ROS Instructions

1 Website Server Ros Setup

1. Create an account on theconstructsim.com

2. In the left hand column, click on my "rosjects" then click on create "new rosject".

3. Name your rosject whatever you would like but make sure to select ros distro as "Ros melodic".

4. There will be a tool bar at the bottom of the screen when you open your project. From this tool bar you will be using the following: Web shell, Code editor, grapical tools.

2 Environment Setup

1. Create a folder name catkin_ws. Create a sub-folder inside of catkin_ws named src. catkin_ws will be your local working environment for ros.

2. Run the command *cd ∼/catkin_ws* followed by *catkin_make*. The command catkin_make converts a regular folder into a ros repository.

3. Every time you open a web shell or new tabs in web shell run *source ∼/catkin_ws/devel/setup.bash*. This command sets your working environment in the current shell to the repo catkin_ws. Otherwise you will be running from its installation working environment.

3 Creating ros packages

1. A ros package is a small standalone ros project created inside of your ros repository.

2. Run *cd ∼/catkin_ws/src* followed by, *catkin_create_pkg [name of package] [depend1] [depend2] ...*
An example(Do it!): *catkin_create_pkg talk_listen std_msgs roscpp rospy*

3. After creating a package make sure to execute steps 2 and 3 from section Environment Setup.

4 First Example

1. On blackboard under course materials you will find a folder called ros_examples, and inside this folder another folder called talk_listen_stuff. Copy the files "listener.py" and "talker.py" into ~/catkin_ws/src/talk_listen/src.

2. Make sure files are executable by running *chmod +x ~/catkin_ws/src/talk_listen/src/listener.py* and *chmod +x ~/catkin_ws/src/talk_listen/src/talker.py*

3. In your current shell run the command *roscore*, this will set up a ros master node that will manage all future nodes.

4. open a new tab in your web shell, run *source ~/catkin_ws/devel/setup.bash* followed by *rosrun talk_listen listener.py*

5. open a third tab in your web shell, run *source ~/catkin_ws/devel/setup.bash* followed by *rosrun talk_listen talker.py*

6. The steps in this section should result in basic stdout output in the terminal where you ran the listener node (*rosrun talk_listen listener.py*). Congrats you just ran your first ros system!

5 More

Moving forward you will just need to create two more packages for the homework(run these in ~/catkin_ws/src):

1. *catkin_create_pkg turtle_motion std_msgs roscpp rospy*

2. *catkin_create_pkg learn_tf2 tf2 tf2_ros roscpp rospy turtlesim*

Use the examples in ros_examples(on blackboard) to test these projects out.