6.3.4

Tutorial: Complete Pick behavior

Carlos Hernandez

FlexBE App

Behavior Dashboard | Statemachine Editor | Runtime Control | Configuration

📄 New Behavior   ✏️ Edit Code   🔍 Check Behavior
📂 Load Behavior
💾 Save Behavior

Version: 2.2.1

Overview

Package	flexbe_behaviors ▾
Name	Pick Part from Conveyor From Videos
Description	Simple pick behavior as in the video lectures
Tags	Factory, Pick
Author	Mario
Date	Mon Feb 17 2020

Private Configuration

Variables enable easy configuration of constant internal values which are used multiple times. They are read-only and cannot be used in private functions.

```
pick_group   = 'robot1'
home1        = [1.24, -1.57, 1.57, -1.57, -1.57, (
gripper1     = "vacuum_gripper1_suction_cup"
names1       = ['robot1_shoulder_pan_joint', 'rob(
```
_____ = _____ [Add]

State Machine Userdata

The userdata of a state machine can be used to pass any data from one state to another. Userdata values may be changed by states during runtime. Make sure you define default values for all userdata keys.

```
part_pose           = []
pick_configuration  = []
home1               = home1
```
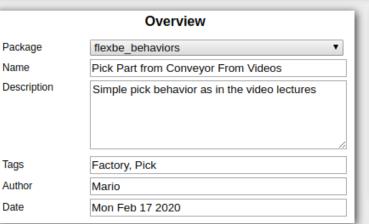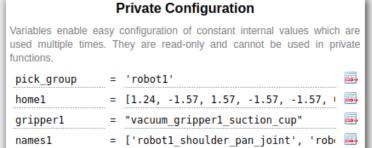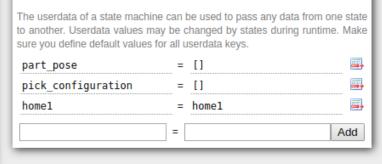_____ = _____ [Add]

Behavior Parameters

These parameters can be set by the operator when this behavior is started via Runtime Control. Each parameter is identified by a unique variable name and displayed by using a label and providing usage advice. Depending on their type, some parameters may require additional specification. Parameters can be accessed as self.*parameter_name*.

[Enum ▾] [_____] [Add]

Private Functions

Defines which functions can be referenced by states that accept functions as parameters. Make sure that the interface of each function matches the requirements of the respective state. These functions can be implemented later in the generated code. Functions can be accessed as self.*function_name*.

State Machine Interface

Defines how the state machine of this behavior can be accessed when embedded in another behavior.

Outcomes	finished
	failed
	[_____] [Add]
Input Keys	[_____] [Add]
Output Keys	[_____] [Add]

Compute pick configuration

Type: *ComputeGraspState*
Package: *hrwros_factory_states*

Computes the joint configuration needed to grasp the part given its pose.

[View Source]

Parameters

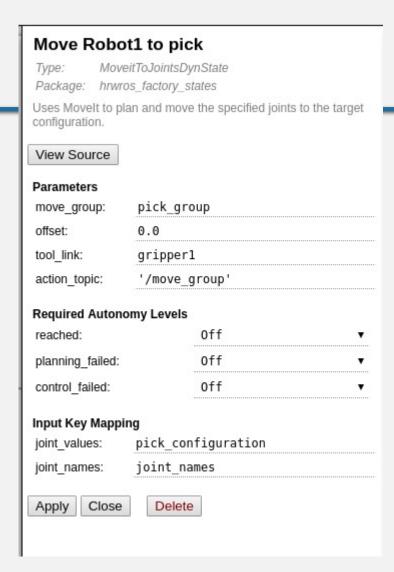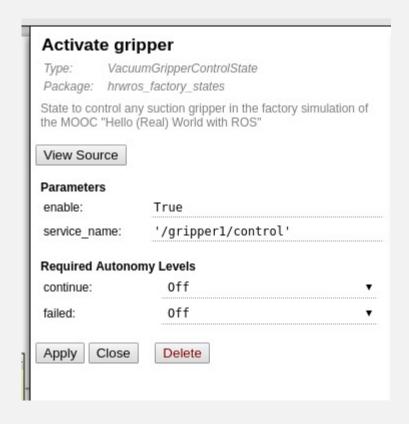|	
group:	pick_group
offset:	0.0
joint_names:	names1
tool_link:	gripper1
rotation:	3.1415

Required Autonomy Levels

continue:	Off ▼
failed:	Off ▼

Input Key Mapping

pose:	part_pose

Output Key Mapping

joint_values:	pick_configuration
joint_names:	joint_names

[Apply] [Close] [Delete]

DetectPart

Type: *DetectPartCameraState*
Package: *hrwros_factory_states*

State to detect the pose of the part with any of the cameras in the factory simulation of the MOOC "Hello (Real) World with ROS"

[View Source]

Parameters

ref_frame:	'robot1_base'
camera_topic:	'/hrwros/logical_camera_1'
camera_frame:	'logical_camera_1_frame'

Required Autonomy Levels

continue:	Off ▼
failed:	Off ▼

Output Key Mapping

pose:	part_pose

[Apply] [Close] [Delete]

Move Robot1 to pick

Type: *MoveitToJointsDynState*
Package: *hrwros_factory_states*

Uses MoveIt to plan and move the specified joints to the target configuration.

[View Source]

Parameters

move_group:	pick_group
offset:	0.0
tool_link:	gripper1
action_topic:	'/move_group'

Required Autonomy Levels

reached:	Off ▼
planning_failed:	Off ▼
control_failed:	Off ▼

Input Key Mapping

joint_values:	pick_configuration
joint_names:	joint_names

[Apply] [Close] [Delete]

Activate gripper

Type: *VacuumGripperControlState*
Package: *hrwros_factory_states*

State to control any suction gripper in the factory simulation of the MOOC "Hello (Real) World with ROS"

View Source

Parameters

enable: True

service_name: '/gripper1/control'

Required Autonomy Levels

continue: Off   ▼

failed: Off   ▼

Apply   Close   Delete

Move Robot to home configuration

Type: *MoveitToJointsDynState*
Package: *hrwros_factory_states*

Uses MoveIt to plan and move the specified joints to the target configuration.

View Source

Parameters

move_group: pick_group

offset: 0.0

tool_link: gripper1

action_topic: '/move_group'

Required Autonomy Levels

reached: Off   ▼

planning_failed: Off   ▼

control_failed: Off   ▼

Input Key Mapping

joint_values: home1

joint_names: joint_names

Apply   Close   Delete