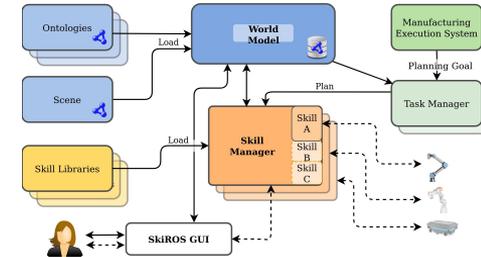
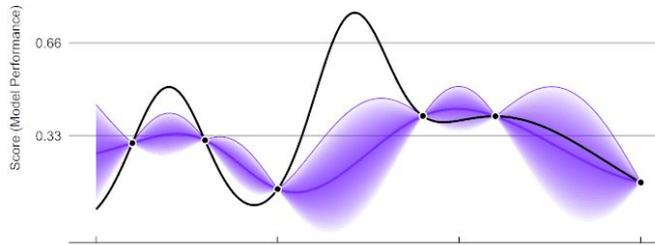
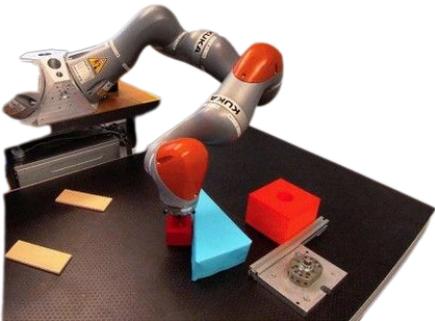


# Lernende Roboter mit Skills

Matthias Mayr, Universität Lund & WASP  
matthias.mayr@cs.lth.se

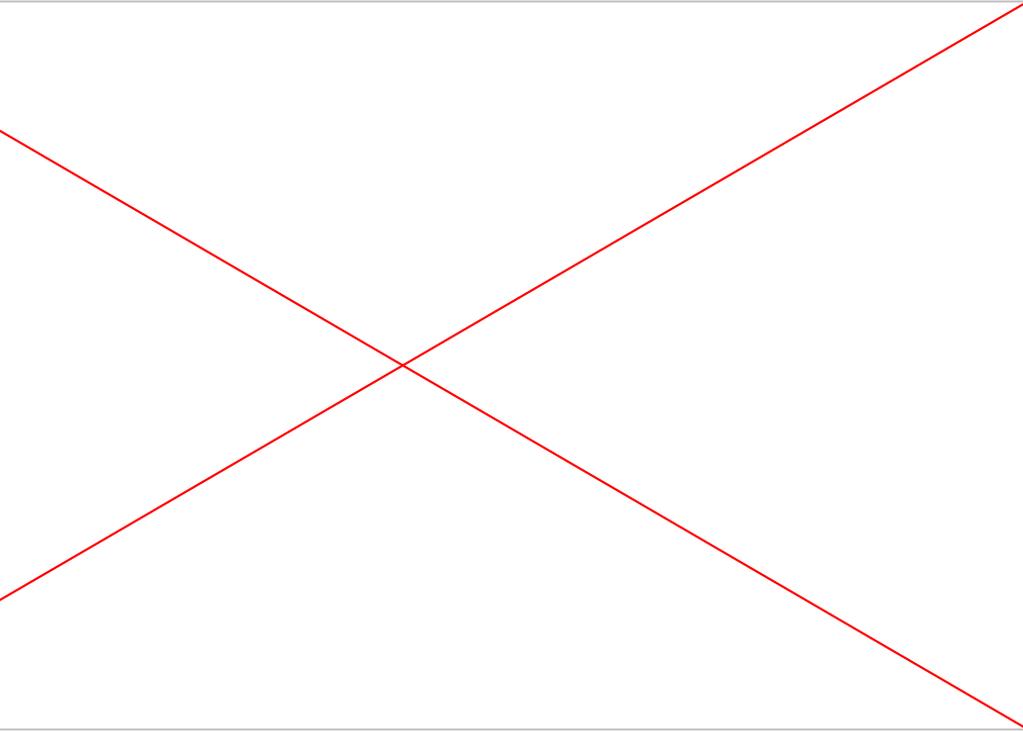


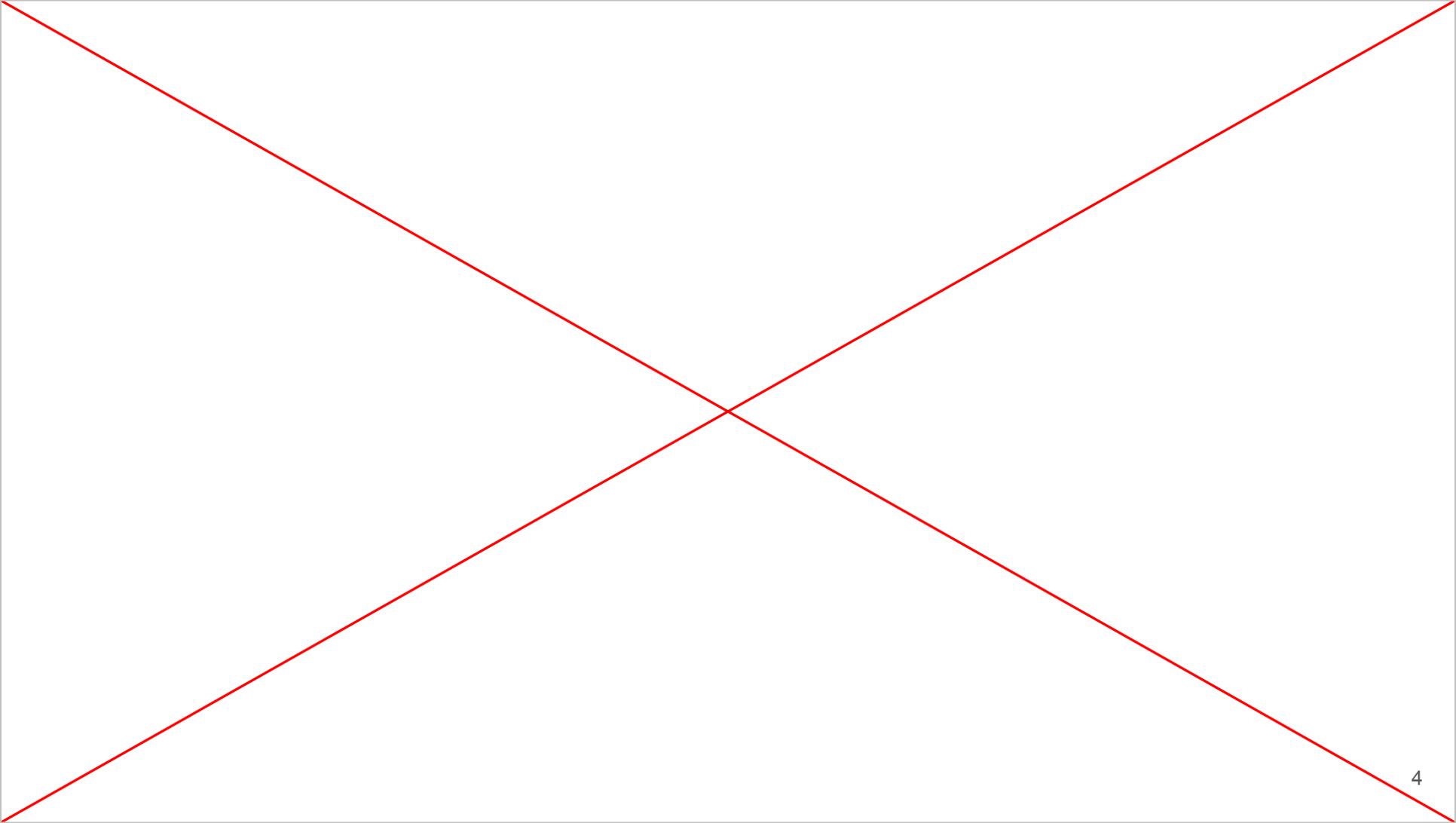
Wer hat schon ...

1. Kraftregelung verwendet?
2. wiederverwendbare Fähigkeiten geschrieben?
3. Aufgabenplanung gemacht?
4. verstärkendes Lernen verwendet?

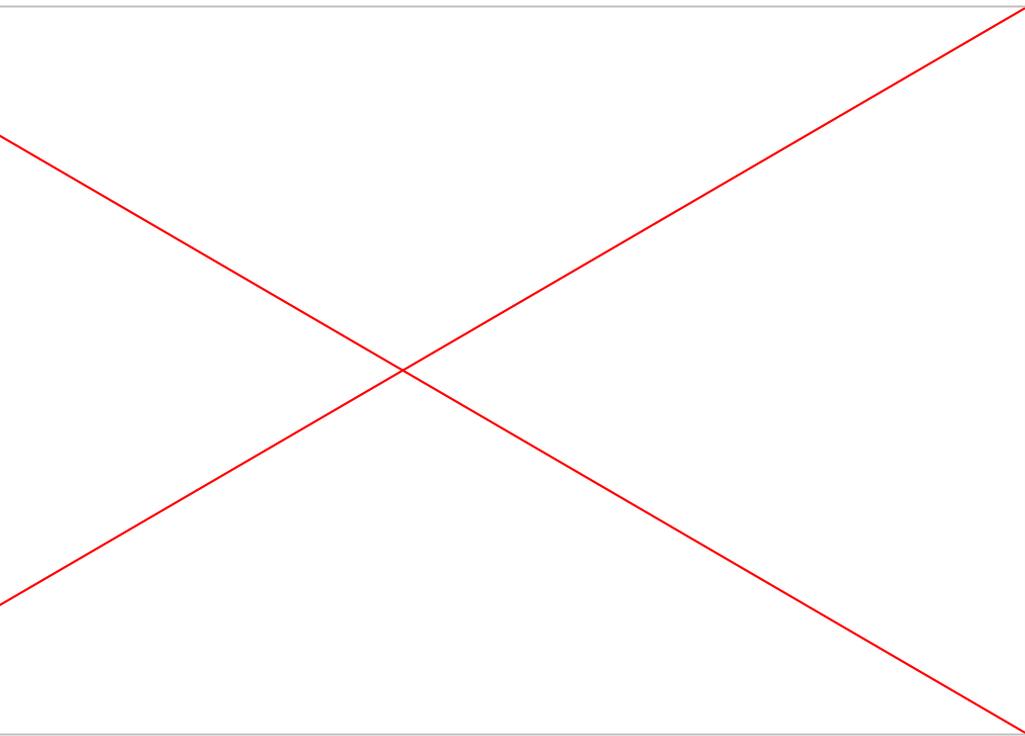
Was machen wir?

Warum?

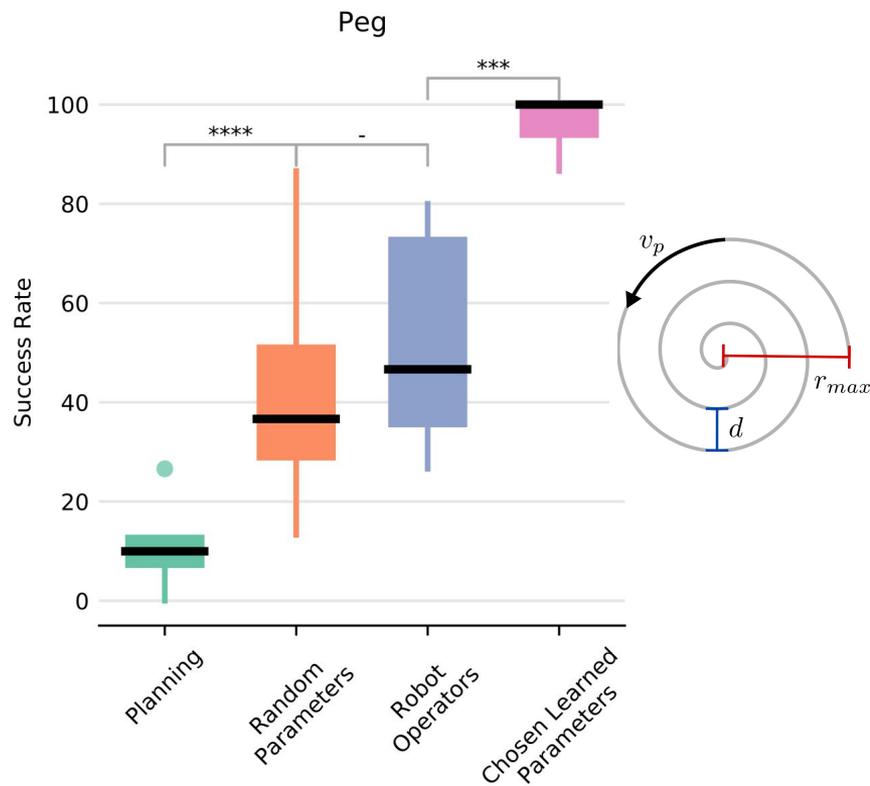




# Was machen wir?



# Warum?

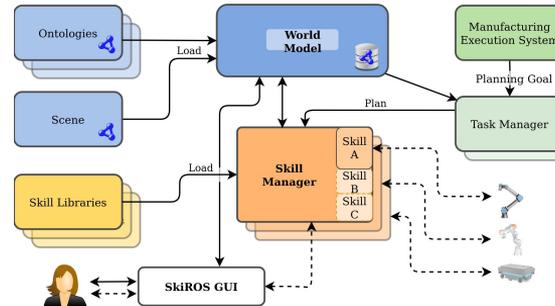
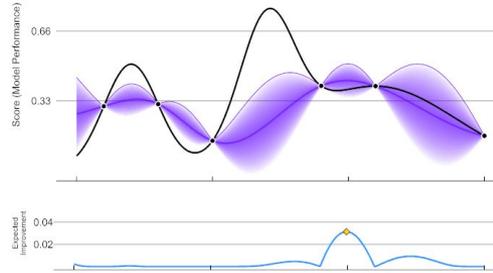


# Was bekommt ihr?

- Robotersetup von Grund auf
- Skill Plattform
- Integration von maschinellem Lernen
- Repository

# Was brauchen wir?

- Lernende
- Roboter
- mit Skills



# Roboter

# Roboter

epfl-lasa / **iiwa\_ros** Type  to search

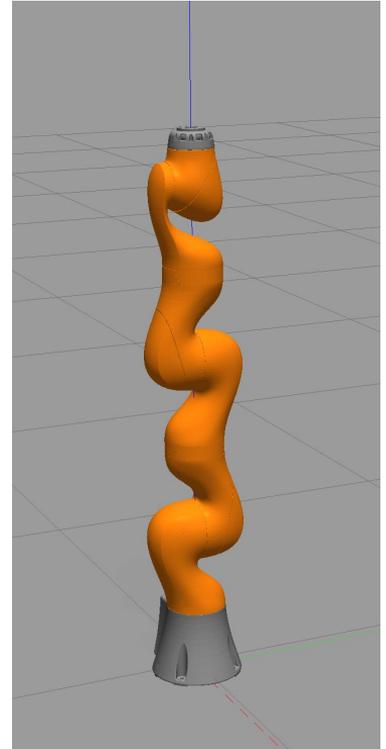
<> Code Issues 6 Pull requests 4 Actions Projects Security Insights

**iiwa\_ros** Public Edit Pins Unwatch 8

master 23 branches 1 tag Go to file Add file Code

**costashatz** Update README for RBDyn SIMD flags 0f0041c on Jan 18 214 commits

iiwa_control	Config: Turn off SIMD	last year
iiwa_description	Add Matthias to license	last year
iiwa_driver	Add Matthias to license	last year
iiwa_gazebo	Add Matthias to license	last year
iiwa_moveit	Add Matthias to license	last year
iiwa_ros	Add Matthias to license	last year
iiwa_tools	Config: Turn off SIMD	last year
.gitignore	Added macOS files to gitignore	4 years ago
.gitmodules	Remove submodules	4 years ago



# Roboter

epfl-lasa / **iiwa\_ros** Q Type ↵ to search

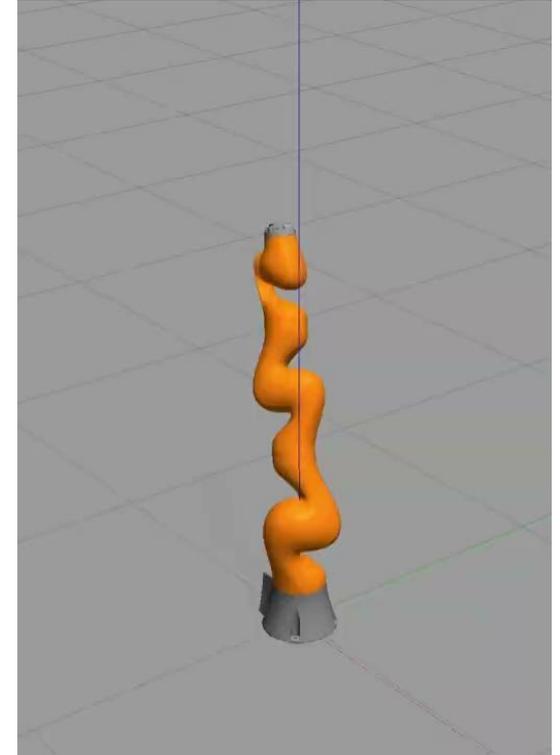
<> Code Issues 6 Pull requests 4 Actions Projects Security Insights

**iiwa\_ros** Public Edit Pins Unwatch 8

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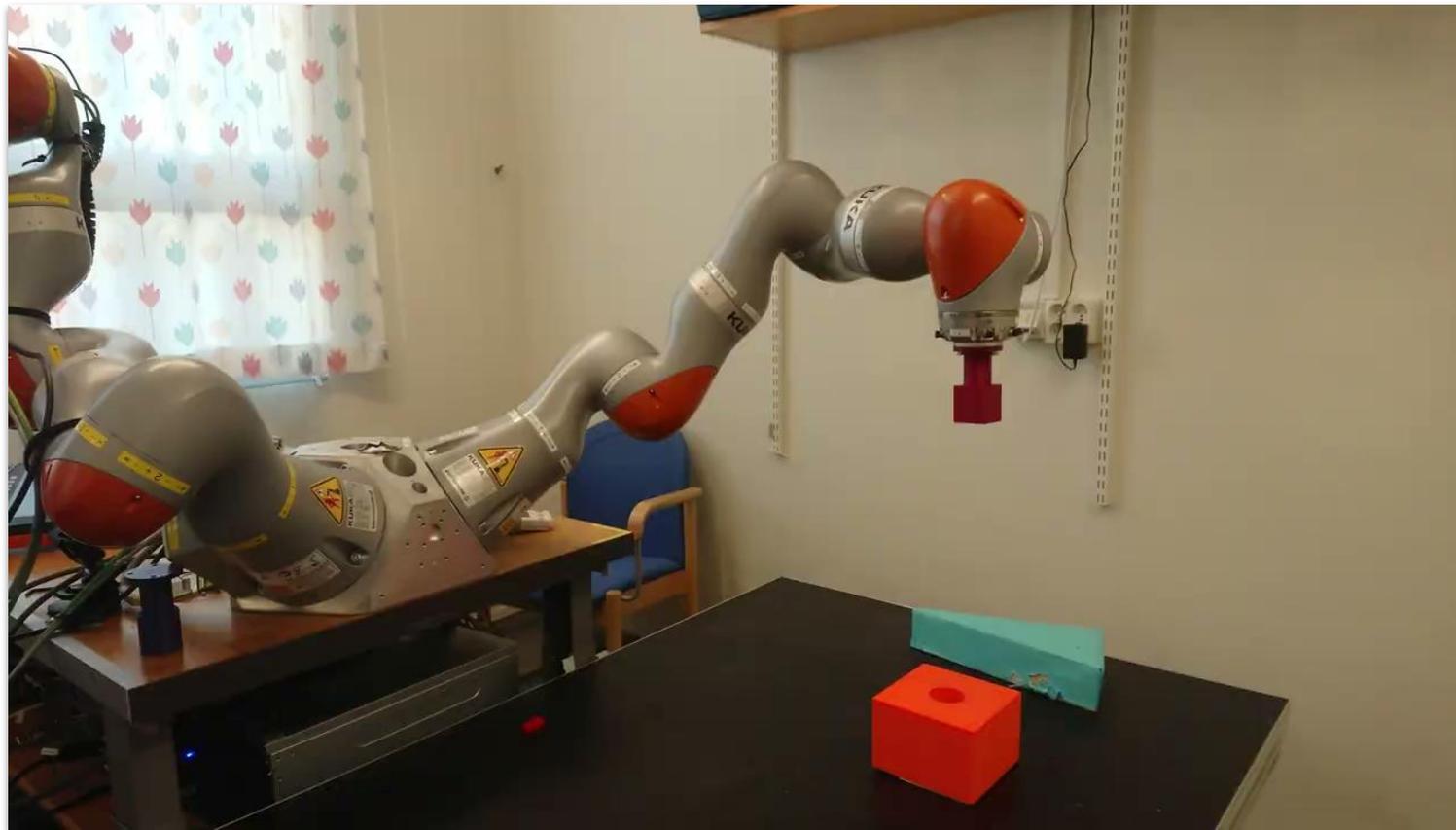
**costashatz** Update README for RBDyn SIMD flags 0f0041c on Jan 18 214 commits

iiwa_control	Config: Turn off SIMD	last year
iiwa_description	Add Matthias to license	last year
iiwa_driver	Add Matthias to license	last year
iiwa_gazebo	Add Matthias to license	last year
iiwa_moveit	Add Matthias to license	last year
iiwa_ros	Add Matthias to license	last year
iiwa_tools	Config: Turn off SIMD	last year
.gitignore	Added macOS files to gitignore	4 years ago
.gitmodules	Remove submodules	4 years ago

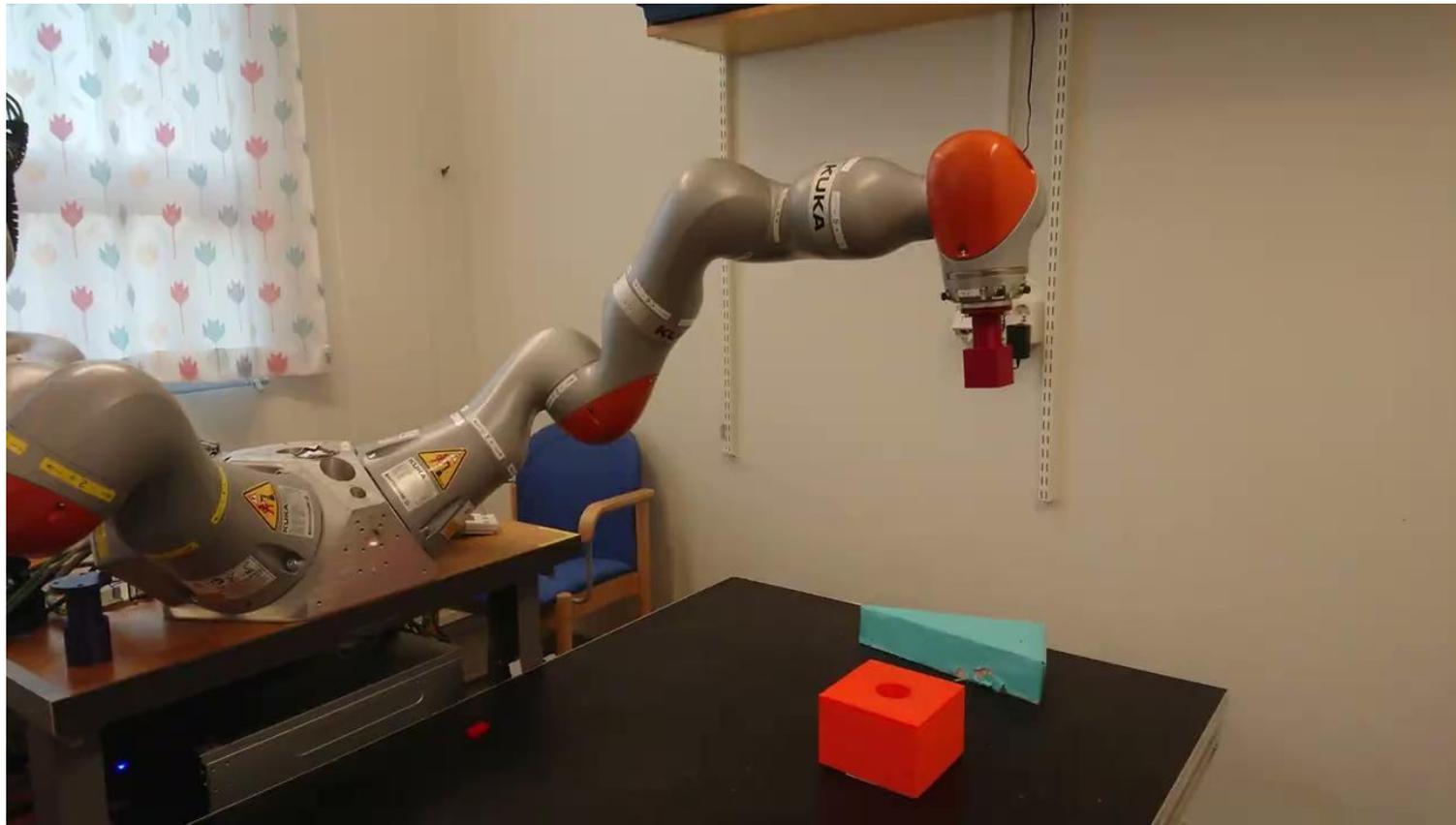


# Regelungstechnik

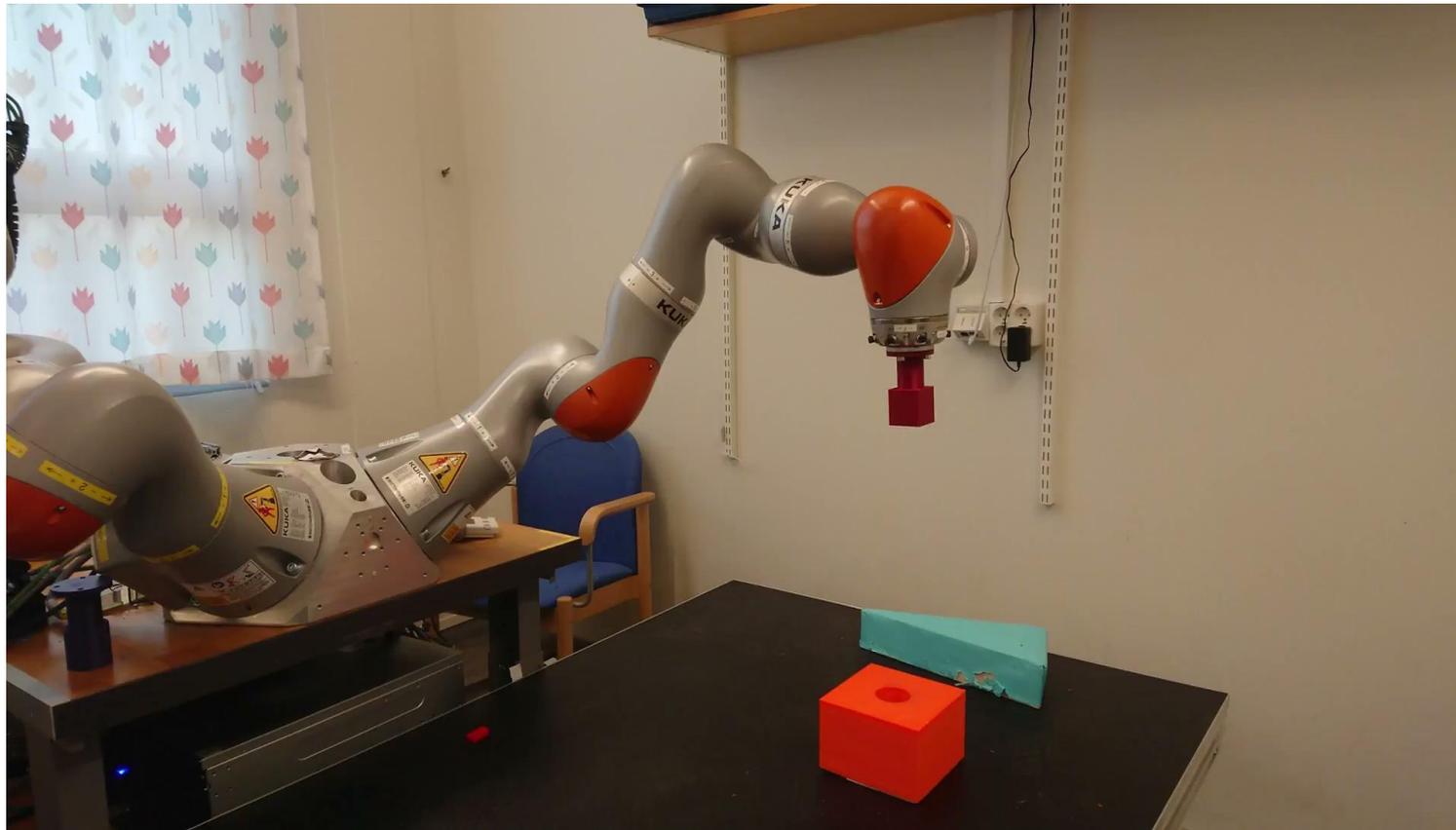
# Kartesische Impedanzregelung



# Keine Translationssteifigkeit



# Keine Rotationssteifigkeit



# Regelungstechnik

matthias-mayr / Cartesian-Impedance-Controller

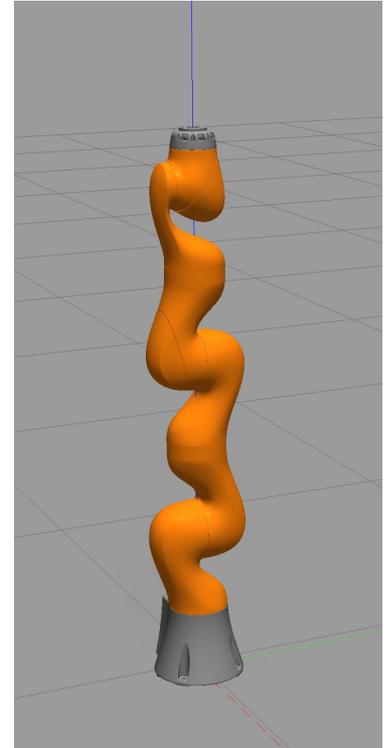
Code Issues 2 Pull requests Actions Projects Wiki Security Insights Settings

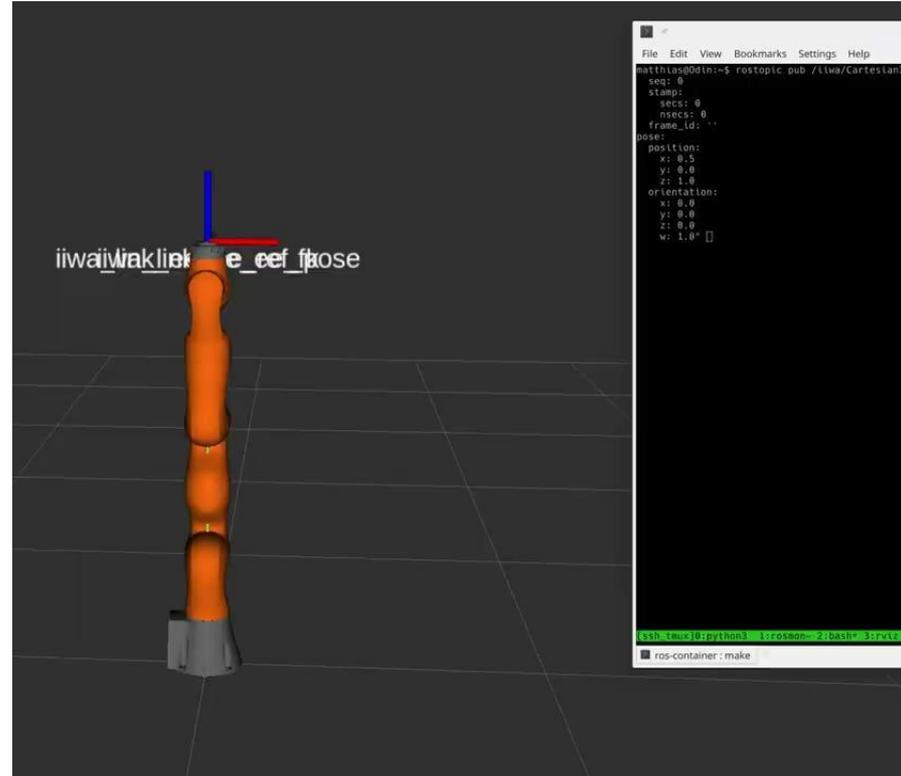
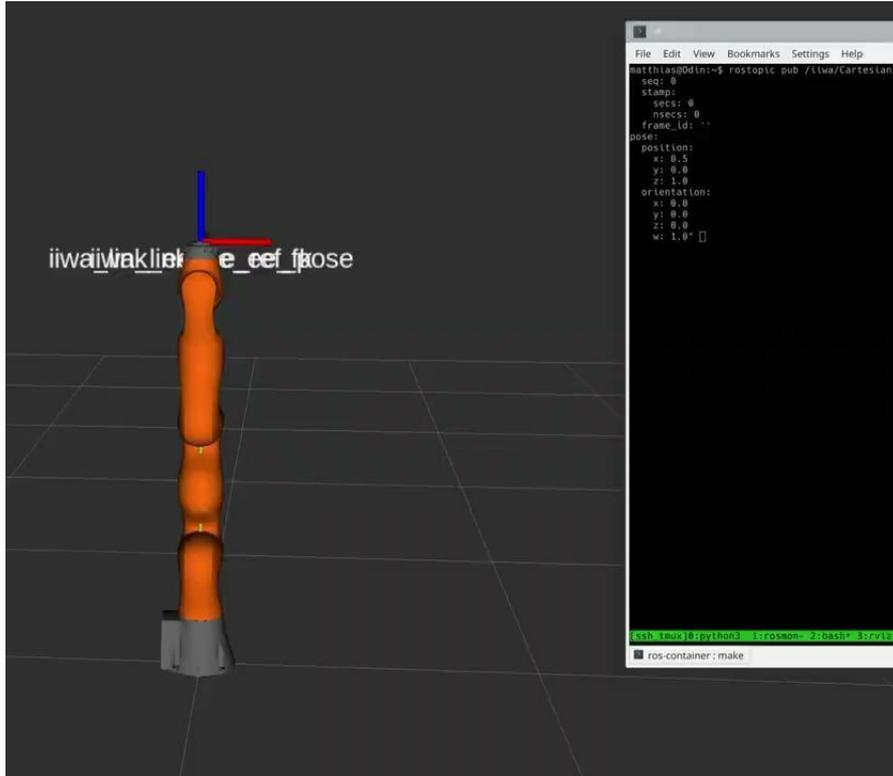
Cartesian-Impedance-Controller Public Unpin Unwatch 2

master 5 branches 0 tags Go to file Add file Code

matthias-mayr Merge pull request #16 from matthias-mayr/pr\_dependen... ✓ e888ba3 2 weeks ago 432 commits

github/workflows	New: Run unit tests after building the code	2 weeks ago
cfg	Chore: Removes execute right from text files	2 weeks ago
include/cartesian_impedance_cont...	Added tests	3 weeks ago
msg	Update: Damping factor clarification and limits	10 months ago
res	Merge branch 'pr_startup_example' of github.com:jsaltducaju/Carte...	2 weeks ago
scripts	Chore: Adds rosdep to install script	2 weeks ago
src	Tests: Improves base library tests	3 weeks ago
test	Chore: Removes execute right from text files	2 weeks ago
.gitignore	New: Foundation for JOSS paper	last year
.gitlab-ci.yml	Adds CI build pipeline	last year
CMakeLists.txt	Testing: Introduces new ROS functionality tests	2 weeks ago





# Kartesische Trajektorien

matthias-mayr / cartesian\_trajectory\_generator

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

cartesian\_trajectory\_generator Public

Unpin Unwatch 1 Fork 1 Starred 4

master 1 branch 0 tags

Go to file Add file Code

<b>Mayr Matthias (CR/AAS4)</b> Fix: Repairs the reset of the Rviz marker	6b2Fed4 on Jun 21	92 commits
action	New: Allows to set custom goal tolerances	5 months ago
cfg	Config: changed the euler angle ranges	2 years ago
config	New: Allows to set custom goal tolerances	5 months ago
include/cartesian_trajectory_gener...	New: Allows to set custom goal tolerances	5 months ago
launch	Chore: Use a namespace for params and executable.	2 years ago
msg	New: Defines OverlayMotionConf message.	2 years ago
res	Doc: Updates marker image and add overlay explanation.	2 years ago
src	Fix: Repairs the reset of the Rviz marker	5 months ago
srv	Feature: Allows to apply overlay motions in arbitrary frames.	2 years ago
.gitlab-ci.yml	Adds CI build pipeline	last year
CMakeLists.txt	New: Defines OverlayMotionConf message.	2 years ago
README.md	New: Allows to set custom goal tolerances	5 months ago
package.xml	Feature: Adds action server for trajectory goals.	2 years ago

README.md

## Cartesian Trajectory Generator

**About**

A trajectory generator for Cartesian linear motions that can apply overlay motions written in C++ and with ROS bindings

Readme Activity 4 stars 1 watching 1 fork

**Releases**

No releases published [Create a new release](#)

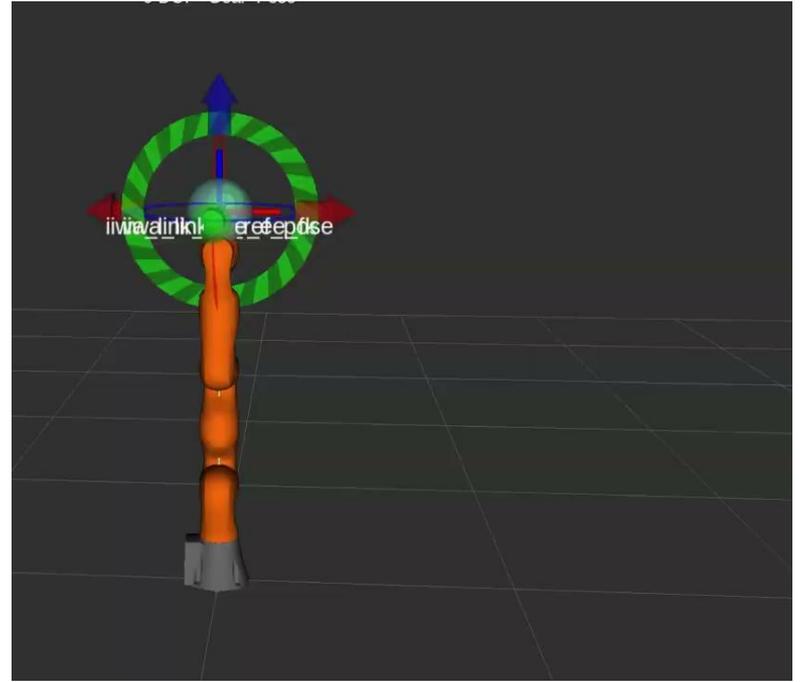
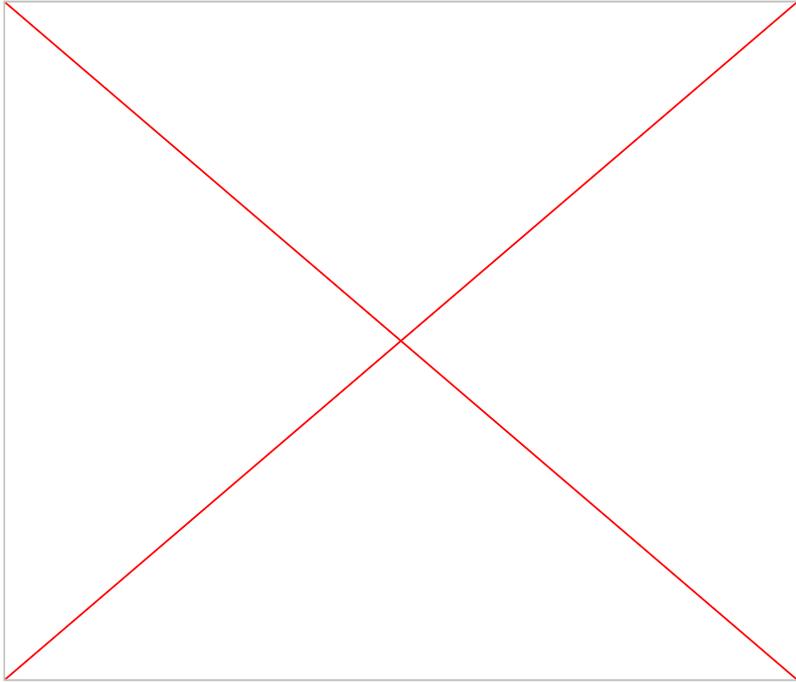
**Packages**

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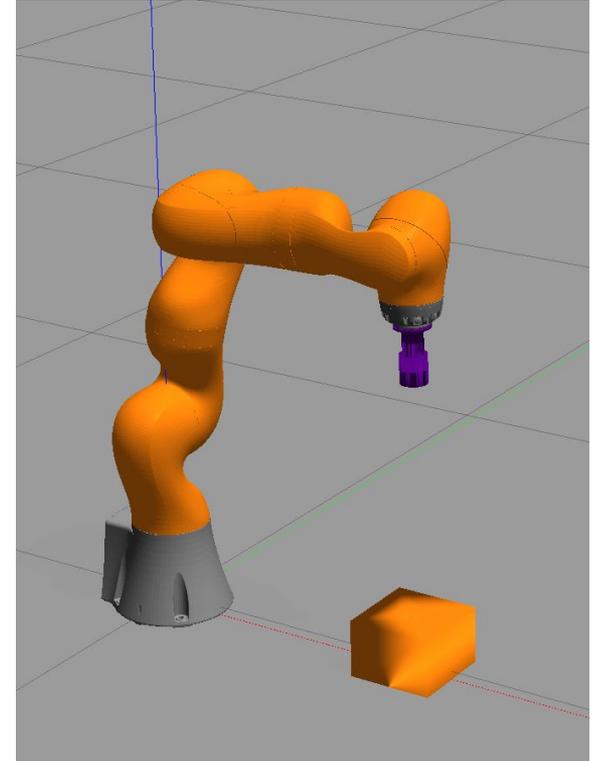
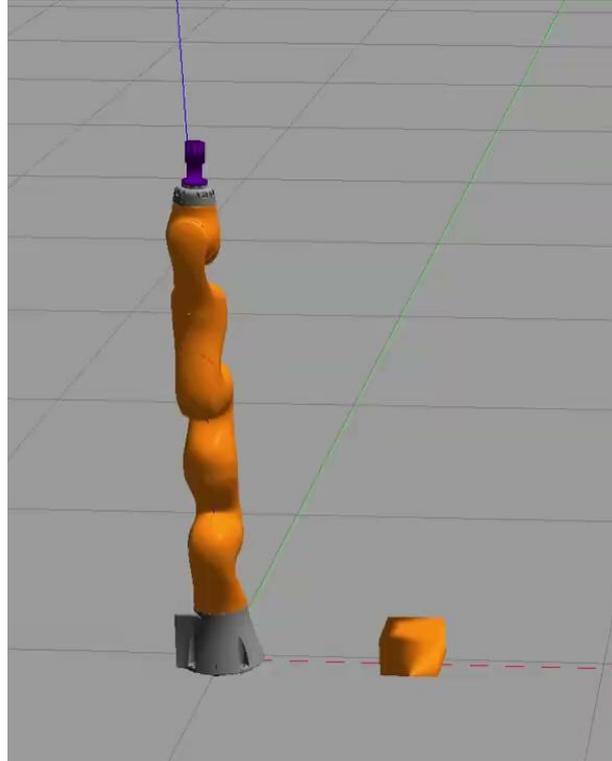
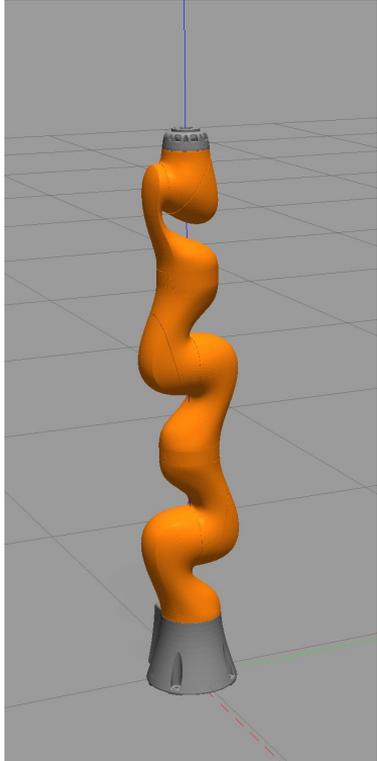
**Contributors** 2

- matthias-mayr Matthias Mayr
- robberthofmanfm Robbert Hofman

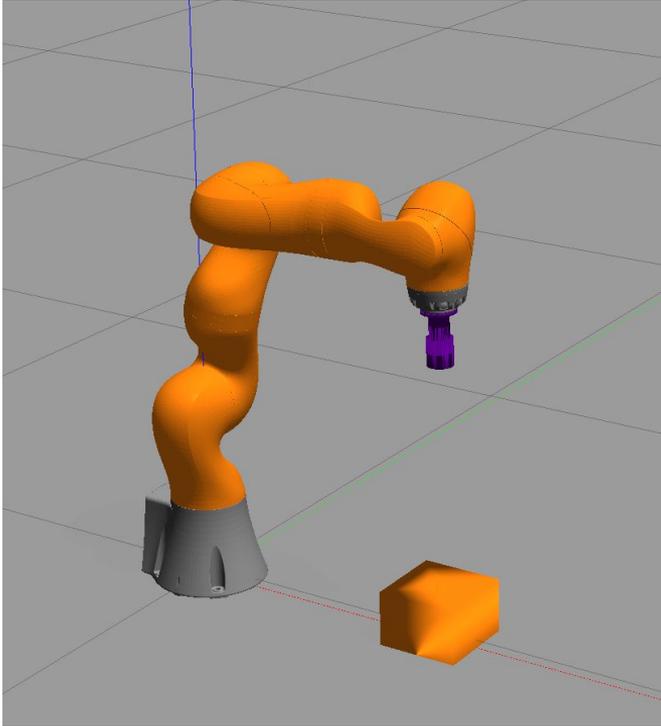
```
src > SkiROS2_skill_learning_demo > launch > robot.launch
2 <launch>
36
37 <!-- Run a python script to send a service call to gazebo_ros to
38 <node name="urdf_spawner" pkg="gazebo_ros" type="spawn_model" res
39 |   args="-urdf -model iiwa -param robot_description"/>
40
41 <!-- Spawn controller -->
42 <rosparam file="$(find skiros2_skill_learning_demo)/config/control
43 <include file="$(find iiwa_control)/launch/iiwa_control.launch">
44 |   <arg name="controller" value="$(arg controller)"/>
45 </include>
46 You, 4 seconds ago * Uncommitted changes
47 <!-- Start trajectory generator -->
48 <group ns="$(arg robot_name)/cartesian_trajectory_generator">
49 |   <node name= "cartesian_trajectory_generator" pkg= "cartesian
50 |     type="cartesian_trajectory_generator" output="screen">
51 |   </node>
52 </group>
53 </launch>
```



# Der Pflock und das Loch



# Start Configuration



```
43  
44 <!-- Run a python script to send a service call to gazebo_ros to spawn a URDF robot  
45 <node name="urdf_spawner" pkg="gazebo_ros" type="spawn_model" respawn="false" output="screen"  
46   args="-urdf -model iiwa -param robot_description -J iiwa_joint_1 0.0 -J iiwa_joint_2 0.0  
   iiwa_joint_3 0.0 -J iiwa_joint_4 -1.3 -J iiwa_joint_5 0.0 -J iiwa_joint_6 1.56  
   0"/> You, 1 second ago • Uncommitted changes  
47
```

# Skills

master 5 branches 1 tag

Go to file Add file Code

matthias-mayr Merge pull request #77 from RVMI/pr\_o... b183864 3 days ago 58 commits

skiros2	New: Adds new properties to skiros.owl	3 days ago
skiros2_common	Fix: Error message on non-existing reasoner	5 months ago
skiros2_doc	Release 1.0.5	3 years ago
skiros2_gui	Warning typo	3 years ago
skiros2_msgs	Publish whole tree on each tick for visualization inste...	3 years ago
skiros2_skill	Fix: Remove non-existing shutdown discovery in skill ...	5 months ago
skiros2_task	Release 1.0.5	3 years ago
skiros2_world_model	Chore: Removes unnecessary deepcopy in WM server	5 months ago
.gitignore	Config: Adds skiros2_doc/html to gitignore.	3 years ago
Doxyfile	Release 1.0.5	3 years ago
LICENSE.md	Release 1.0.5	3 years ago
README.md	Typo	5 months ago
requirements.txt	Release 1.0.5	3 years ago

README.md

# SkiROS2: Skill-based robot control platform for ROS

## About

A skill-based platform for ROS v.2

robotics ros behavior-trees

- Readme
- View license
- Activity
- 101 stars
- 7 watching
- 14 forks
- Report repository

## Releases

1 tags

[Create a new release](#)

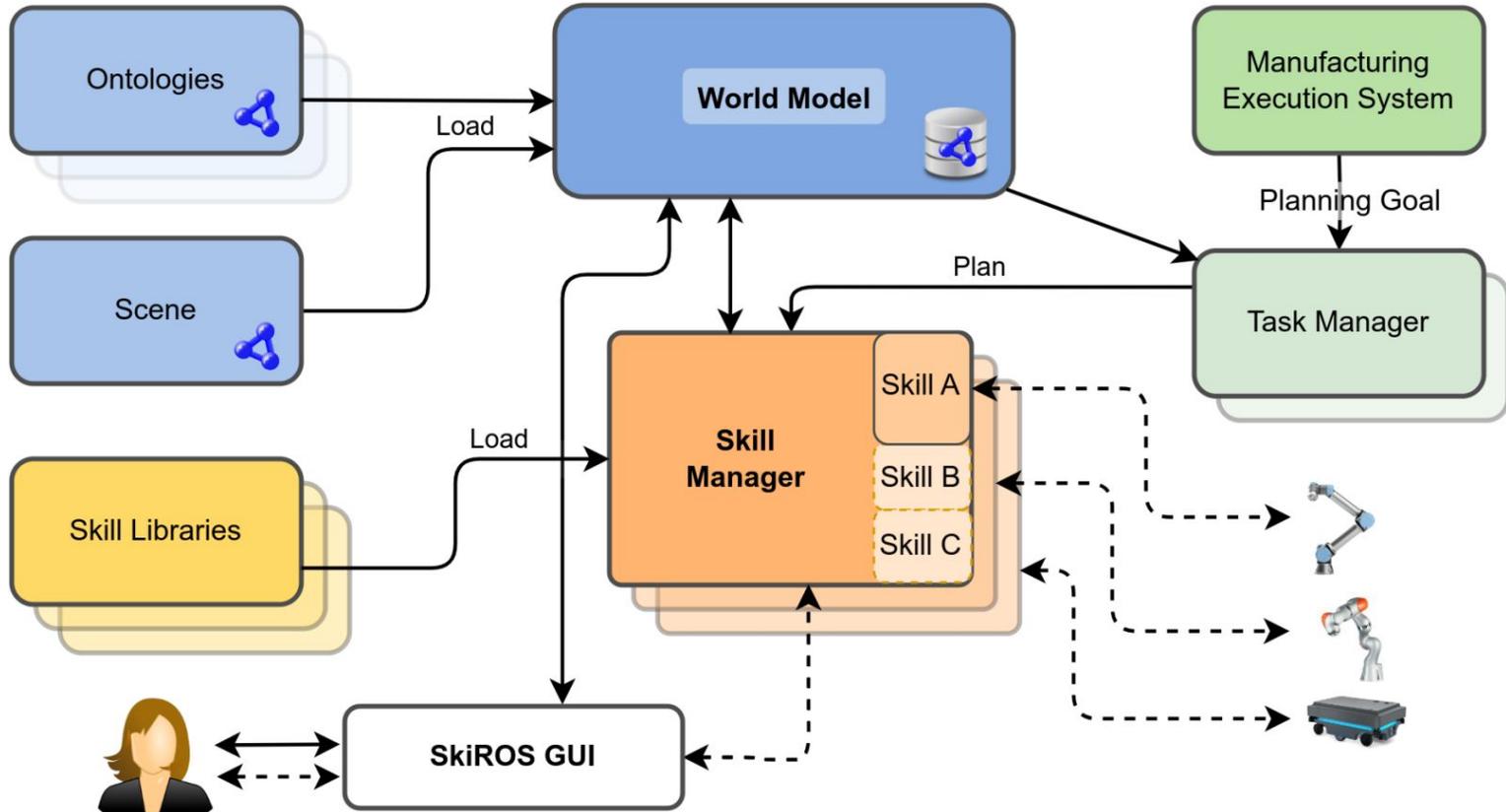
## Packages

No packages published  
[Publish your first package](#)

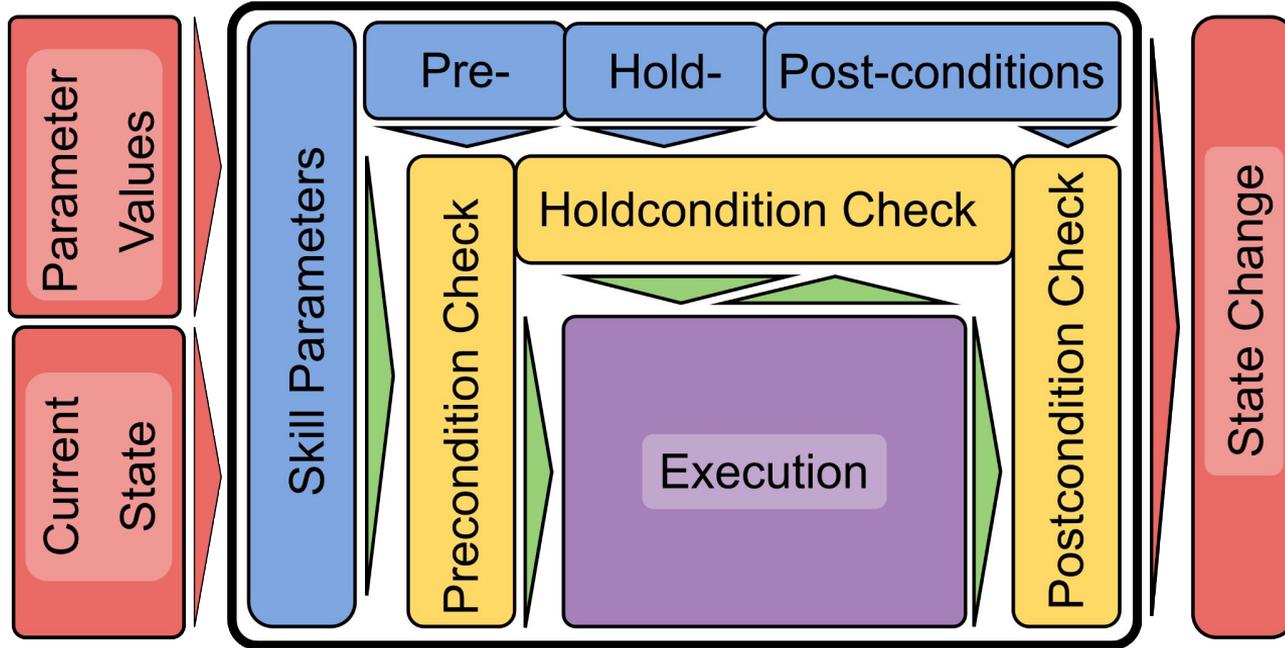
## Contributors 8



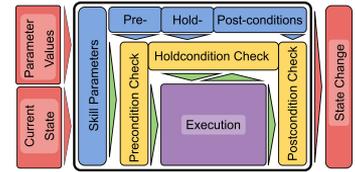
# SkiROS2 - eine fähigkeitsbasierte Robotersteuerungsplattform



# Skill Modell



# Skill Modell



## Skill Beschreibung

- Semantik
- Parameter
- Pre-, hold- and post-conditions

```
class Drive(SkillDescription):
    def createDescription(self):
        # =====Params=====
        self.addParam("Robot", Element("cora:Robot"), ParamTypes.Required)
        self.addParam("TargetLocation", Element("skiros:Location"), ParamTypes.Required)
        self.addParam("Velocity", 0.5, ParamTypes.Optional)
        self.addParam("StartLocation", Element("skiros:Location"), ParamTypes.Inferred)
        # =====PreConditions=====
        self.addPreCondition(self.getRelationCond("RobotAt", "skiros:at", "Robot", "StartLocation", True))
        # =====PostConditions=====
        self.addPostCondition(self.getRelationCond("NoRobotAt", "skiros:at", "Robot", "StartLocation", False))
        self.addPostCondition(self.getRelationCond("RobotAt", "skiros:at", "Robot", "TargetLocation", True))
```

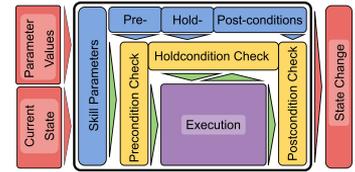
## Skill Implementierung

- Implementiert eine Beschreibung
- Verschiedene Implementierungen einer Beschreibung
- Beschreibung ist veränderbar

```
class drive_fake(SkillBase):
    def createDescription(self):
        self.setDescription(Drive(), self.__class__.__name__)

    def expand(self, skill):
        skill.setProcessor(SerialStar())
        skill(
            self.skill("Wait", "wait", specify={"Duration": 1.0}),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': "Robot", 'Dst': "StartLocation", },
                specify={'Relation': 'skiros:at', 'RelationState': False}),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': "Robot", 'Dst': "TargetLocation", },
                specify={'Relation': 'skiros:at', 'RelationState': True})
        )
```

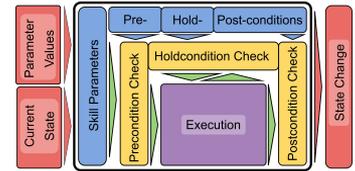
# Skill Beschreibung



- Parameter
  1. Notwendig
  2. Optional
  3. Inferiert
- Bedingungen
  1. Preconditions
  2. Holdconditions
  3. Postconditions
- Bedingungsarten
  1. Relationsbedingung
  2. Existenz einer Eigenschaft
  3. Wert einer Eigenschaft

```
class Drive(SkillDescription):
    def createDescription(self):
        # =====Params=====
        self.addParam("Robot", Element("cora:Robot"), ParamTypes.Required)
        self.addParam("TargetLocation", Element("skiros:Location"), ParamTypes.Required)
        self.addParam("Velocity", 0.5, ParamTypes.Optional)
        self.addParam("StartLocation", Element("skiros:Location"), ParamTypes.Inferred)
        # =====PreConditions=====
        self.addPreCondition(self.getRelationCond("RobotAt", "skiros:at", "Robot", "StartLocation", True))
        # =====PostConditions=====
        self.addPostCondition(self.getRelationCond("NoRobotAt", "skiros:at", "Robot", "StartLocation", False))
        self.addPostCondition(self.getRelationCond("RobotAt", "skiros:at", "Robot", "TargetLocation", True))
```

# Skill Implementierung: Primitive Skills



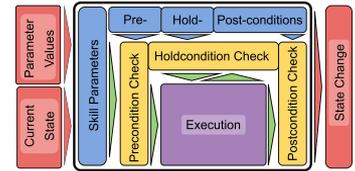
- Semantisch atomar
- Oft Interaktion mit APIs
- Beispiele:
  - Greiferbewegungen
  - Armbegeugungen
  - Sensordaten

## Code-gerüst:

- Implementiert eine Beschreibung
- Python Funktionen für start, ...
- Rückgabesignal:  
Erfolg, Fehler oder Laufend

```
class my_primitive(PrimitiveBase):  
    def createDescription(self):  
        """Set the primitive type"""  
        self.setDescription(MyPrimitive())  
  
    def onInit(self):  
        """Called once when loading the primitive. If return False, the primitive is not loaded"""  
        return True  
  
    def onPreempt(self):  
        """ Called when skill is requested to stop. """  
        pass  
  
    def onStart(self):  
        """Called just before 1st execute"""  
        return True  
  
    def onEnd(self):  
        """Called just after last execute"""  
        pass  
  
    def execute(self):  
        """ Main execution function """  
        return self.success("Done")
```

# Skill Implementierungen: Compound Skills



- Kombiniert mehrere primitive und zusammengesetzte Skills

- *Extended Behavior trees*

- Prozessoren

- Serial (AND)
- Selector (OR)
- Parallel
- ...

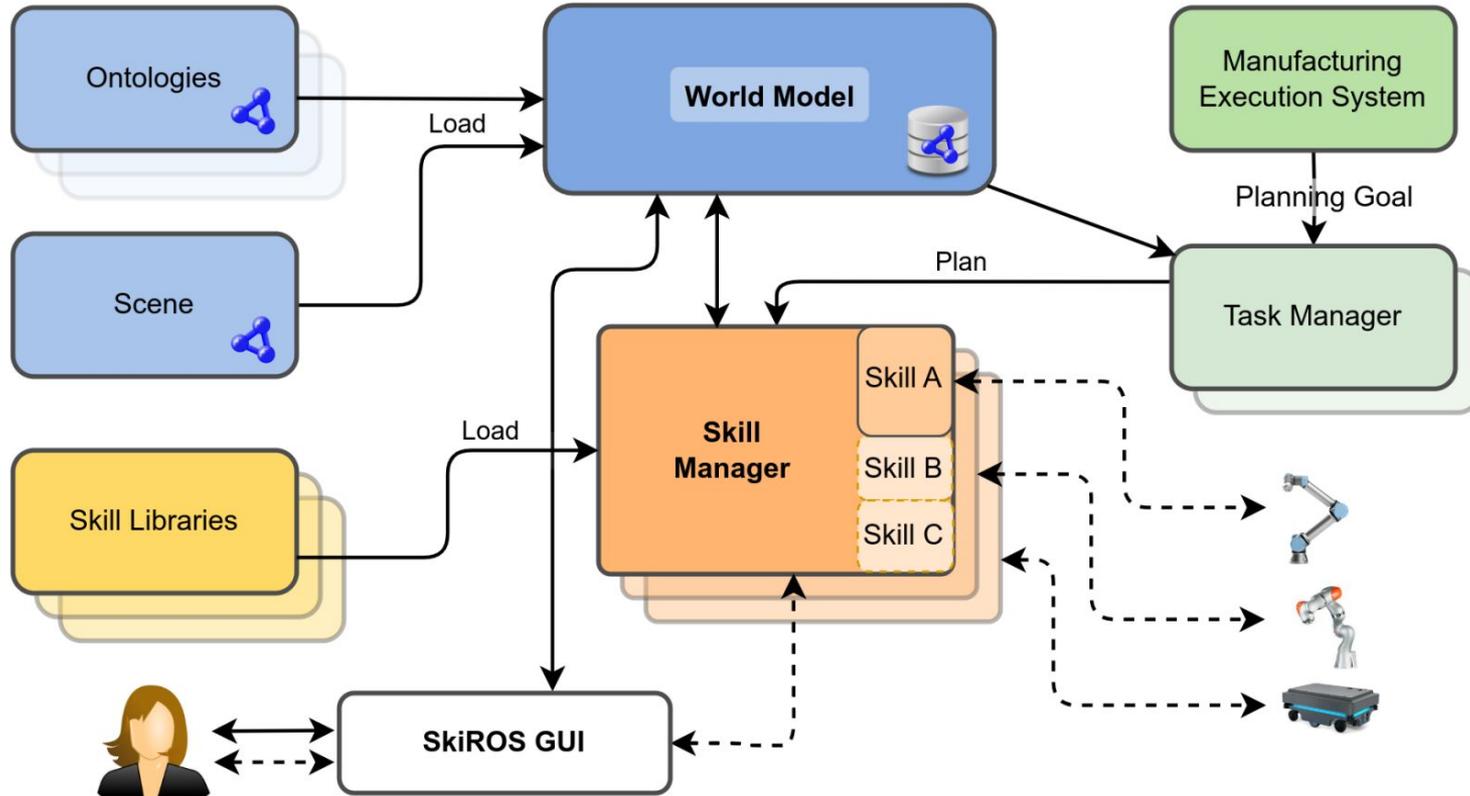
- Automatische Auswahl von Implementierungen

## Compound Skill Implementation:

```
class drive_fake(SkillBase):
class drive_platform(SkillBase):
    def createDescription(self):
        self.setDescription(Drive(), self.class.name)

    def expand(self, skill):
        skill.setProcessor(SerialStar())
        skill(
            self.skill("MovePlatform", "", specify={"Velocity": self.params["Velocity"].values}),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': "Robot", 'Dst': "StartLocation"},
                specify={'Relation': 'skiros:at', 'RelationState': False}),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': "Robot", 'Dst': "TargetLocation"},
                specify={'Relation': 'skiros:at', 'RelationState': True})
        )
)
```

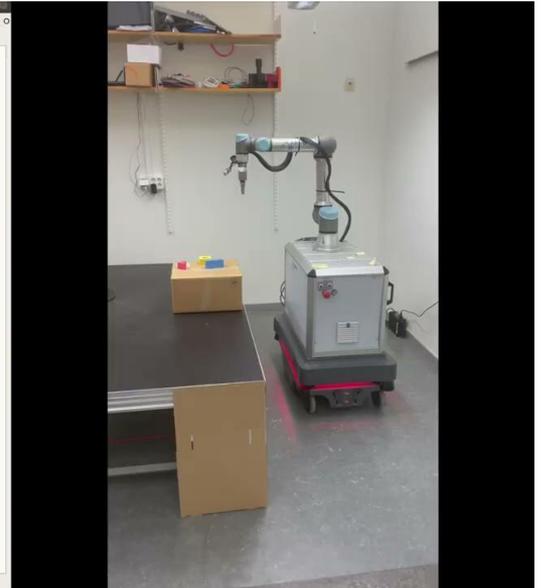
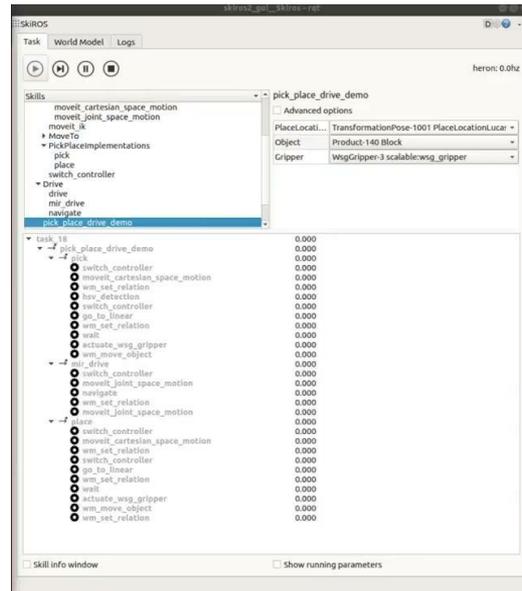
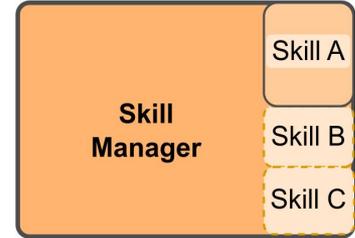
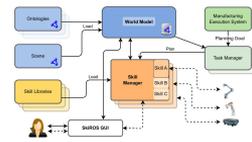
# SkiROS2 Architecture





# Skill Manager

- Loads skills from skill libraries
- Populates the world model with skill information
- Executes skills
  - Creates a task
  - Skills share a blackboard
  - Grounds skills
  - Automatically selects skills



# SkiROS2 - Eigene Fähigkeiten

 RVMII / **skiros2\_template\_lib** 🔍 Type ↵ to search

[Code](#) [Issues](#) [Pull requests](#) [Actions](#) [Projects](#) [Wiki](#) [Security](#) [Insights](#)

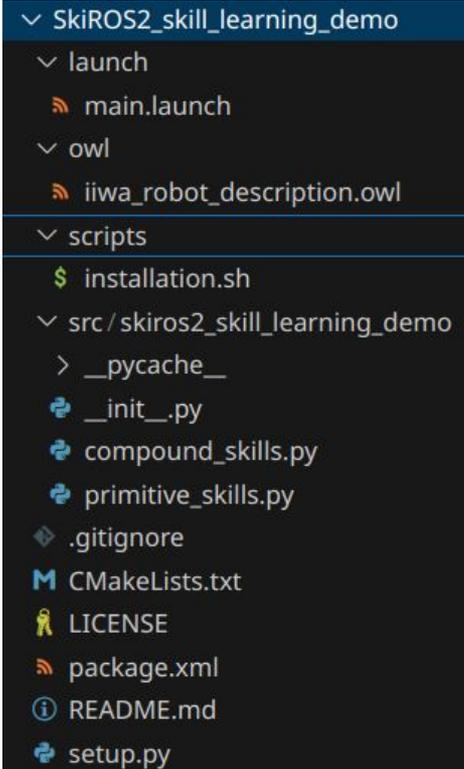
 **skiros2\_template\_lib** Public Edit Pins Unwatch 5

🔗 master 🌿 1 branch 🏷️ 0 tags Go to file Add file Code

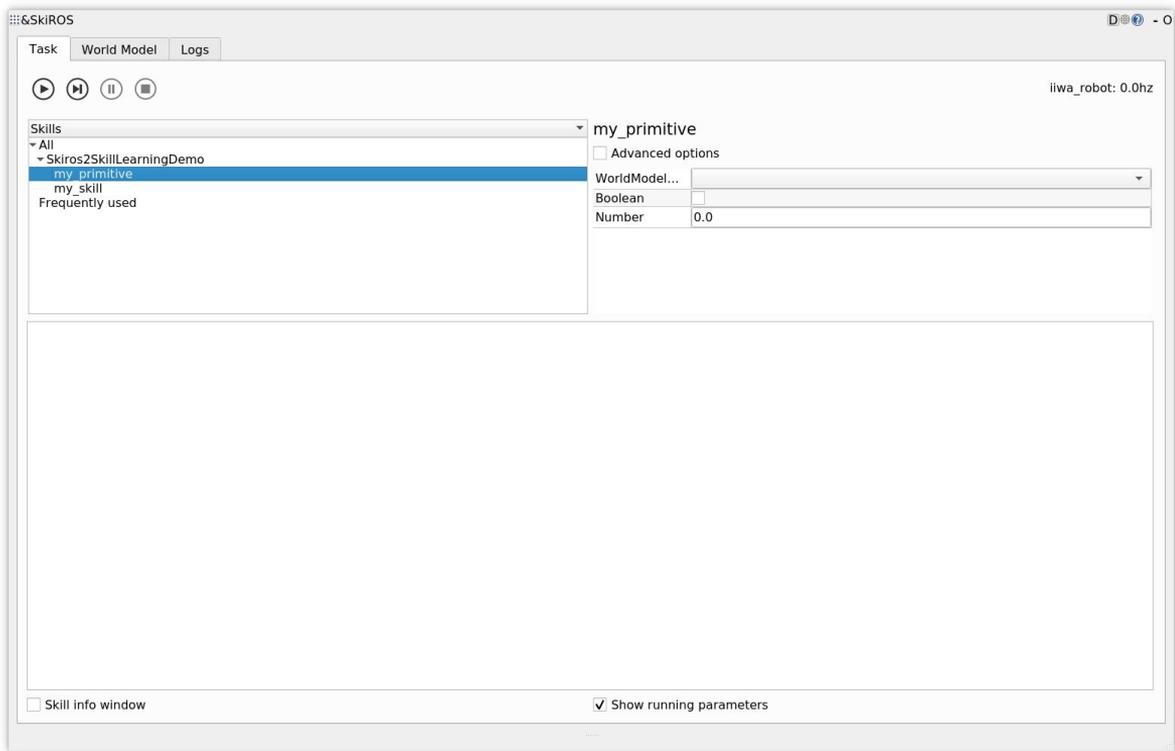
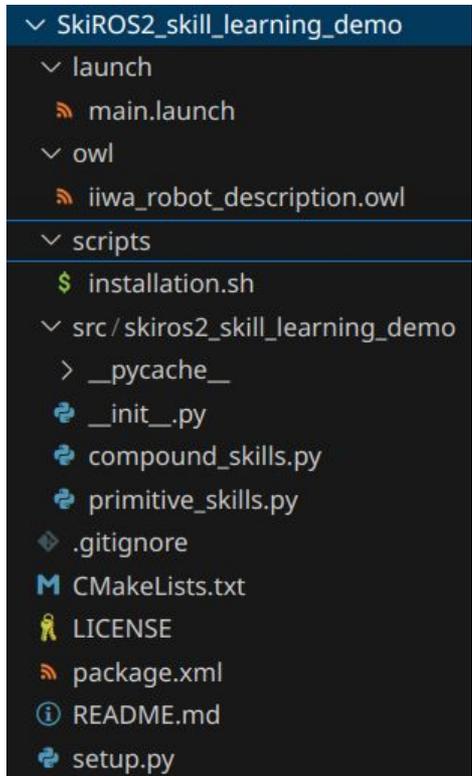
 **matthias-mayr** Merge pull request #5 from matthias-mayr/pr\_preempt\_fix ... 2230ced on May 15 🕒 19 commits

📁 launch	Removed obsolete launch parameter	3 years ago
📁 owl	First commit	6 years ago
📁 src/skiros2_template_lib	Chore: Set example processor to "Serial"	7 months ago
📄 .gitignore	First commit	6 years ago
📄 CMakeLists.txt	Config: Bump up CMake version	7 months ago
📄 README.md	Update: Changes launch command as well	7 months ago
📄 package.xml	fixed CMakeList	5 years ago
📄 setup.py	First commit	6 years ago

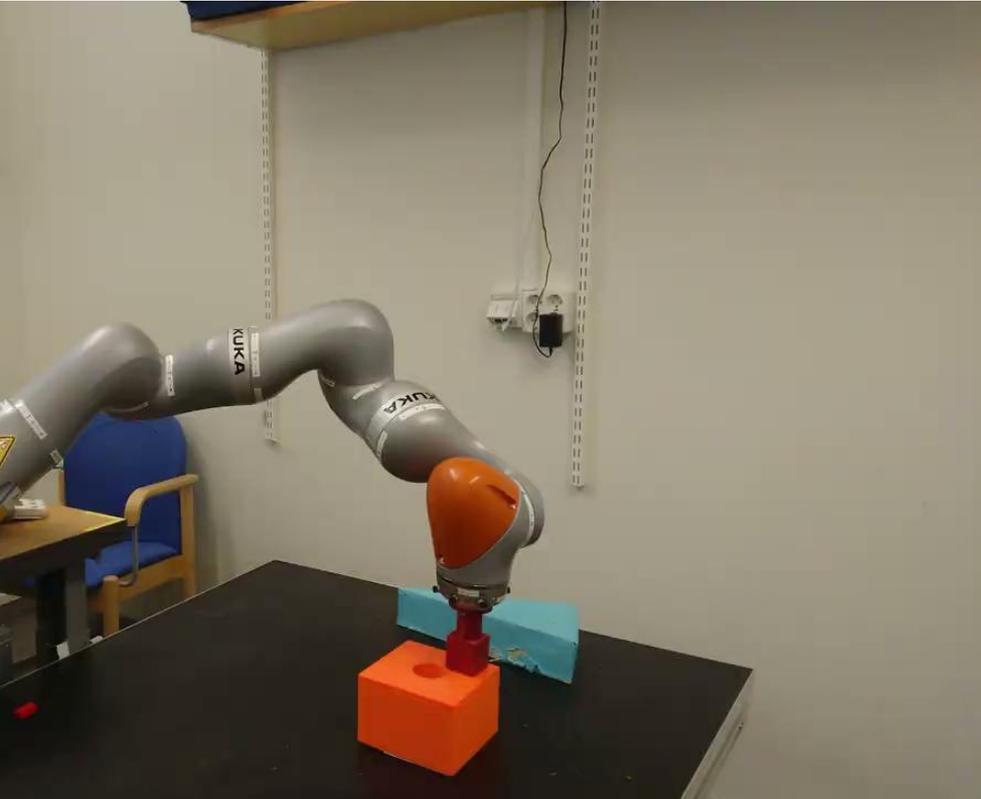
# Skills



```
9
10 class MyPrimitive(SkillDescription):
11     def createDescription(self):
12         #=====Params=====
13         self.addParam("WorldModelObject", Element("skiros:TransformationPose"), ParamTypes.Required)
14         self.addParam("WorldModelOptional", Element("skiros:TransformationPose"), ParamTypes.Optional)
15         self.addParam("DictionaryOptional", dict, ParamTypes.Optional)
16         self.addParam("Boolean", False, ParamTypes.Required)
17         self.addParam("Number", 0.0, ParamTypes.Required)
18
19
20 ##### You, 1 hour ago • Net
21 # Implementations
22 #####
23
24 class my_primitive(PrimitiveBase):
25     """
26     This primitive has 3 states
27     """
28     def createDescription(self):
29         """Set the primitive type"""
30         self.setDescription(MyPrimitive(), self.__class__.__name__)
31
32     def onInit(self):
33         """Called once when loading the primitive. If return False, the primitive is not loaded"""
34         return True
35
36     def onPreempt(self):
37         """ Called when skill is requested to stop. """
38         return self.fail("Stopped", -1)
39
40     def onStart(self):
41         """Called just before 1st execute"""
42         return True
43
44     def execute(self):
45         """ Main execution function. Should return with either: self.fail, self.step or self.success """
46         if self._progress_code<10:
47             return self.step("Step")
48         else:
49             return self.success("Done")
50
51     def onEnd(self):
52         """Called just after last execute OR preemption"""
53         return True
54
```



# Primitive Fähigkeiten



```
19
20 You, 20 seconds ago | 1 author (You)
21 class ArmMovement(SkillDescription):
22     """
23     @brief Any arm movement that brings the end-effector to the target pos
24     """
25
26     def createDescription(self):
27         # =====Params=====
28         self.addParam("Arm", Element("rparts:ArmDevice"), ParamTypes.Required)
29         self.addParam("Target", Element("sumo:Object"), ParamTypes.Required)
30         self.addParam("Start", Element("sumo:Object"), ParamTypes.Inferred)
31         # =====PreConditions=====
32         self.addPreCondition(self.getRelationCond("ArmAtStart", "skiros:at", "A
33
34 You, 20 seconds ago | 1 author (You)
35 class ChangeStiffness(SkillDescription):
36     """
37     @brief Change end effector stiffness.
38     """
39
40     def createDescription(self):
41         self.addParam("Arm", Element("rparts:ArmDevice"), ParamTypes.Required)
42         self.addParam("TransX", -1.0, ParamTypes.Optional)
43         self.addParam("TransY", -1.0, ParamTypes.Optional)
44         self.addParam("TransZ", -1.0, ParamTypes.Optional)
45         self.addParam("RotX", -1.0, ParamTypes.Optional)
46         self.addParam("RotY", -1.0, ParamTypes.Optional)
47         self.addParam("RotZ", -1.0, ParamTypes.Optional)
```

# Fähigkeitenparameter und das Weltmodell

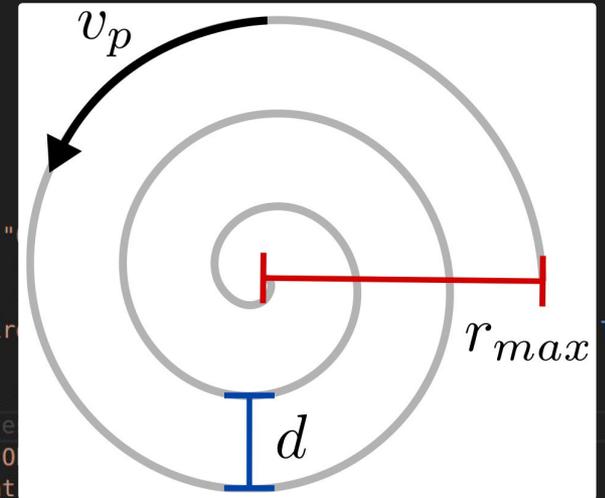
The screenshot displays the &SkiROS software interface, which is used for configuring and running skills on a robot. The interface is organized into several panels:

- Task Panel:** Located at the top, it contains playback controls (play, step, pause, stop) and a timer showing `iiwa_robot: 0.0hz`. It also has tabs for `Task`, `World Model`, and `Logs`.
- Skills List:** A dropdown menu labeled `Skills` is open, showing a list of skills under the `PrimitiveSkills` category. The `apply_force` skill is selected and highlighted in blue. Other visible skills include `change_stiffness`, `go_to_linear_action`, `overlay_motion`, and `apply_force` under the `Frequently used` category.
- Advanced Options:** A checkbox labeled `Advanced options` is present.
- Arm Selection:** A dropdown menu labeled `Arm` is set to `ArmDevice-2 iiwa Arm`.
- Task Configuration:** At the bottom, a task named `task_4` is shown with a gear icon and the skill `apply_force` listed next to it. The status `End` and `Assuming force change has wor...` is visible.
- Checkboxes:** At the bottom left, there is a checkbox for `Skill info window` (unchecked). At the bottom right, there is a checkbox for `Show running parameters` (checked).

# Zusammengesetzte Fertigkeiten (Compound Skills)

```
class PegInsertion(SkillDescription):
    def createDescription(self):
        #====Params=====
        self.addParam("ObservationPose", Element("skiros:ObservationPose"), ParamTypes.Inferred)
        self.addParam("Arm", Element("rparts:ArmDevice"), ParamTypes.Required)
        self.addParam("Container", Element("skiros:Container"), ParamTypes.Required)
        self.addParam("Object", Element("skiros:Product"), ParamTypes.Required)
        self.addParam("Force", 4.0, ParamTypes.Required)
        self.addParam("Radius", 0.03, ParamTypes.Optional)
        self.addParam("PathVelocity", 0.1, ParamTypes.Optional)
        self.addParam("PathDistance", 0.01, ParamTypes.Optional)

        ## ===== PreConditions =====
        self.addPreCondition(self.getRelationCond("Holding", "skiros:contain", "Arm", "
        self.addPreCondition(self.getRelationCond("NotObjectAtContainer", "skiros:at",
        self.addPreCondition(self.getRelationCond("ArmAtObservationPose", "skiros:at",
        self.addPreCondition(self.getRelationCond("ContainerHasAObservationPose", "skir
        ## ===== HoldConditions =====
        self.addHoldCondition(self.getRelationCond("Holding", "skiros:contain", "Arm",
        ## ===== PostConditions =====
        self.addPostCondition(self.getRelationCond("ObjectAtContainer", "skiros:at", "0
        self.addPostCondition(self.getRelationCond("NotArmInOversationPose", "skiros:at
```

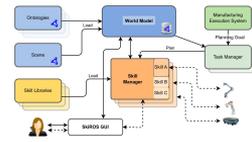


# Zapfeneinschub

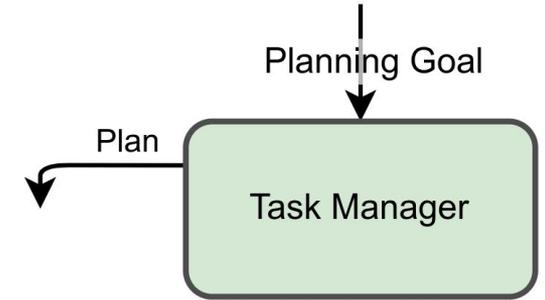
```
class peg_insertion(SkillBase):
    def createDescription(self):
        self.setDescription(PegInsertion(), self.__class__.__name__)

    def expand(self, skill):
        skill.setProcessor(SerialStar())
        skill(
            self.skill("ChangeStiffness", "", specify={"TransZ": 0.0}),
            self.skill(ParallelFs()(
                self.skill("ArmMovementAction", "go_to_linear_action", remap= {'Target': 'Container'}),
                self.skill("ApplyForce", "", specify={"TransZ": self.params["Force"].value}),
                self.skill("OverlayMotion", "", specify={"Motion": "archimedes", "Radius": self.params["Radius"]}),
            )),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': 'Arm', 'Dst': 'Observation'}),
            self.skill("WmSetRelation", "wm_set_relation", remap={'Src': 'Object', 'Dst': 'Container'}),
            self.skill("ChangeStiffness", ""),
        )
```

# Aufgabenkoordinatorer für Aufgabenplanung



- Bekommt ein Planungsziel  
(**skiros:at** **skiros:Product-3** **skiros:Container-4**)
- Generiert automatisch PDDL Planungsdomäne
  - Basiert auf Wissen im Weltmodell
- Nutzt einen PDDL Planer (tfd)
- Ausführung im Fähigkeitenmanager



# Planen mit Skills

The screenshot displays the &SkiROS software interface. At the top, there are tabs for 'Task', 'World Model', and 'Logs'. Below the tabs are control buttons for play, step, pause, and stop, along with a status indicator 'iiwa\_robot: 0.0hz'. A 'Skills' list on the left includes 'peg\_insertion', 'reset\_peg\_insertion', 'PrimitiveSkills' (with sub-items 'apply\_force', 'change\_stiffness', 'go\_to\_linear', and the selected 'go\_to\_linear\_action'), 'overlay\_motion', and 'Skiros2StdSkills' (with sub-items 'task\_plan', 'wm\_set\_relation', and 'Frequently used'). The right panel shows the configuration for 'go\_to\_linear\_action', including an unchecked 'Advanced options' checkbox, a dropdown for 'Arm' set to 'ArmDevice-2 iiwa Arm', and a dropdown for 'Target' set to 'Product-3 Peg'. At the bottom, there are checkboxes for 'Skill info window' (unchecked) and 'Show running parameters' (checked).

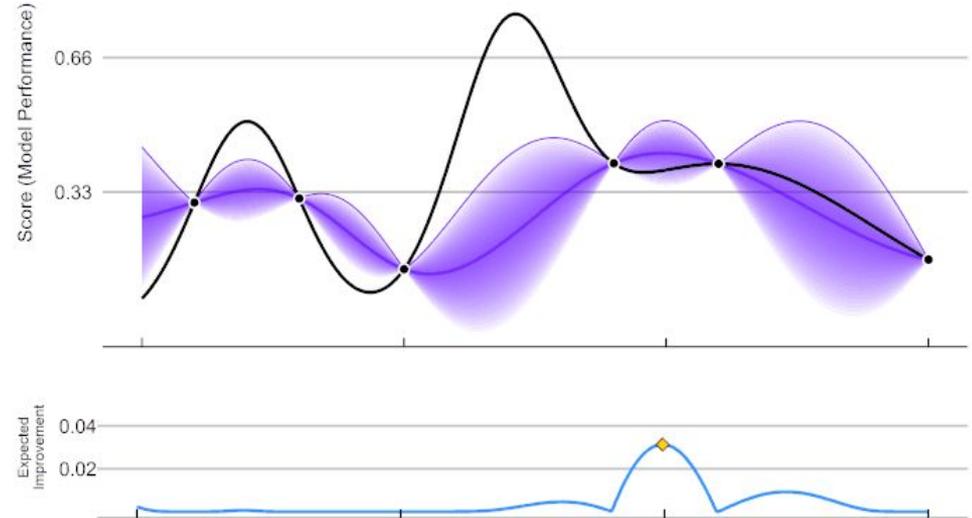
# Lernen

# Bayesian Optimierung

- Veränderbare Fähigkeitenparameter

→ “besten” Werte

- Black box Optimierungsproblem



# Bayesian Optimierung

The screenshot shows the GitHub repository page for 'hypermapper' by 'luinardi'. The repository is public and has 14 issues, 2 pull requests, 24 forks, and 140 stars. The repository description is 'Black-box Optimizer based on Bayesian Optimization'. The file list shows a commit on Mar 21 with 177 commits, including folders for workflows, outputs, scenarios, and scripts, and files for .gitignore, .travis.yml, and LICENSE.

luinardi / hypermapper

Type to search

<> Code Issues 14 Pull requests 2 Actions Projects Wiki Security Insights

hypermapper Public

Unwatch 10 Fork 24 Starred 140

master 15 branches 15 tags

Go to file Add file <> Code

**github-actions** and **github-actions** fixup! Format Python c... 3dfa8a7 on Mar 21 177 commits

.github/workflows	- added pip support	2 years ago
example_outputs	Added Batch BO for default mode.	3 years ago
example_scenarios	Updated jupyter notebook demo.	2 years ago
hypermapper	fixup! Format Python code with psf/black push	8 months ago
scripts	fixup! Format Python code with psf/black push	8 months ago
tests	remove test output	2 years ago
.gitignore	Cleaned up code and added Makefile	3 years ago
.travis.yml	Added GPy to travis.	3 years ago
LICENSE	HyperMapper Release.	4 years ago

**About**

Black-box Optimizer based on Bayesian Optimization

Readme MIT license Activity 140 stars 10 watching 24 forks Report repository

**Releases** 15

v2.2.12 pip support and paral... Latest on Aug 4, 2022

```
def run_episode(self, params = None, max_time = 15.0):
    # Make sure the reset skill has finished
    if self.reset_id is not None and self.reset_id in self.bt_responses:
        while self.bt_responses[self.reset_id] != SkillProgress.SUCCESS:
            rospy.sleep(0.1)
            rospy.loginfo_throttle(1, "Waiting for reset to finish.")

    print("Starting episode with parameters: ", params)
    start_time = rospy.Time.now()

    skill = self.agent.get_skill(self.skill_name)
    self.set_peg_insertion_parameters(skill, params)

    episode = PegInsertionEpisode(params)
    self.task_id = self.agent.execute(skill_list=[skill])

    # Wait for the task to finish with max_time timeout
    while (rospy.Time.now() - start_time).to_sec() < max_time:
        episode.calculate_rewards()
        rospy.sleep(0.1)
```

```

--- a/src/learning.py
+++ b/src/learning.py
@@ -15,6 +15,7 @@ import skiros2_common.ros.utils as utils
    from cartesian_impedance_controller.msg import ControllerSta

    from geometry_msgs.msg import Pose
+from hypermapper import optimizer

    # Translates SkiROS skill states to strings
    SkillStateDict = {0: 'unkown', SkillProgress.SUCCESS: 'succe
ing', SkillProgress.IDLE: 'idle'}
@@ -111,6 +112,8 @@ class SkirosRLClient(object):
        value = float(value)
        skill.ph[key].value = value

+    def learn(self):
+        optimizer.optimize("src/SkiROS2_skill_learning_demo/

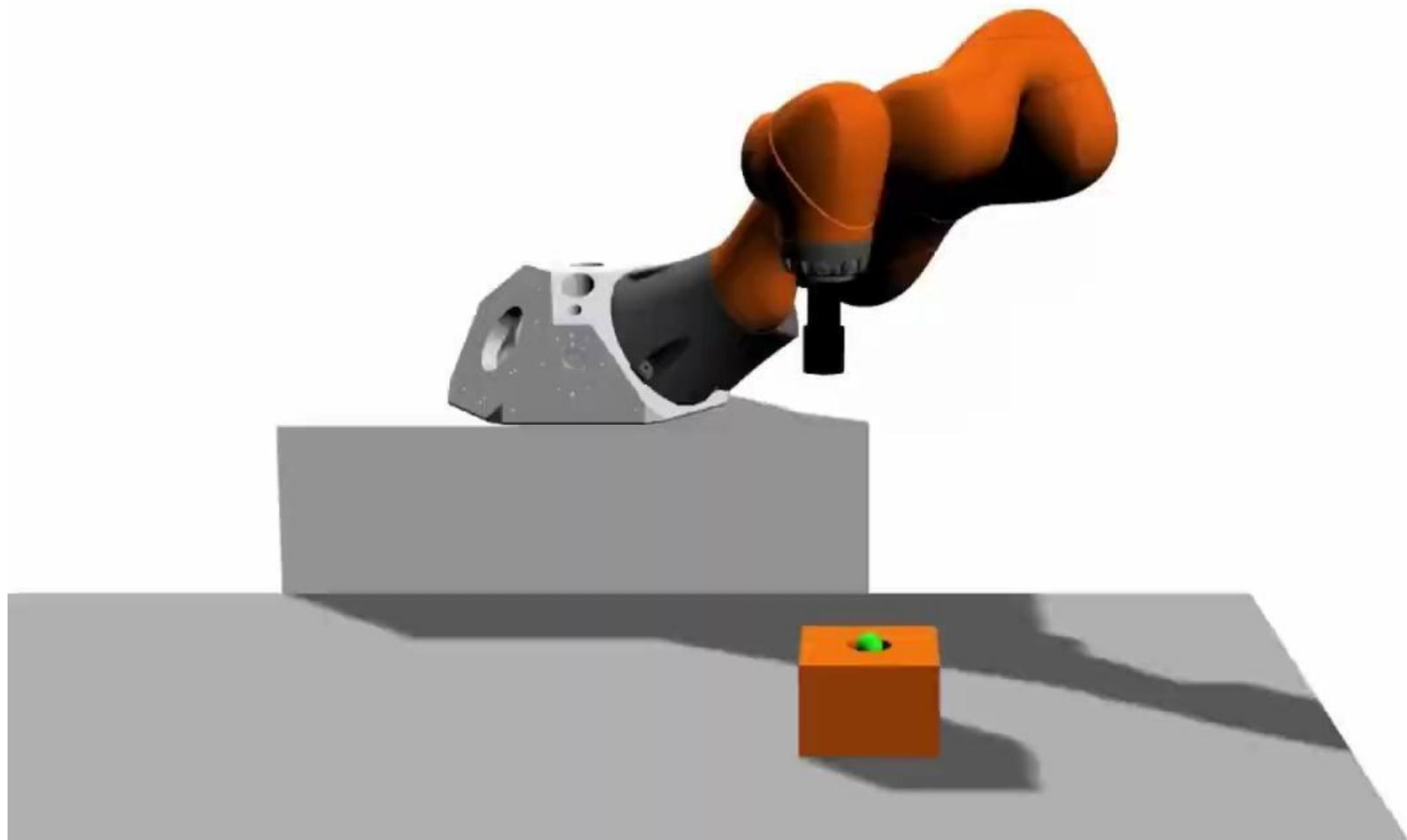
    def run_episode(self, params = None, max_time = 15.0):
        # Make sure the reset skill has finished
@@ -192,7 +195,7 @@ def main():
    signal.signal(signal.SIGINT, signal_handler)
    rospy.init_node("rl_client")
    rl_client = SkirosRLClient()
-    rl_client.run_episode()
+    rl_client.learn()

```

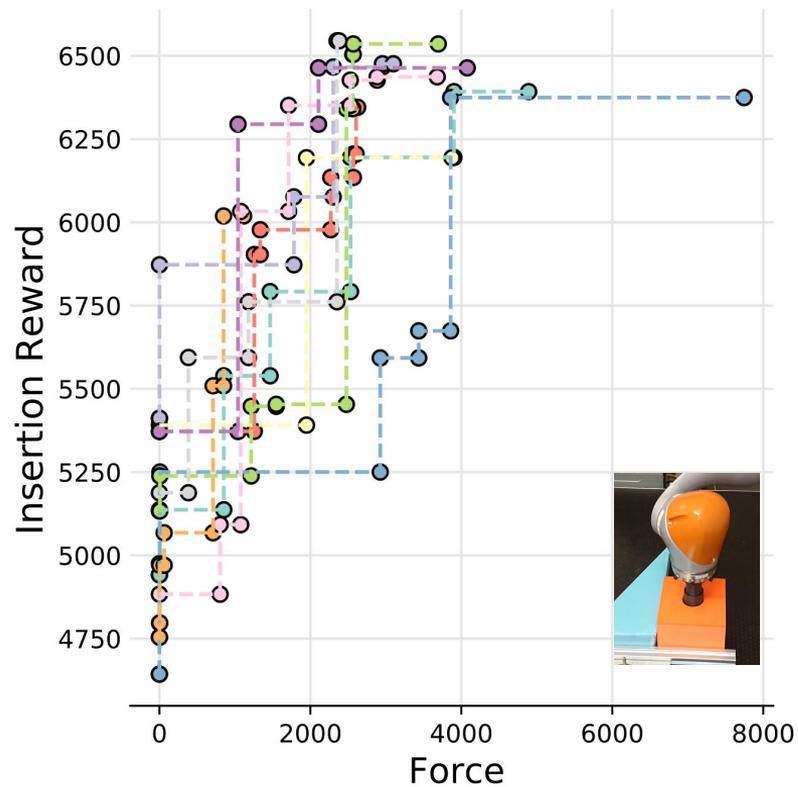
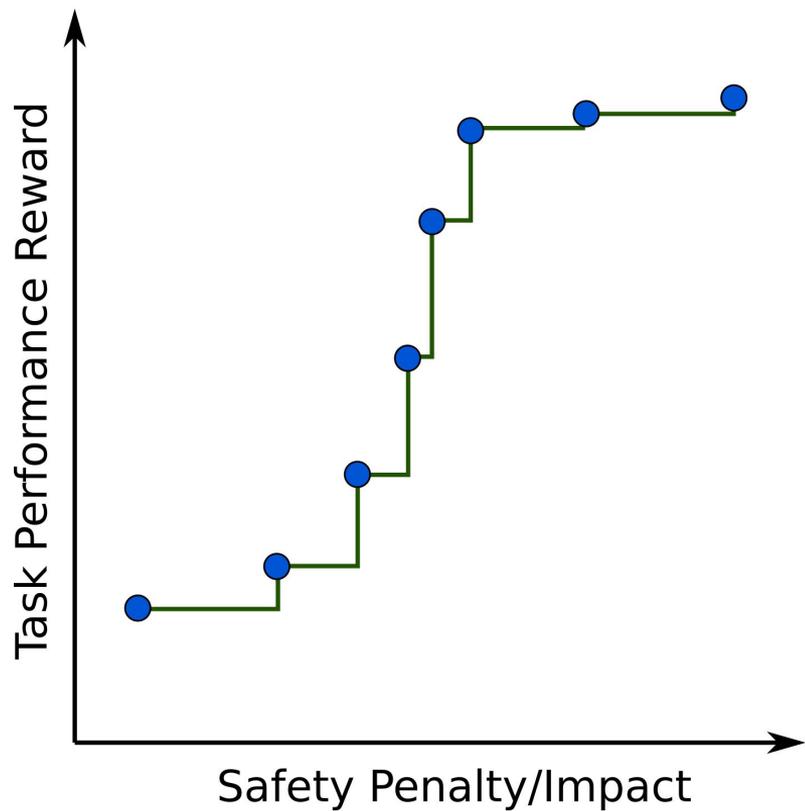
```

src > SkiROS2_skill_learning_demo > config > {} peg_learning.json > {} input_paramete
1  {
2      "application_name": "peg_learning",
3      "optimization_objectives": ["force", "performance"],
4      "optimization_iterations": 60,
5      "input_parameters" : {
6          "Force": {
7              "parameter_type" : "real",
8              "values" : [0.05, 20],
9              "parameter_default" : 0.05
10         },
11         "PathDistance": {
12             "parameter_type" : "real",
13             "values" : [0.0, 0.02],
14             "parameter_default" : 0.0
15         },
16         "Radius": {
17             "parameter_type" : "real",
18             "values" : [0.0, 0.05],
19             "parameter_default" : 0.0
20         },
21         "PathVelocity": {
22             "parameter_type" : "real",
23             "values" : [0.0, 0.3],
24             "parameter_default" : 0.0
25         }
26     }
27 }

```



# Lernergebnis



# Überblick



**BO mit Hypermapper**

<https://github.com/luinardi/hypermapper/>

**SkiROS2**

<https://github.com/RVMI/skiros2>

**Cartesian Trajectory Generator**

[https://github.com/matthias-mayr/cartesian\\_trajectory\\_generator](https://github.com/matthias-mayr/cartesian_trajectory_generator)

**Cartesian impedance controller**

<https://github.com/matthias-mayr/Cartesian-Impedance-Controller>

**iiwa\_ros**

[https://github.com/epfl-lasa/iiwa\\_ros](https://github.com/epfl-lasa/iiwa_ros)



[https://github.com/matthias-mayr/SkiROS2\\_skill\\_learning\\_demo](https://github.com/matthias-mayr/SkiROS2_skill_learning_demo)

# Lizenz des ROS Pakets

The screenshot shows the GitHub repository page for 'ros\_license\_toolkit' by 'boschresearch'. The repository is public and has 5 watchers, 4 forks, and 29 stars. The main branch is 'main' with 2 branches and 10 tags. The repository description is 'Checks ROS packages for correct license declaration'. The repository includes tags for 'python', 'open-source', 'ros', and 'license'. The repository has 71 commits, 29 stars, 5 watchers, and 4 forks. The repository is reported as a repository.

**Repository Information:**

- Repository: `ros_license_toolkit` (Public)
- Watchers: 5
- Forks: 4
- Stars: 29

**Repository Details:**

- Branches: 2 (main)
- Tags: 10
- Commits: 71

**Repository Description:** Checks ROS packages for correct license declaration

**Repository Tags:** python, open-source, ros, license

**Repository Statistics:**

- Readme
- Apache-2.0 license
- Activity
- 29 stars
- 5 watching
- 4 forks

**Repository Files:**

File Name	Description	Last Commit
<code>.github</code>	indentation is key	last month
<code>field-trials</code>	renaming	8 months ago
<code>src/ros_license_toolkit</code>	bump version to 1.2.2	3 weeks ago
<code>test</code>	Handling single special license (#40)	3 weeks ago
<code>.gitignore</code>	installing first (#31)	4 months ago
<code>.pre-commit-config.yaml</code>	a pre-commit config	last month
<code>.pylintrc</code>	a pre-commit config	last month

[https://github.com/boschresearch/ros\\_license\\_toolkit](https://github.com/boschresearch/ros_license_toolkit)

# Lizenz des ROS Pakets

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File	Change	Time
.github	indentation is key	last month
field-trials	renaming	8 months ago
src/ros_license_toolkit	bump version to 1.2.2	3 weeks ago
test	Handling single special license (#40)	3 weeks ago
.gitignore	installing first (#31)	4 months ago
.pre-commit-config.yaml	a pre-commit config	last month
.pylintrc	a pre-commit config	last month

```
matthias@odin:~$ ros_license_toolkit ~/Workspaces/roscon_de_ws2/src/SkiROS2_sk
```

[https://github.com/boschresearch/ros\\_license\\_toolkit](https://github.com/boschresearch/ros_license_toolkit)

# Überblick



**BO mit Hypermapper**

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