0.005904951071402227
  z: 0.4043322800618948
  w: 0.9145822013370969
orientation_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
---

yahboom@ubuntu: ~$ rostopic echo /wit/mag
header:
  seq: 3623
  stamp:
    secs: 1715254064
    nsecs: 671277523
  frame_id: "imu_link"
magnetic_field:
  x: 3880.0
  y: 3549.0
  z: -4155.0
magnetic_field_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
---
header:
  seq: 3624
  stamp:
    secs: 1715254064
    nsecs: 676295280
  frame_id: "imu_link"
magnetic_field:
  x: 3880.0
  y: 3550.0
  z: -4163.0
magnetic_field_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
---
header:
  seq: 3625
  stamp:
    secs: 1715254064
    nsecs: 681268215
  frame_id: "imu_link"
magnetic_field:
  x: 3881.0
  y: 3548.0
  z: -4167.0
magnetic_field_covariance: [0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0, 0.0]
---

```

```
#Odometer information
rostopic echo /odom_wheel
#Radar information
rostopic echo /scan
#Speed information
rostopic echo /cmd_vel
```

```
#Chassis information
rostopic echo /scout_status
```

```
yahboom@ubuntu:~/robo_ws$ rostopic echo /scout_status
header:
  seq: 120121
  stamp:
    secs: 1715256177
    nsecs: 704823314
  frame_id: ''
linear_velocity: 0.0
angular_velocity: 0.0
base_state: 0
control_mode: 1
fault_code: 0
battery_voltage: 27.5
motor_states:
-
  current: 0.0
  rpm: 0.0
  temperature: 30.0
  motor_pose: 0.0
-
  current: 0.10000000149011612
  rpm: 0.0
  temperature: 30.0
  motor_pose: 0.0
```