Indoor Environment Mapping Tutorials

Landing drone on ArUco marker

Required ROS Packages

- For simulation of ARDrone in Gazebo

    1. ardrone_simulator_gazebo7 [2] - [1]

- For Aruco marker detection and pose calculation

    1. marker_pose_detection - [1]
    2. aruco_ros - [1]
    3. pal_vision_segmentation - [1]

Required Files

- ardrone_testworld.launch (cvg_sim_gazebo/launch) - Launches a test world with the ARDrone in Gazebo

- keyboard.py (cvg_sim_gazebo/scripts) - Script to takeoff, reset, land and fly ARDrone using keyboard.

- aruco_land.py (cvg_sim_gazebo/scripts) - Script to start the required PID loops and control the drones position with respect to the aruco marker using the bottom camera feed from ARDrone.

PID Loops

- Four PID loops are used in the aruco_land.py script to control the drones position.

1. Translation along X axis (Roll)
2. Translation along Y axis (Pitch)
3. Translation along Z axis (Altitude)
4. Rotation along Z axis (Yaw)

Procedure

1. Launch the ardrone_testworld.launch present in cvg_sim_gazebo package inside ardrone_simulator_gazebo7 folder

2. Drag and drop an aruco marker into the world from the insert tab in the left pane of Gazebo

3. Start the ARDrone in simulation using the keyboard tele-op script (keyboard.py) present in cvg_sim_gazebo package and fly the drone until the the ArUco is visible in the bottom camera feed

4. Start the aruco_land.py script to hover the drone directly above the ArUco marker

Appendix

1. Github Link for packages - https://github.com/eYSIP-2017/eYSIP-2017_Indoor-Environments-Mapping-using-UAV
2. Link to install Gazebo7 - https://github.com/eYSIP-2017/eYSIP-2017_Indoor-Environments-Mapping-using-UAV/blob/master/bash_scripts/install_gazebo7.sh
3. Video Link - TO-DO

THANK YOU!