General questions about robot competitions

Branch

- ◯ Academia / Research
- ◯ Robot manufacturer
- ◯ System integrator
- ◯ End user
- ◯ Sonstiges: _____

Position

- ◯ Researcher
- ◯ Developer
- ◯ Project leader
- ◯ Team leader
- ◯ Sonstiges: _____

Do you know the following robotics challenges and competitions?

- ☐ DARPA Grand Challenge
- ☐ RoboCup
- ☐ euRathlon - An Outdoor Robotics Challenge for Land, Sea and Air
- ☐ RoCKIn - Robot Competitions Kick Innovation in Cognitive Systems and Robotics
- ☐ EuRoC - European Robotics Challenges
- ☐ ELROB - The European Land Robot Trial
- ☐ ARGOS Challenge - Creating the first autonomous robot for gas and oil sites
- ☐ MBZIRC - Mohamed Bin Zayed International Robotics Challenge
- ☐ KUKA Innovation Award
- ☐ Amazon Picking Challenge
- ☐ FIRST Lego League

Which other challenges and competitions are you aware of?

Meine Antwort

Have you ever participated in a challenge?

○ Yes

○ No

Do you consider challenges and competitions a useful tool to advance the fields of robotics?

	1	2	3	4	
not at all	○	○	○	○	fully agree

Which fields of robotics do you think are influenced the most by robotic competitions?

☐ Research

☐ Education

☐ Industry

☐ Sonstiges: _____

Do you think that challenges and competitions can create solutions for technology transfer from academia/research to the robotics industry?

	1	2	3	4	
not at all	○	○	○	○	fully agree

Are todays technical level of the teams and their solutions sufficiently advanced to solve todays robotics or manufacturing industry problems?

	1	2	3	4	
not all all	○	○	○	○	fully agree

In RoCKIn we developed functionality and task benchmarks. Please rate their usefulness from your point of view.

RoCKIn is an EU-funded project aiming to foster scientific progress and innovation in cognitive systems and robotics through the design and implementation of competitions.

To this end, RoCKIn has developed two Challenges:
RoCKIn@Work (Industrial Robots)
RoCKIn@Home (Domestic Service Robots)

It's project website can be found here:
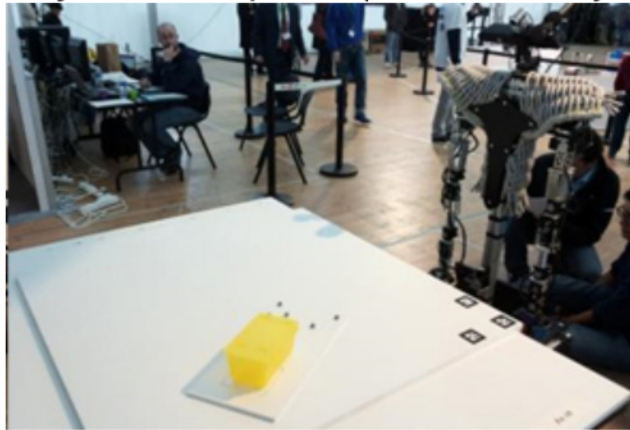http://rockinrobotchallenge.eu/

RoCKIn@Work

is set in the medium-sized RoCKIn 'n' RoLLIn factory, a scenario modelled after a typical industrial manufacturing line with different workstations, shelves and machines. The robot has to support a human worker with the assembly of a drive axles for a small mobile robot.
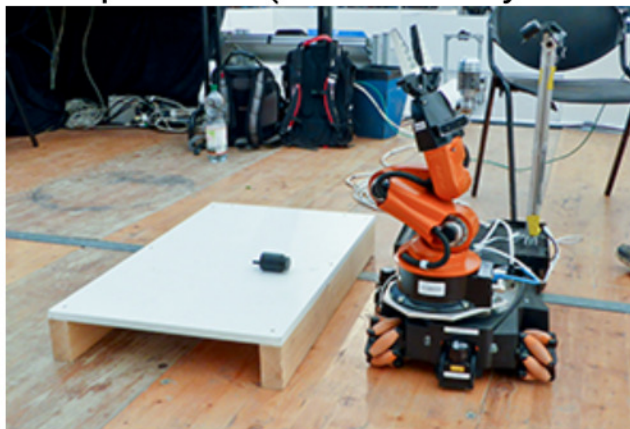
RoCKIn@Work competition environment

Object Perception (Functionality benchmark)

From a set of objects the robot has to detect, recognize and locate an object placed in front of it. Objects could be for example a tray, an axis or a bearing box.

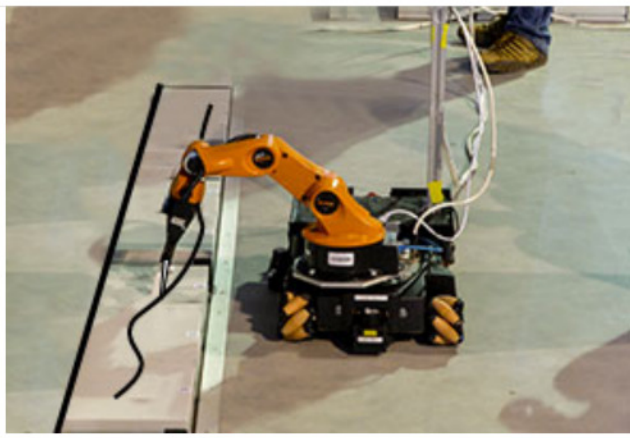|	1	2	3	4	
not useful	○	○	○	○	very useful

Manipulation (Functionality benchmark)

The robot has to identify the object in front of it, grasp and lift it and release it after a given time. The pose of the object in the gripper is not important, as long as the object is succesfully grasped.

	1	2	3	4	
not useful	○	○	○	○	very useful

Control (Functionality benchmark)

The robot has to follow a straight line/spline (without sensor feedback). Using a marker mounted on its end-effector an external system measures the path accuracy.

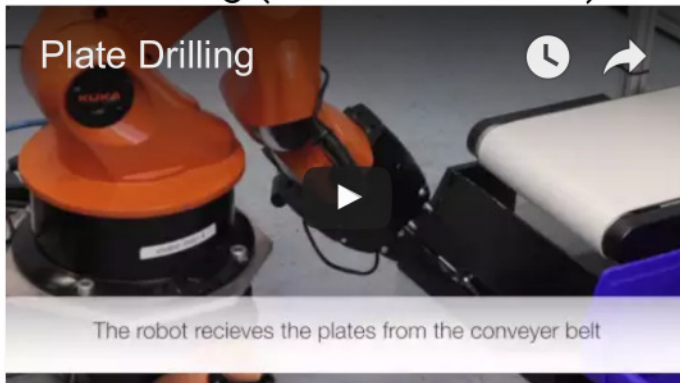|	1	2	3	4	
not useful	○	○	○	○	very useful

Assembly Aid Tray For Force Fitting (Task benchmark)

In this task the robot should collect a tray, a bearing box and a bearing. Bearing box and bearing have to be put into the tray and the tray has to be brought to the "Force Fitting Machine" for final assembly.

	1	2	3	4	
not useful	○	○	○	○	very useful

Plate Drilling (Task benchmark)

The robot recieves the plates from the conveyer belt

In this task the robot has to pick up a cover plate from a conveyor belt, conduct a quality check and perform one of three tasks according to the quality of the plate: perfect - collect; unusable - throw away; faulty - place inside drilling machine for rework.

	1	2	3	4	
not useful	○	○	○	○	very useful

Fill a Box for Manual Assembly Step (Task benchmark)

Prepare a Box for Manual...

And places it in the box

The robot has to navigate through a previously mapped area and avoid collisions with different types of unknown obstacles in unknown positions or people moving through the area.

	1	2	3	4	
not useful	○	○	○	○	very useful

Speech Understanding (Functionality benchmark)

The robot has to understand different speech commands. The commands are taken from a set of recognizable commands and can either be provided as prerecorded utterance or directly spoken by the user.

	1	2	3	4	
not useful	○	○	○	○	very useful

Getting to Know My Home (Task benchmark)

Getting to Know my Home

The robot is supposed to generate a semantic map of the apartment. How this is achieved is not specified, for example a team can guide the robot through the apartment, or the robot can explore it fully autonomously.

	1	2	3	4	
not useful	○	○	○	○	very useful

Welcoming Visitors (Task benchmark)

Welcoming Visitors

The robot has to answer the door, because Granny Annie is not feeling well. Depending on the visitor, eg. Deli Man, unknown person, Dr. Kimble or the postman, the robot has to show a different behaviour.

	1	2	3	4	
not useful	○	○	○	○	very useful

The robot has to navigate to different shelves, pick up objects and place them into a box as a preparatory step for manual assembly.

	1	2	3	4	
not useful	○	○	○	○	very useful

RoCKIn@Home

is set in a domestic environment, where the robot has to support the elderly lady Grannie Annie in her day to day activities.

Granny Annies apartment

Object Perception (Functionality benchmark)

From a set of objects the robot has to detect, recognize and locate an object placed in front of it. Objects could be for example a coffee mug, a knife or a gold-colored picture frame.

	1	2	3	4	
not useful	○	○	○	○	very useful

Navigation (Functionality benchmark)

Catering for Granny Annie's Comfort (Task Benchmark)

In this task the robot has to manage different day to day tasks. Granny Annie can call for the robot via her tablet computer. On arrival it can be given commands to, for example lift the shutters, tilt the window and switch of the lights. Another task may be to search for and bring back her reading glasses.

	1	2	3	4	
not useful	○	○	○	○	very useful

Open source and standard platforms in robot competitions

Do you consider it beneficial if teams use standard hardware platforms to compete on implementation level only?

	1	2	3	4	
not at all	○	○	○	○	fully agree

Do you agree that basic software functionality should be made available to the teams for allowing an easy entry to robot competitions?

	1	2	3	4	
not at all	○	○	○	○	fully agree

Do you agree that the software of all participating teams should be made public?

	1	2	3	4	
not at all	○	○	○	○	fully agree

Would you make your software publicly available if there was a special open source award at the before-mentioned competitions?

○ Yes

○ No

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