Outdoor_gcs Readme File

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1 Summary

This qt ground control station (gcs) communicates with UAVs via MAVROS. Installation and launching steps:

1. Git fork, git clone, then git branch to px4_command
2. CMakeLists_4.txt is for qt4 ubunutu 16.04, and CMakeLists_5.txt is for qt5 ubuntu 18.04. Rename CMakeLists_4.txt or CMakeLists_5.txt to CMakeLists.txt.
3. catkin build
4. (roslaunch mavros px4.launch) or (roslaunch mavros apm.launch) or (roslaunch f450 f450_test.launch) to trigger mavros.
5. rosrun outdoor_gcs outdoor_gcs

The GUI has three tabs. The first tab shows the information of a single UAV (without namespace), and controls the UAV via the px4/apm onboard controller. The second tab shows the information of multiple UAVs (with namespace), and controls the UAVs via px4_command.

Figure 1 shows the Qt ground control station (GCS) used for multiple drones outdoor experiment. The functionalities of this GCS include:

- Detect all the drones available and show them in the log on the left side of interface.
- Show the data of all detected drones in the log on the right side of interface.
- Set the origin of the world frame for all drones.
- Input the desired final positions for selected drones.
- Send command to the selected drone or all the detected drones.
- Let the drones to follow written paths or fly with path planning.

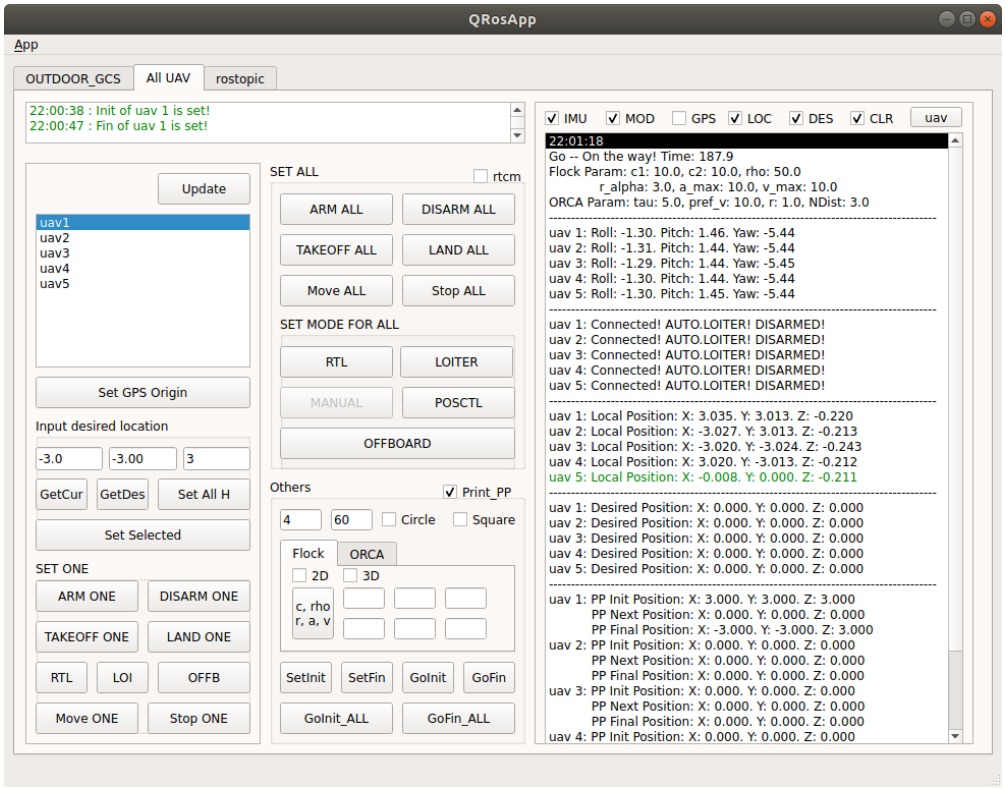

Figure 1: Qt ground control station for outdoor experiment

2 Files

- **src** folder: **main_window.cpp** and **qnode.cpp**. **main_window.cpp** receives feedback from user interface (ui), and react by calling function in **qnode.cpp**. It also gets information from **qnode.cpp** and shows on the ui. **qnode.cpp** gets and sends ros messages.
- **include** folder: **main_window.hpp** and **qnode.hpp**, the header files which includes definitions.