
INSTALLATION / USER MANUAL

AUTHOR: SUNDY(SUNDYCODER@GMAIL.COM)

OPTITRACK LOCALIZATION SYSTEM FOR MULTIPLE ROBOTS

1 Optitrack System Setup

- Install the cameras of Optitrack system according to the official manual, the network topology is shown in Fig. 1.
- Calibrate the Optitrack and configure the marks on each robots according to the link: <https://tuw-cpsg.github.io/tutorials/optitrack-and-ros/>

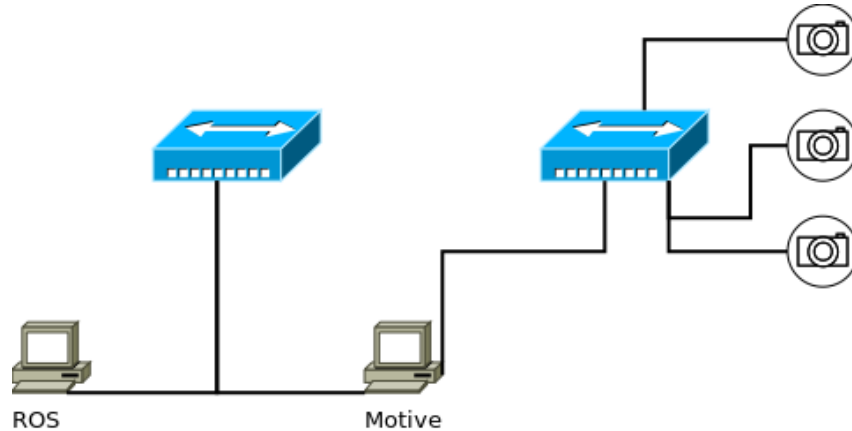


Figure 1: Optitrack system setup with ROS

2 ROS Configuration

The motive software tracks the position and act as a server, it also broadcasts the position information. To receive the position information from motive software, we should configure the ROS as follows.

First, we should install VPN on the host PC.

- download vrpn from bellow link:
https://github.com/vrpn/vrpn/releases/download/version_07.34/vrpn_07.34.zip
- unzip vrpn_07.34.zip && cd vrpn
- mkdir build && cd build && cmake ../ && make && make install
- configure the env:
export VRPN_INCLUDE_DIR=/usr/local/include/
export VRPN_LIBRARIES=/usr/local/lib

Second, install the vrpn_client_ros package [1] in ROS, please refer to this link: http://wiki.ros.org/vrpn_client_ros

- sudo apt-get install ros-kinect-vrpn-client-ros (for kinect, important)*
- cd ~ && cd ~/catkin_ws/src
- git clone -b kinetic-devel https://github.com/ros-drivers/vrpn_client_ros
- cd ~/catkin_ws && catkin_make
- cd ~/catkin_ws/src/vrpn_client_ros/launch/
- roslaunch vrpn_client_ros sample.launch server:=MOTIVE_ADDRESS

3 Get position

python get_position.py

4 Bugs

1. The raspberry-pi model B cannot detect the SSID of wifi-5G , so model B+ is used.

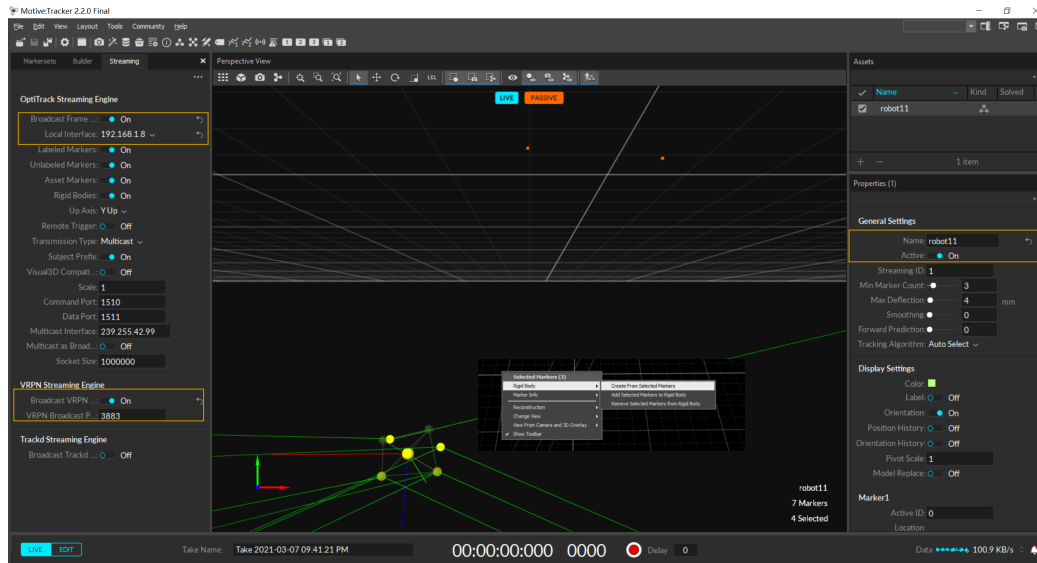


Figure 2: Optitrack system data streaming engine setup.

```
<launch>

<arg name="server" default="192.168.1.8"/>

<node pkg="vrpn_client_ros" type="vrpn_client_node" name="vrpn_client_node" output="screen">
  <rosparam subst_value="true">
    server: $(arg server)
    port: 3883

    update_frequency: 100.0
    frame_id: world

    # Use the VRPN server's time, or the client's ROS time.
    use_server_time: false
    broadcast_tf: true

    # Must either specify refresh frequency > 0.0, or a list of trackers to create
    refresh_tracker_frequency: 1.0
    # the trackers name should be the same with in motive software.
    trackers:
      - robot11
  </rosparam>
</node>

</launch>
```

Figure 3: The VRPN client on ROS.

References

- [1] ROS. Ros setup. http://wiki.ros.org/vrpn_client_ros, 2021.

```
header:
  seq: 8070
  stamp:
    secs: 1615124280
    nsecs: 599396945
  frame_id: "world"
pose:
  position:
    x: -0.379312038422
    y: -0.557902038097
    z: 0.670382857323
  orientation:
    x: 0.00811962224543
    y: -0.51771402359
    z: 0.855506539345
    w: 0.00384832057171
```

Figure 4: Pose message received from Optitrack Motive.