

Using the Robot Operating System (ROS) To Operate the Calliope2SP



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Abstract

Using robots for real-world applications in the future is the outcome of research today. Implementations of innovative robotic technologies result in new solutions for evolving needs from service to defense. Considering the significance of research, the need to attract new roboticists is important. The Robot Operating System (ROS) has the ability to use a shared structure to quickly tie in new modules, therefore is a good tool in which to introduce the novice software developer to robotics and robotic competitions. Because developing software is complex, A novice to robotics is sometimes frustrated by coding. This approach is to provide a functional starting point using C++ within ROS packages, which may enable someone new to the platform to operate the Calliope 2SP robot.

Introduction

ROS WORKSPACE

MANAGE YOUR ENVIRONMENT

Make sure that you have your environment properly setup.

```
$ export | grep ROS
```

```
# Source your setup.*sh files
```

```
$ source /opt/ros/hydro/setup.bash
```

CREATE A ROS WORKSPACE

```
$ mkdir -p ~/connor/catkin_ws/src
```

```
$ cd ~/connor/catkin_ws/src
```

```
$ catkin_init_workspace
```

```
$ cd ~/connor/catkin_ws/
```

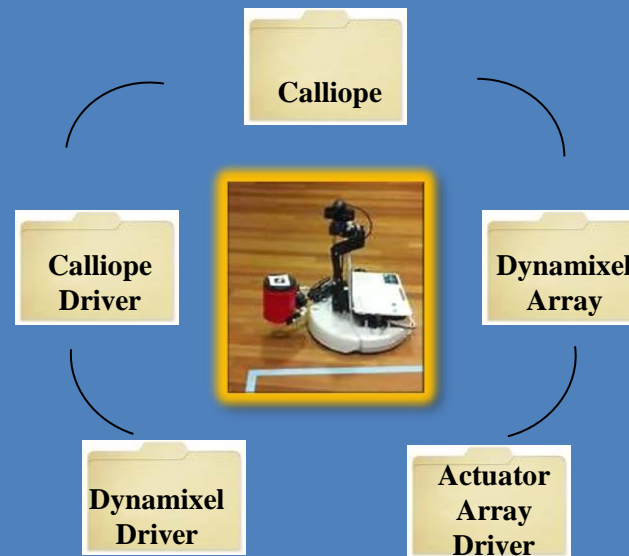
```
$ catkin_make
```

```
# Source your new setup.*sh files
```

```
$ source devel/setup.bash
```

Methods and Materials

catkin_ws



Packages used to operate the Calliop2SP

connor/catkin_ws/src

/ Actuator Array Driver package - Standard functionality, such as subscribing and publishing to a command topic, and parsing joint limits from the robot description.

/ Calliope package - Houses the launch, the urdf, and the yaml files.

/ Calliope Driver package - Contains the KinematicSolver header file and the C++ codes for nodes and demos.

/ Dynamixel Array packet - Allows any number of controllers to be easily implemented, to add new behaviors to the robot.

/ Dynamixel Driver package - Provides low level IO for the Dynamixel servos.

Results/Conclusion

- A tutorial www.calliop2sptutorial.weebly.com, which list the errors and answers in building the ROS catkin_make workspace.
- I recommend that the operation of the Calliop2SP robot to be completed in the Robot Operating System.

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