User Stories for the Challenges at Robocup@Home 2014
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Pre-Competition Robot Setup

Description:

Before the competition starts, we're allowed to map out the competition arena. This means creating a map with our sensors in ROS, and we're also told what objects will be used and what class they're in. In addition, we also get their locations that they will be at on the map.

We should create some kind of map construct in our OO code that has a datastructure of all the objects. The objects should have their current XY location on the map and their XYZ point from the robot. The robot should be able to query this map to get information from it (eg items, obstacles, rooms).

"Grab me a beverage" - Cocktail Party

Description:
The doors will open in the arena and the robot must know that this means go. The robot will have to know what challenge it is doing and we can set that as some global parameter, either via voice or just by typing it into the CLI.

The robot must then enter the arena and find the person it is supposed to via memorizing their face prior to finding them. It might be the case it should ask anyone, in that case it must ask anyone, then it should find the nearest person. It should ask them what beverage they want, and parse the beverage. If they want to know what we have to offer, the robot should be able to parse from the given beverage set the list of beverages it contains and synthesize it into speech.

The robot, once knowing what beverage to get from the fridge (of which it must know the location) must go and grab it and return to the location of the person and hand it to them.

Projects that hold a stake in this task:
Facial Recognition
Speech Recognition
Navigation
Object Recognition
Object Manipulation
Speech Synthesis

"Follow John" - Follow Me

Description:

The robot will start at a taped line and be told to follow a chosen person. The robot must recognize that person and their entire body shape to be able to follow them. There will be an occlusion where someone or something walks infront and cuts out all vision from that person and our robot is expected to pause so they don't hit the obstacle, then continue following.

Projects that hold a stake in this task:
Navigation
Facial Recognition
Person Recognition
Person Tracking
Dynamic Obstacle Avoidance
Speech Recognition

Emergency Stop Test

Description:

The robot will have to be able to stop at any time via a big red button that is reachable on the robot. In addition, I'd like to have the robot to be able to recognize the stop sign gesture (when you tell someone to stop or a dog to heel).

Projects that have a stake in this task:
Emergency Stop Button
Gesture Recognition

Starting When The Door Opens

Description:

The robot must roll into the arena when the door opens. This means it must be waiting outside, facing a door and its only vision input will be a white screen. It can be implemented by waiting to see if it sees multiple objects from a living room/kitchen etc, or even recognize that the door is at some sort of angle. There are points deducted for not being able to do this, so lets do it.

Projects that have stake in this task:
Navigation
Object Recognition
Scene Recognition
Speech Synthesis

Cleaning up an Object

Description:

The robot will start outside the arena facing the door and will be told to clean up an object we'll find out beforehand. It must navigate through the arena to the location of the object, recognize the object, and grasp it. It will then put it in a basket or hold it until it drops it off at a determined location.

Projects that have a stake in this task:
Navigation
Arm Controller
Object Recognition (Instance/General)
Arm Grasping

2 Special Tasks of Our Choice

Description:

We get marked in the competition for making the robot do something cool, useful, and difficult. There are 2 opportunities to demonstrate the skills our robot can do, and last year the best thing was pouring a cup of water into another cup of water.