Launch files

Launch files allow you to startup multiple nodes at the same time. Thus allowing you to start the robot by launching one or two files. When launching a node in this way you can give parameters like you normally could. It also gives the options to rename your node and even the topics that you use.

Launch files aren't executed in the order they are written in. if you have nodes which have to be executed in a certain order make sure to launch them in different files.

It's also possible to set environment variable in a launch file and set parameter on the parameter server.

The simplest launch files you can make is shown below:

```
<launch>
  <node name="leftHandCamPublisher" pkg="capture" type="captureAndPublish" />
</launch>
```

This launch file starts a node of the type "captureAndPublish" from the package "capture". it also renames the node to "leftHandCamPublisher"

Next we are going to look at the most important tags.

The <launch> tag is the root element of every launch file. Its only purpose is to act as a container for other elements.

The <node> tag allows you to specify which nodes have to be launched. The node tag has three required attributes:

1. Name: the name attribute specifies the name the node should be known as.
2. Pkg: the pkg attribute specifies the name of the package which constrains the node.
3. Type: the type attribute specifies the type of node that is to be launched. The type just is the name of the executable.

Beside the required attributes there are a couple of extra attributes. I will list some of the most useful ones.
Args: the arg attribute allows you to give arguments to your nodes.
Respawn: when this attribute is set to "true" the node will be restarted when it quits or dies.
Required: when this attribute is set to "true" the entire launch file will exit when this node dies or exits.
A full list of attributes of the note tag can be found here: www.ros.org/wiki/roslaunch/XML/node .

The <include> tag allows you to include other launch files. It has one required parameter this is:
file: here you specify the path of the launch file you want to include. It's the easiest to use $(find *package*)/ followed by the location of the launch file in the package. where you replace *package* with the package which contains the launch file. This way you don't depend on static paths.

The <remap> tag allows you to change the name of topics. The remap tag has two arguments which both are required. The arguments are:

From: there you give the original name
To: this is the new name.

The <arg> tag allows you to make arguments which the launch files takes, it also allows you to make arguments than use them on multiple locations.

The last tag I want to discuss is the <env> tag. The env tag allows you to set environment variables. The <env> tag only has two attributes. These are: name, the name attribute contains the name of the environment variable. The other attribute is value, the value attribute specifies the value you want to set the environment variable to.