AMR Lab Tutorial

Last updated by Hai Zhu, December 13, 2019

1. Optitrack Setup

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a. Calibration (Optional)

- Log into the *Optitrack computer*
- Start Motive
- Select “perform new calibration”
- Camera system calibration
    - Making, wandering, calibration results, ground plane and origin…
    - (*TODO: A picture here showing our definition of the origin*)
- Save the calibration file

b. Data Streaming

- Log into the *Optitrack computer*
- Start Motive
- Create a new project or load a prior project
- Place the objects with markers attached in the workspace
- Define rigid objects within the workspace
    - Select desired markers, right click and select “Create rigid body”
    - Assign a “User ID” for each object, which should match the configuration in the optitrack ROS package (described below)
- In the streaming panel
    - Make sure the “Broadcast Frame Data” is selected
    - Make sure the type “MultiCast” is selected in Advanced Network Settings

Note: If you cannot find those panel, click “View” in the menu bar of Motive, and choose “Project”, “Data Streaming”. Then you should see those panels.

c. Install the Optitrack ROS Package

- Log into the *ROS computer*
- Clone and build the mocap_optitrack ROS package, e.g.:
    - `cd ROS/catkin_ws/src/`
    - `git clone https://github.com/hai-zhu/mocap_optitrack.git`
    - `git checkout dcsc_pose_stamped`
    - `cd ..`
    - `catkin build mocap_optitrack`
    - `source devel/setup.bash`

Note: The newest version of the original mocap_optitrack ROS package has some unsolved issues.

- mocap_optitrack ROS wiki

d. Read Mocap Data

- Log into the *ROS computer*
- Check if the ROS computer is connected to the ROS network (WLAN connection is preferable)
- Run the launch file, e.g.:
  - `roslaunch mocap_optitrack mocap_multidrone.launch`
- You can check if the data streaming is successful using the rostopic commands:
  - `rostopic list`
  - `rostopic echo topic_name`