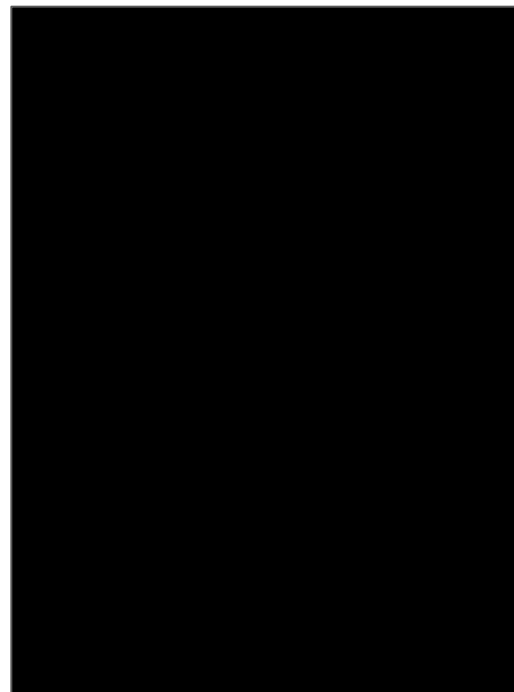# Learning KIT

Pick and Place

Wrist Camera
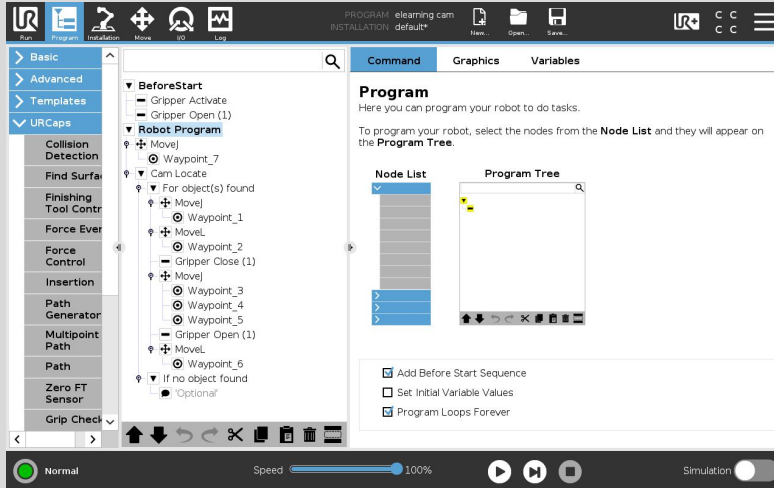
PROGRAM TEMPLATE USING THE WRIST CAMERA

Description

Use this document to help you program your application using the template for the **Wrist Camera.**
You can learn more about the steps on how to program your first Wrist Camera application using the available video for this course. Visit *support.robotiq.com* for more details.


What you will need

- Robotiq Adaptive Gripper
- Robotiq Wrist Camera
- Latest URcap - Camera URCap
- Universal Robot UR3, UR5, or UR10
- Part for pick and place
- Program Template: PROGRAMNAME.lesson.urp

Gripper

Gripper 1

Position	Speed	Force
0%	100%	100%

Open

Go to position   Edit action

☑ Complete gripper motion before next action

1 Gripper Activate
Before starting the main program, *activate* the gripper.

2 Open Gripper and Move to the Part
Open the gripper and move it over the part.

Select Calibration

calibration

Point_1

1/1
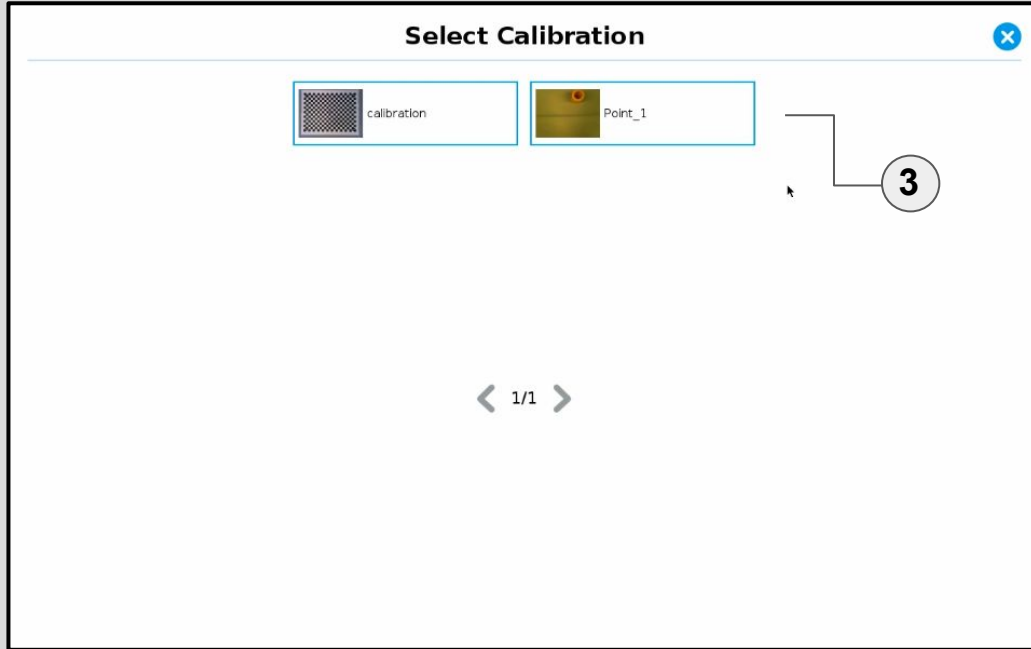
3

Select your calibration

Select the calibration of the camera that has previously been done.

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Select Teach Method

Automatic method
Let the camera scan your object
Best for complex and irregular shapes

Parametric method
Input the dimensions of a 2D basic shape
Best for blanks or simple shapes

4

4 **Automatic method**
Select the **Automatic Mode** to teach an object.

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Select Model

Confirm automatic model selection or select it manually
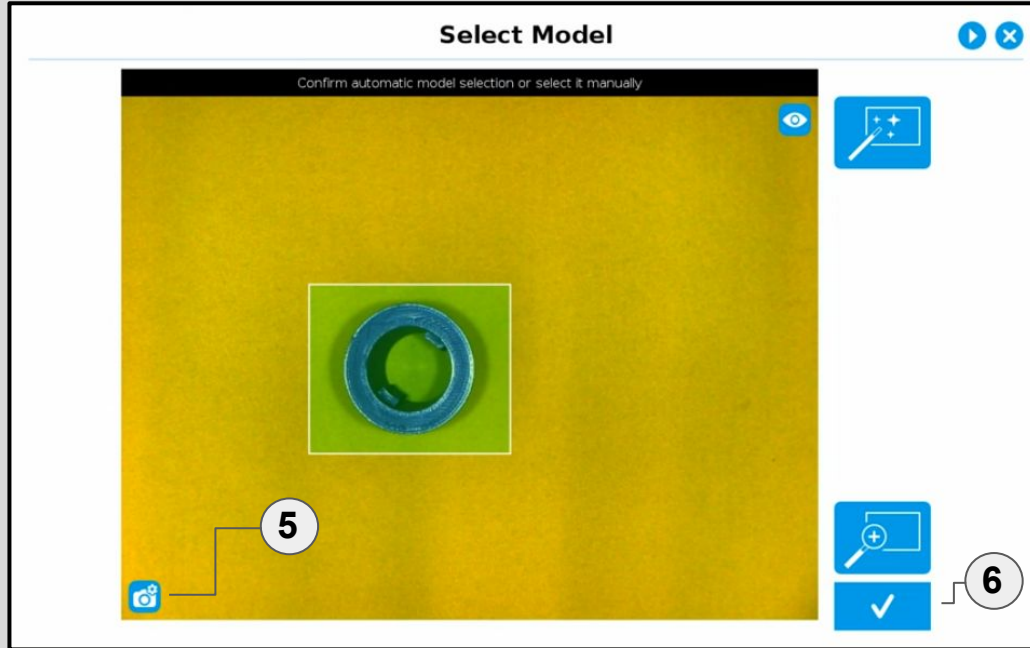
5 **Adjust the camera**
Tap on the camera icon to access the advanced parameters of the camera.

6 **Confirm the part**
Confirm that the camera found the part in the image by making sure that the box covers the whole part.

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Edit Model

Highlight features to keep, erase features to ignore
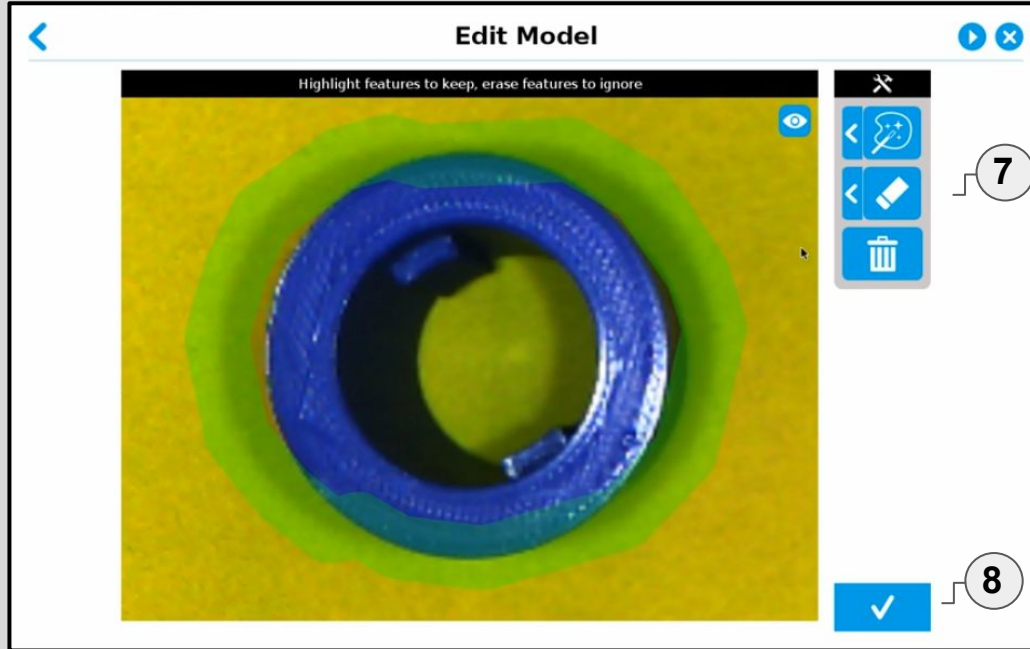
7 **Edit the model**
Use the icons on the top right to edit the model and select only the required edges

8 **Confirm the part**
Confirm that the camera found the part in the image by making sure that the box covers the whole part.

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Refine Model

Turn object 90° between each picture
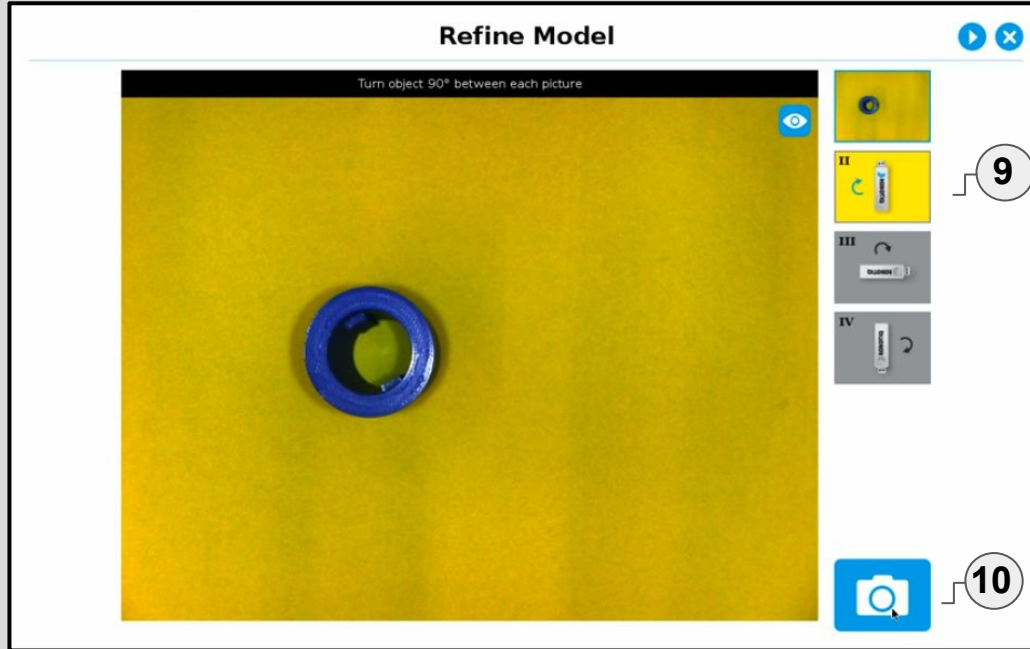
9 **Refine the Model**
Take pictures at different orientations.

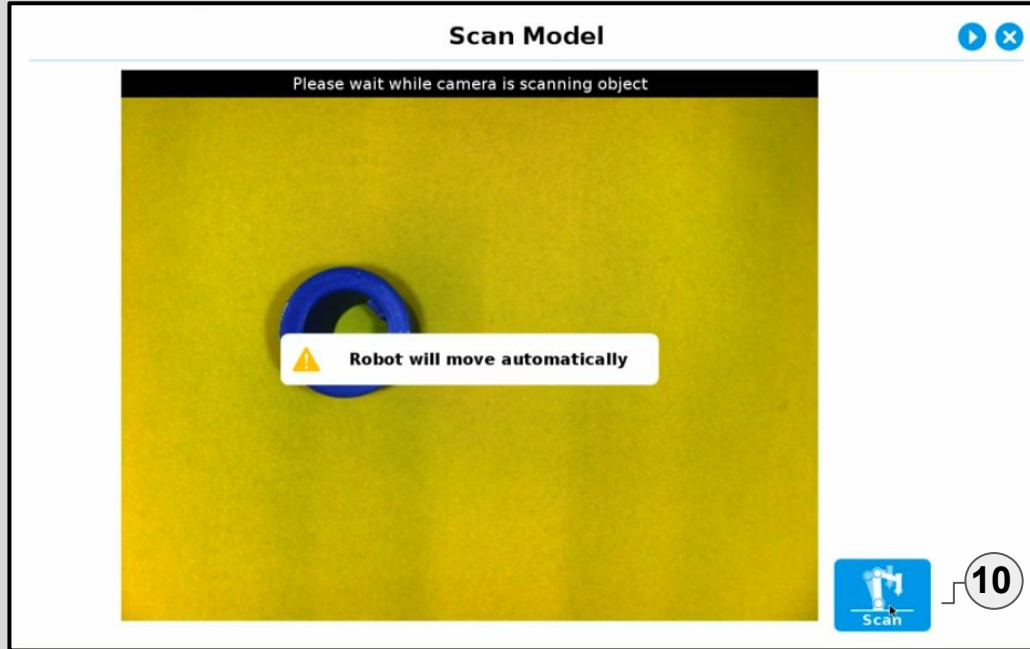**10** **Take picture**
After changing the orientation, take a picture by tapping the button

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Scan Model

Please wait while camera is scanning object

⚠ **Robot will move automatically**

Scan

10

10 Scan the Model
Scan the model by tapping the button. The robot will then take pictures at various angles to better understand the model.

Configure Model

Adjust settings & test object location

Edges detec. threshold
60

Color detec. threshold
60

11 **Configure the Model**
Use the various option to configure the model such as number of parts, color detection, and threshold for detection.

12 **Save the model**
Save the final model.

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Cam Locate

Snapshot Position: Point_1

Test/Modify — Set position — Snapshot Position — Settings

Program example

13 **Cam Locate**
The **for** loop inside the cam locate will iterate on the objects found.

14 **Move to approach**
Move over the part.

Program Tree

- ▼ BeforeStart
  - — Gripper Activate
  - — Gripper Open (1)
- ▼ Robot Program
  - ⊕ MoveJ
    - ◉ Waypoint_7
  - ▼ Cam Locate
    - ▼ For object(s) found
      - ⊕ MoveJ
        - ◉ Waypoint_1
      - ⊕ MoveL
        - ◉ Waypoint_2
      - — Gripper Close (1)
      - ⊕ MoveJ
        - ◉ Waypoint_3
        - ◉ Waypoint_4
        - ◉ Waypoint_5
      - — Gripper Open (1)
      - ⊕ MoveL
        - ◉ Waypoint_6
    - ▼ If no object found
      - 💬 'Optional'

Command | Graphics | Variables

Gripper

Gripper 1

Position 100%   **Speed** 100%   **Force** 100%

Close

▶ Go to position   ⚙ Edit action

☑ Complete gripper motion before next action

15

Move to pick
Move into the pick position where the gripper can grab the part.

16

Grab the part
Close the gripper in order to grab the part.

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Gripper

Gripper 1

Position	Speed	Force
0%	100%	100%

Open

Go to position **Edit action**

☑ Complete gripper motion before next action

Tree structure:
- ▼ BeforeStart
  - Gripper Activate
  - Gripper Open (1)
- ▼ Robot Program
  - MoveJ
    - Waypoint_7
  - ▼ Cam Locate
    - ▼ For object(s) found
      - MoveJ
        - Waypoint_1
      - MoveL
        - Waypoint_2
      - Gripper Close (1)
      - MoveJ
        - Waypoint_3
        - Waypoint_4
        - Waypoint_5
      - Gripper Open (1)
      - MoveL
        - Waypoint_6
    - ▼ If no object found
      - 'Optional'

17 Move to drop point
Move the robot to the point to drop the part.

18 Open the Gripper
Open the gripper to drop.

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Waypoint

Fixed position ▾

Waypoint_6

Set Waypoint

Edit pose

Move here

- ◉ Stop at this point
- ○ Blend with radius
  - 0 mm

- ◉ Use shared parameters
- ○ Tool Speed — 250 mm/s
  - Tool Acceleration — 1200 mm/s²
- ○ Time — 2 s

+ Add Until

Program tree:
- ▼ BeforeStart
  - Gripper Activate
  - Gripper Open (1)
- ▼ Robot Program
  - ⊕ MoveJ
    - ◉ Waypoint_7
  - ▼ Cam Locate
    - ▼ For object(s) found
      - ⊕ MoveJ
        - ◉ Waypoint_1
      - ⊕ MoveL
        - ◉ Waypoint_2
      - Gripper Close (1)
      - ⊕ MoveJ
        - ◉ Waypoint_3
        - ◉ Waypoint_4
        - ◉ Waypoint_5
      - Gripper Open (1)
      - ⊕ MoveL
        - ◉ Waypoint_6 **(19)**
    - ▼ If no object found **(20)**
      - 💬 'Optional'

(19) Move away from the drop point
Move linearly away from the drop point after releasing the part.

(20) If no object found
If the camera doesn't detect any object, it is possible to perform and action by inserting it here.

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Join Here!

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Ask your Questions !

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