A robotics software framework for R&D

Background

Due to safety, and also the protection of intellectual property, standard industrial robots often have restricted interfaces and a proprietary programming language, such that it is difficult for R&D departments to access sensor information, apply new control methods, optimize trajectory planning, etc.

Description

The task of this thesis is to develop a software framework, that accommodates researchers in universities and R&D departments in small and medium businesses. Well-defined interfaces and accessibility should enable researchers to easily develop and integrate new functions, such as new trajectory planners, control methods, include new sensors, etc.

MATLAB/Simulink is a script-based prototyping language, which is widely popular within the engineering community for its rich mathematical toolboxes, easy code modifiability, and debugging features. This new framework will be developed using MATLAB/Simulink.

Tasks

- Literature research on existing framework concepts in the industry (ROS, KUKA, CommonROAD...)
- Identify R&D requirements and develop a framework concept
- Implementation in MATLAB/Simulink
- Evaluation of the new concept