Master Thesis

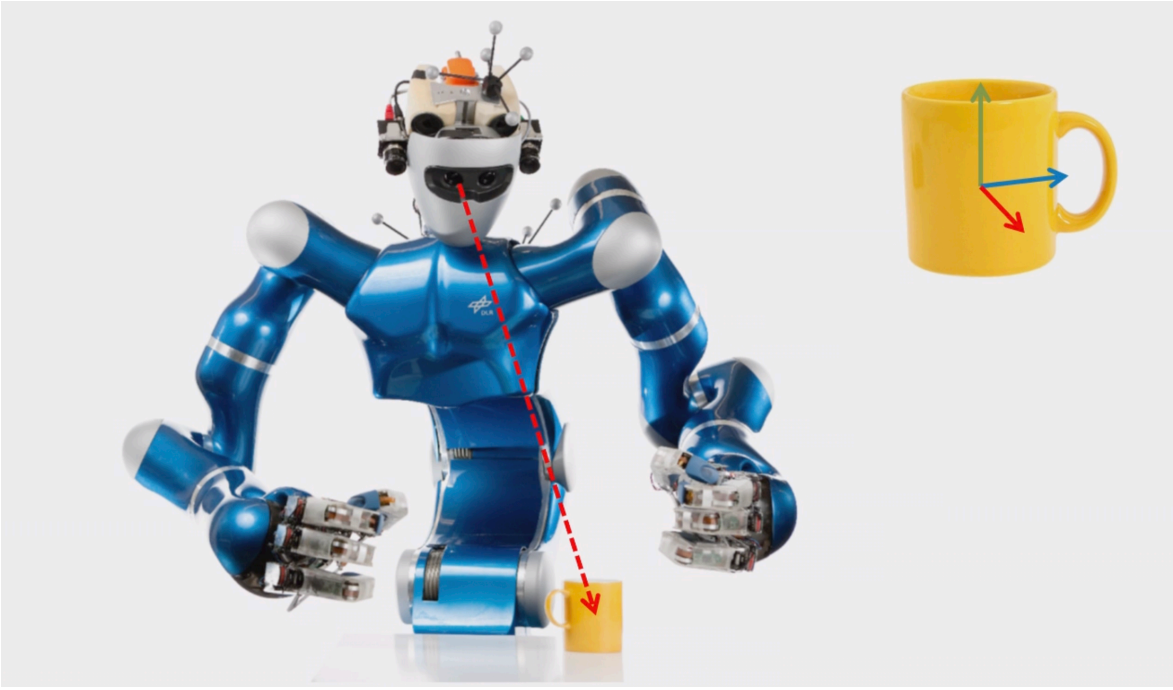
Object Pose estimation using Deep Learning

Before a robot can pick an object, it must estimate its pose. This is called *object pose* estimation. Generally, we require the (x, y, z) location with respect to the camera, and the object orientation (α, β, γ), making it a 6D estimation problem.
State-of-Art approaches require complicated geometrical models and various optimisation algorithms, making the object pose estimation a non-trivial problem. Recently, a deep-learning based algorithm was published that is able to estimate the 6D pose of a known object *directly* from camera input (see Image below). All that is needed for training, is a CAD model of the object.

The goal of this thesis is to explore the performance of this algorithm in practice with our robots in the robotics lab and with our cameras (e.g. the intel RealSense).
The algorithm is written in python and the code as well as data for training the deep network is available via github. See https://www.youtube.com/watch?v=jgb2eNNlPq4

Prerequisites:

- Prior knowledge in machine learning is needed.
- Good knowledge of Python.
- Knowledge in robotics is not necessary but useful.



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