Launch File Documentation

Robotics Project 2

A launch file is provided, placed in launch/project2.launch inside the kame_project package. In ROS, launch files are similar to startup scripts. Much simpler than world files, they serve as a guide to help ROS understand exactly how the world file and user commands around this world file should be handled. The launch file is also XML-formatted, all encapsulated in <launch>. There are various “arguments” in arg_name, which help ROS know what to launch. F

For this project, unlike Project 1, there is no need to call a world file, as the robot is not a simulated turtlebot in a virtual environment. Rather, this project uses the actual earth, at a perfect 1:1 scale.

The program to allow our turtlebot to explore the world is started through this line `<node pkg="kame_project" name="explore" type="explore" required="true" output="screen"/>`. This starts up the program and prints the output, mostly for feedback from the object detection, to the screen. Setting required to true kills the whole launch file whenever the program is terminated, e.g. robot bumpers are pressed and the robot dies.

To manually navigate such a daunting planet, we have chosen to use teleop keyboard input, which is called in `<node pkg="turtlebot_teleop" type="turtlebot_teleop_key" name="turtlebot_teleop_keyboard" output="screen">`. This enables the user to use their computer’s keyboard to directly control the robot; the velocity is printed to the user’s screen. The next two arguments, `<param name="scale_linear" value="0.5" type="double"/> <param name="scale_angular" value="1.5" type="double"/>,` set the linear and angular scale of the robot. If the values were increased, the robot would move much more rapidly.

The following argument, `<remap from="turtlebot_teleop_keyboard/cmd_vel" to="keyboard_controls"/>`, supports user control of the robot by mapping the teleop keyboard to the user’s computer keyboard.

Our project supports mapping, if the following from the launch file is uncommented:

```
<!-- <include file="$(find turtlebot_navigation)/launch/includes/gmapping/gmapping.launch.xml"/>
-->
```

Essentially, this would instruct the robot to automatically make use of GMapping to create an internal map of its environment. As the robot moves, it would learn more about the world around it and save this information in a useful format.