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Main purpose of this module

- Purpose of this module is to demonstrate how industrial robot can be used for grasping arbitrary placed objects by utilizing ROS.
- This module is mainly responsible for movement and trajectory creation depending on object position in the container, object class or other information from sensors.





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Module components

Ros melodic on Ubuntu 18.04 is used. ROS-I is being used in the module as a high-level controller in conjunction with a low-level controller provided by an industrial robot. Currently, Universal Robot UR5 is supported, but the module can be adjusted for other ROS compatible industrial robots. Universal_Robots_ROS_Driver and universal_robot ROS packages are used to establish the connection between the Robot Control node and robot low-level controller.



Industrial robot controller with installed ROS driver (if necessary)

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Environmental requirements & adaptability of the module

- ur5_robot_moveit_config.
- gripper and object types.



 The module has been built for usage with Universal Robots UR5 robot, however this module is adjustable for different ROS-supported industrial robots and grippers. Module consists of several packages: robot_config_ur5, rc_module,

Requirements are mainly associated with the respective robot specifications,



Integration

In the selected demonstration example for picking and placing of arbitrary arranged different objects, the robot movement is implemented in following way – linear path generation for picking up an object respectively to its position and orientation, while avoiding collisions with obstacles in the environment, linear path generation to move object in classification position to classify what kind of the object has been picked and other features of the object, after that the object is moved to appropriate position(box) depending on classification result



















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Robot-Camera extrinsic calibration

The usage of this module is mainly intended in conjunction with camera vision systems, therefore extrinsic calibration must be done. As industrial robot and camera (On-Wrist and Static) must work in the same coordinate system.



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Robot control module

Electronics and computer science If you are interested in this module, contact us: https://www.edi.lv/en/contacts/



More information on this module and access to the described module can be obtained after an agreement with Institute of



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Thank you!

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