530.707 Robot System Programming

3D Visual SLAM and Motion Planning using AR Drone

Weekly Progress Report #4

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1. This Week's Goals

1. Improve motion planning package
2. Test the packages on the AR Drone

2. This Week's Progress

1. Merge all launch commands into shell scripts, which can automatically open several terminals and run commands separately
2. Working on modifying Moveit package so that it can generate usable motion panning data for mobile robot like ardrone.

3. Changes in Project Scope/Goals

We postpone testing of motion planning on ardrone to next week. It is because there are much more issues than we expected when applying Moveit generated package to the ardrone. There's currently no change in final goal.

4. Lessons Learned

1. Move_base works well for path navigation in 2D space; but as for 3D path navigation, using MoveIt would be better.
2. MoveIt supports robot arm well, but does not have a good support for mobile robot. Therefore, we should treat the quadrotor as a multi dof joint when connecting moveIt and the Ar Drone.
3. A server on the quadrotor need to service the move_group client in order to receive control commands output by the move_group node

4. Typically, MoveIt relies on pre-defined action files and action controller file (.yaml file) for translating the multi dof trajectories produced by MoveIt
5. How to make shell script file that can open serval terminals and run cammands separately

5. Next Week's Goals

1. Test the packages on the AR Drone
2. Prepare for demo and poster session.

Schedule:

Items	Start Date	End date
Install necessary packages in ROS Kinetic	March 27	March 28
Convert the LSD SLAM from rosbuild+Indigo to catkin+Kinetic	March 28	April 4
Be able to implement LSD-SLAM under ROS Kinetic on our own laptop independently with sample data as input	April 4	April 11
Communicate with AR Drone and get the image data	April 11	April 13
Tesing the LSD SLAM on the AR Drone	April 13	April 15
Path planning package	April 15	April 30
Test LSD SLAM & path planning on AR Drone	May 1	May 6
Wrinting final report and making poster	May 5	May 10