DaVinci Regular Meeting

Su Lu
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Glennan 519c

Contents

- **dvrk and Cisst/Saw libraries installation guide**
- **How to Run dvrk-ros**
- **Arm Classes**
- **ROS Topics**

dvrk and Cisst/Saw libraries installation guide

- **Pre-installed ROS**
- **Pre-installed Catkin Build**
- **Compile in CMake Release mode (not necessary)**
- **Download and Build Cisst/Saw Libraries (Manual (prefered)/ Auto)**
- **Download dvrk-ros and cisst-ros to your ros_ws**
- **Build dvrk-ros and cisst-ros (catkin build)**

Reference:
1. https://github.com/jhu-dvrk/sawIntuitiveResearchKit/wiki/Build
2. https://github.com/jhu-cisst/cisst/wiki/Compiling-cisst-and-SAW-with-CMake#13-building-using-catkin-build-tools-for-ros

How to Run dvrk-ros

- roslaunch dvrk_robot dvrk_arm_rviz.launch arm:=PSM1 config:=/home/<user_name>/catkin_ws/src/cisst-saw/sawIntuitiveResearchKit/share/console-PSM1_KIN_SIMULATED.json

Reference: https://github.com/cwru-robotics/dvrk-ros/tree/master/dvrk_robot

Arm Classes

Arm classes

All the arm classes are part of the sawIntuitiveResearchKit library. There is a base class (`mtsIntuitiveResearchKitArm`) for:

- powering
- getting data from the PID and IO components
- joint and cartesian motions
- *cisstMultiTask* interfaces

Since each arm is slightly different, there are three classes derived from the base class:

- `mtsIntuitiveResearchKitPSM`
- `mtsIntuitiveResearchKitECM`
- `mtsIntuitiveResearchKitMTM`

Each of these instantiates some virtual methods to reflect each arm characteristics:

- number of joints and actuators
- arm specific parameters (encoders/potentiometers tolerance, PID tracking error)
- kinematics
- homing procedure including different states (e.g. sterile adapter and tool for PSMs)

ROS Topics

- Dvrk defined specific ROS topics for arms:

  MTM, PSM, ECM, Foot Pedal
- List of Topics: https://github.com/jhu-dvrk/dvrk-ros/wiki/ROS-Topic-Interface