Evaluation and Robot Control Demonstration using RoboDK

Most commercial robots are sold with exclusive languages and interfaces, making them difficult for users to learn and master. The RoboDK software allows to simulate and program many robots. In this work, RoboDK is evaluated and its capabilities demonstrated with two different robots.

Context

Most commercial robots are distributed with their own programming languages and interfaces.
This makes it difficult for users to learn and master how to use specific robot brands. Commercially, this strategy makes sense, as once a user learns how to operate one robot brand, he or she will tend to stay with that brand.

Introduction

RoboDK is a software application that allows to simulate and program many industrial robots of different brands. In addition, its API makes it possible to program with a common interface in Python, C#, Visual Basic, C++ and Matlab. The package also includes robot models, enabling a simulation without a robot.

Goals

The project consists in evaluating the RoboDK package and demonstrating its capabilities by developing a sensor-based control application with two different robots.

Methods

Initially, a test and validation plan was defined and the concept for a sensor based demonstration program was developed.
This demonstration program consists of a pick and place application, where parts are located through an image analysis algorithm. This program was initially developed for Mecademic's Meca500 robot and was later adapted for Universal Robots' UR3 robot.
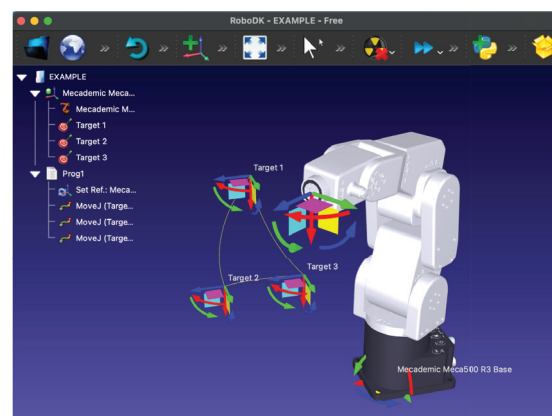
Results

The demonstration was implemented in C++ using the RoboDK API. It was possible to develop a working application for both Meca500 and UR3 robots.
The next step is to interface RoboDK with other supported robots, like Staubli TX40, Emika Panda and Kuka LBR iiwa, and test them with simple movements. Thereafter, a RoboDK interface for a non-supported robot like the Fanuc SR-3iA will be developed.

Ezio Ranzoni
079 905 70 67
ezio.ranzoni@gmail.com
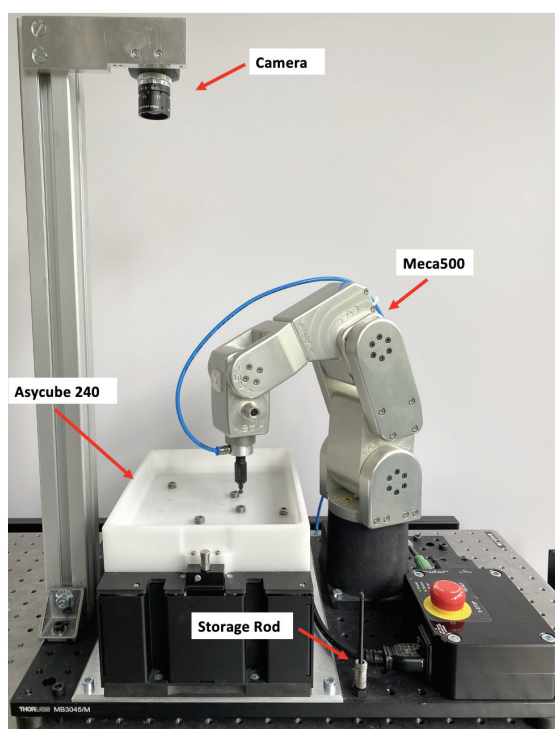
Developed demonstration workspace with Meca 500

RoboDK interface with Meca500