Vision component: Object Detector

Technical Instructions - DRAFT

The object detector is able to detect different types of basic object shapes (cubes, cones, cylinders, balls) as well as lower level basic Gestalt features, like rectangles, flaps, junctions and so on. The current version writes only the detected cubes, defined as visual objects, to the working memory.

1. Installation

Install the CAST-framework. Then activate sub-architecture "vision.sa" for installation within the cast-framework.

Necessary libraries for installation in Ubuntu 8.04:

- TBA

- ...

Necessary libraries for installation in Ubuntu 9.04:

- TBA

- ...

2. Configuration

There are two configuration files, `vs3.cfg` and `calibration.xml`, at

> ./subarchitectures/vision.sa/src/c++/vision/components/ObjectDetector/cfg/

To configure the perceptual grouping tree of the object detector, open "vs3.cfg" and enable/disable the different Gestalt principles with the value 1/0.

"calibration.xml" is used for the camera calibration, if the camera parameters are not available from the video server. The user has to define the image size, intrinsic and distortion parameters as well as some reference points, which are describing the relationship between image points (pixel) and 3D world points (mm).

3. Start object detector demo program

Start first the cast server in a client console and than start in another console session the client program:

```
cast-server
cast-client subarchitecture/vision.sa/config/detector.cast
```

4. Usage and display commands

The object detector aims to detect predefined Gestalts and basic object shapes like cubes, cones, cylinders and balls using a perceptual organized system. After the start of the detector shows a display the incoming images from the video server with the extracted edges.

The following display keys showing different estimated Gestalts:

- – '^' … Show all detected objects.
- – '1' … Show all detected cubes.
- – '2' … Show all detected cylinders.
- – '3' … Show all detected cones.
- – '4' … Show all detected balls.
- – '5' … Show all detected ellipses.
- – '6' … Show all detected segments (default value).
- – '7' … Show all detected lines.
- – '8' … Show all detected rectangles.
- – '9' … Show all detected flaps.
- – 'd' … Enable/disable display.
- – '+' … Increase degree of detail (default = 0).
- – '-' … Decrease degree of detail.

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