

Robot Control Interface - Bug #1713

RCI is getting messed up with Torques, JointTorques and TorqueSensing

01/05/2014 07:15 PM - C. Emmerich

Status:	Feedback	Start date:	01/05/2014
Priority:	Normal	Due date:	
Assignee:		% Done:	0%
Category:	Modeling	Estimated time:	0.00 hour
Target version:	rci0.5		

Description

In my opinion, RCI is a little messed up with the different torque dtos and the sensing interface. There is a JointTorque type (joint space), a Torque (cartesian space) type and a TorqueSensing interface which doesn't sense Torques (as the name might suggest) but JointTorques. An interface for sensing Torques (the cartesian ones) is missing at all. By the way, is it necessary at all to have two different/parallel torque types? Is there any conceptual difference between them? Maybe one is a specification/derivate of the other one...?

History

#1 - 01/06/2014 10:56 AM - Anonymous

- Category set to Modeling
- Status changed from New to Feedback
- Target version set to rci0.5

Christian Emmerich wrote:

In my opinion, RCI is a little messed up with the different torque dtos and the sensing interface. There is a JointTorque type (joint space), a Torque (cartesian space) type and a TorqueSensing interface which doesn't sense Torques (as the name might suggest) but JointTorques.

You are right. This confusion came up as Torques was introduced way after JointTorques, when the TorquesSensing interface was already created for JointTorques. Do you have a suggestion/preference on how to clean up this mess?

An interface for sensing Torques (the cartesian ones) is missing at all.

Indeed. Can you file an (short!) issue for this?

By the way, is it necessary at all to have two different/parallel torque types? Is there any conceptual difference between them? Maybe one is a specification/derivate of the other one...?

This was subject to extensive discussion already and in my opinion these are indeed different concepts (but I am open for other opinions), as reflected in the API documentation of these concepts. JointTorques are as the name suggests torques in / around / about mechanical joints. Torques, however, are the three torque components in cartesian space around x, y and z. They share the same representation (units), but the latter one is for example restricted to 3 components.

This doesn't mean of course, that it can't be (technically) derived from each other.

#2 - 01/06/2014 08:33 PM - C. Emmerich

Arne Nordmann wrote:

| *Do you have a suggestion/preference on how to clean up this mess?*

Hmm, I think you have to options here:

1. You stick with the current difference between torques and joint torques. Then obviously the current TorqueSensing needs to be renamed to JointTorqueSensing and a new TorqueSensing interface needs to be created
2. You kill one of the types and dont care about conceptual differences. Then only one type and one sensing interface is needed (which should be named corresponding to each other).

I would prefer number 1. In my opinion (and the more I think about the wrench type and cartesian torques) there is a conceptual difference between a (multi-dim) joint torque and a 3-dim cartesian torque. But then, the latter one actually is the torque part of a wrench and you can re-use it for rethinking that type (#1715, #1043) ;-)