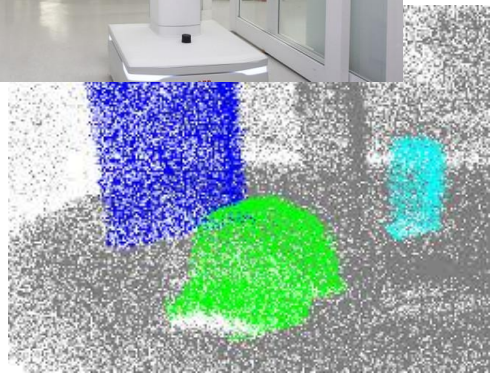
CODE: 1687

Master's Thesis Proposals

Object recognition based on RGB-D cameras for Programming by Demonstration



Scope

Research topics:

Developing an object recognition approach for our programming by demonstration (PbD) grasping system.

Goal(s):

1. Developing an object recognition and pose estimation system based on RGB-D perception
2. Integrating the object recognition algorithm into our grasping system based on Programming by Demonstration

Description

The objective of the thesis is to develop an object recognition system for grasping applications based on RGB-D sensor data.

Once the algorithm is implemented, it will be integrated in an existing prototype of programming by demonstration system for both mobile YuMi and single-arm YuMi.

A significant part of the work will be to review existing object recognition approaches, determine relevant performance metrics, choose the most suitable solutions, and carry out experimental evaluation on a real system.

Tasks

The work will address the following points:

- State of the art study about object recognition approaches
- Determine relevant performance metrics
- Implement and compare the most promising solutions
- Experimental evaluation by Integrating the developed solution into an existing PbD system

Required background

- Programming skills in C++ or Python
- Experience with RGB-D cameras and ROS are considered a plus

Timeline

- Start: between Jan. 2021 and March 2021
- Duration: 6 months
- Place: ABB CRC (Västerås)
- ABB will cover the accommodation in Västerås

Supervisor contact: pietro.falco@se.abb.com

Pietro Falco