Technische Universität München

Faculty of Informatics

Robotics and Embedded Systems

http://www6.in.tum.de
Lab Course: Human Robot Interaction
Manuel Giuliani, Thomas Müller, Prof. Alois Knoll

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Sheet 4
giuliani@in.tum.de, muelleth@in.tum.de

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Exercise 6

In this exercise your goal is to extend the object inventory from exercise 5. The object inventory shall now provide access to a list of objects for (higher-level) cognitive modules. This list contains all objects or only objects matching a certain condition.

1. Define your own `slice` interface for queries to the object inventory. You have to write down these interface definitions in `ObjectInventory.ice`, which you can download from http://www6.in.tum.de/Main/TeachingSs2010LabCourseHRI. Other modules can call a method `allObjects()` in order to retrieve a list of all objects currently in the inventory.
2. Extend your interface and add a method `listObjects()`. This method has an additional parameter `Predicate`. Using this predicate it is possible to restrict the list of objects to only contain those of the list matching a condition. For this part you will have to define a data structure `Predicate` and carefully design the conditions to be met.

Possible, orthogonal conditions to be specified within the predicate are

- the ID of the desired object: a list of valid IDs (or any ID)
- the type of desired objects: a list of valid types (or any type)
- the color of the desired objects: a list of valid colors (or any color)
- reachability of the desired objects: for the left hand, the right hand, both or none
- only for slats: small, medium, large ones (or any combination).

A predicate can be composed of the above conditions by using logical `AND` and / or `OR` conjunctions. For example, a cognition module could request a list of current objects containing only blue cubes reachable by the right hand. Or, e.g., a list of small and medium slats that are not reachable by the robot.

Notice

Please send your solution files by May 26, 2010 to giuliani@in.tum.de and muelleth@in.tum.de with subject `HRI Lab Course` as usual.