Erle-Copter simulation

This guide demonstrates how to install all necessary packages to simulate an Erle-Copter in Gazebo on Ubuntu 14.04.

Installation

- The first step is to configure your simulation environment. To do this, simply follow the instructions at **http://docs.erlerobotics.com/simulation/configuring_your_environment.**
    - After completing this tutorial, you have a working ROS workspace that contains all necessary packages to simulate the Erle-Copter in Gazebo. However, the *rotors_simulator* package implemented by Erle-Robotics has a bug that results in very unstable yaw rotation! You can fix this problem by removing the **rotors_gazebo_plugins** folder, located on your computer at *~/simulation/ros_catkin_ws/src/rotors_simulator/*. Then, replace that folder with the new **rotors_gazebo_plugins** folder located in this portfolio at */Code/ros_catkin_ws/src/rotors_simulator.* Build the package again by executing:
      cd ~/simulation/ros_catkin_ws
      catkin_make --pkg rotors_simulator
      Yaw rotation should work now!
- In order to control the Erle-Copter, you can install a Ground Control Station (GCS). For our simulation, we install APM Planner.
    - As building this GCS requires your Qt version to be at least 5.4.2, we will have to install that first:
      sudo add-apt-repository ppa:beineri/opt-qt542-trusty
      sudo apt-get update
      sudo apt-get install qt-latest
      To enable this Qt version, execute the following:
      export QT_SELECT=qt5
    - Now we can install APM Planner. First,clone the repository to your desired location:
      git clone https://github.com/diydrones/apm_planner
      Now go to the APM Planner directory and execute:
      qmake apm_planner.pro
      make
      When the build is complete, you can run APM Planner by executing the following command in the APM Planner directory:
      ./release/apmplanner2
- APM Planner comes with a built-in joystick functionality. The simulated Erle-Copter can be steered with a PS3 Controller, if the right drivers are installed. Installing these drivers is very simple:
      sudo apt-get install sixad