



# BUILDING A MANUFACTURING ROBOT SOFTWARE SYSTEM (ENPM809B)

## ASSIGNMENT 2

### Group 4

## Coordinate Frames

February 26, 2020

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## 0.1 Introduction and Objective

### 0.1.1 Introduction

Addition of sensor/camera in the ROS ariac environment. Moreover, creating a ROS node that output sensor/camera information on console using tf\_2 package.

### 0.1.2 Objective

The main aim of the assignment are:

1. Create a package for competition with all the necessary sub-directories and required files .
2. Adding a sensor to the provided ROS environment.
3. Developing a ROS program to provide sensor information received on the screen.

## 0.2 Instruction for running package

### Build Instructions

```
mkdir -p ~/catkin_ws/src
cd ~/catkin_ws/
catkin_make
source devel/setup.bash
cd src/
copy group4_rwa1package here
cd..
catkin_make
```

### Running the code

Instructions for running package: Open a new terminal

```
cd ~/catkin_ws
source devel/setup.bash
roslaunch group4_rwa1 group4_rwa1.launch
```

Open a new terminal

```
cd ~/catkin_ws
```

```
source devel/setup.bash
roslaunch group4_rwa1 ariac_example_node
```

### 0.3 Outputs

```
logical_camera_4_piston_rod_part_1_frame in world frame : [-0.500241, -1.30185, 0.723419], [-0.00531817, -0.00112362, 0.766299]
logical_camera_4_piston_rod_part_2_frame in world frame : [-0.498464, -1.149, 0.722911], [-0.0199638, 0.00047012, 0.787572]
logical_camera_4_piston_rod_part_3_frame in world frame : [-0.501235, -1.00189, 0.725360], [0.00495019, -0.0102888, 0.785196]
logical_camera_4_piston_rod_part_4_frame in world frame : [-0.374526, -1.30179, 0.723419], [-0.000293894, 0.0034225, 0.791152]
logical_camera_4_piston_rod_part_5_frame in world frame : [-0.37645, -1.14961, 0.723537], [0.00349093, 0.0130175, 0.796008]
logical_camera_4_piston_rod_part_6_frame in world frame : [-0.375109, -1.0005, 0.724051], [0.0113198, -0.00218471, 0.790145]
logical_camera_4_piston_rod_part_7_frame in world frame : [-0.249668, -1.30253, 0.722446], [-0.000743063, 0.0130793, 0.800647]
logical_camera_4_piston_rod_part_8_frame in world frame : [-0.248058, -1.15154, 0.725425], [-0.00474009, 0.00252296, 0.803612]
logical_camera_4_piston_rod_part_9_frame in world frame : [-0.249235, -1.00104, 0.722925], [0.00946144, -0.0197294, 0.799068]
[ INFO] [1582579358.226037785, 64.221000000]: Break bean triggered.
logical_camera_1_gasket_part_1_frame in world frame : [-0.499663, 0.282893, 0.723103], [-0.0105309, 0.00171757, 0.778206]
logical_camera_1_gasket_part_2_frame in world frame : [-0.500016, 0.432819, 0.725511], [0.000498317, -0.00392093, 0.79755]
logical_camera_1_gasket_part_3_frame in world frame : [-0.500394, 0.592637, 0.722916], [0.0040636, -0.00235479, 0.794275]
logical_camera_1_gasket_part_4_frame in world frame : [-0.199893, 0.282071, 0.724927], [-0.00546328, -0.00660551, 0.786811]
logical_camera_1_gasket_part_5_frame in world frame : [-0.198951, 0.432052, 0.725549], [0.0107753, 0.00277705, 0.784915]
logical_camera_1_gasket_part_6_frame in world frame : [-0.20069, 0.581353, 0.723039], [-0.00384491, -0.0175292, 0.766937]
[ INFO] [1582579360.514760911, 65.122000000]: Break bean triggered.
logical_camera_4_piston_rod_part_1_frame in world frame : [-0.499319, -1.29943, 0.726075], [0.00872679, -0.000669656, 0.781322]
logical_camera_4_piston_rod_part_2_frame in world frame : [-0.500184, -1.15096, 0.724314], [0.0113121, -0.00692529, 0.793792]
logical_camera_4_piston_rod_part_3_frame in world frame : [-0.499056, -0.999987, 0.724899], [-0.00308683, 0.000154257, 0.790889]
logical_camera_4_piston_rod_part_4_frame in world frame : [-0.376983, -1.30824, 0.725546], [-0.0104103, 0.00311187, 0.795109]
logical_camera_4_piston_rod_part_5_frame in world frame : [-0.373005, -1.14966, 0.723364], [-0.0191681, 0.00236987, 0.773907]
logical_camera_4_piston_rod_part_6_frame in world frame : [-0.374122, -0.999225, 0.725002], [0.00305967, -0.00137635, 0.776108]
logical_camera_4_piston_rod_part_7_frame in world frame : [-0.250406, -1.30111, 0.726323], [-0.00476159, 0.00841354, 0.776764]
logical_camera_4_piston_rod_part_8_frame in world frame : [-0.251064, -1.14966, 0.721953], [0.00493384, -0.00632315, 0.778837]
logical_camera_4_piston_rod_part_9_frame in world frame : [-0.248349, -1.00115, 0.724474], [-0.0136092, 0.0130715, 0.784115]
```

Figure 1: Parts in world co-ordinate

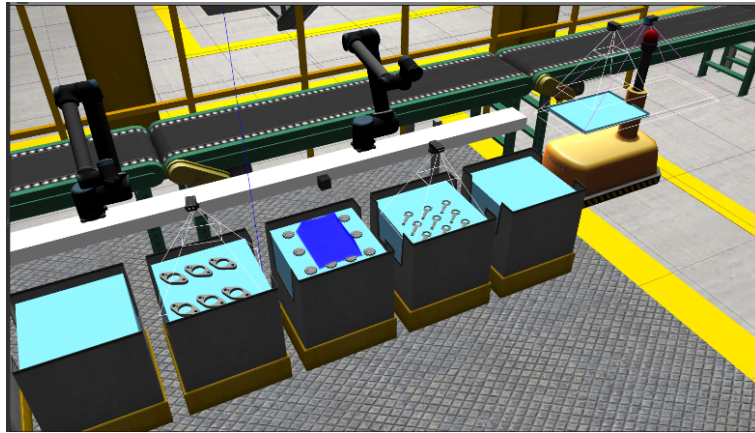


Figure 2: Logical camera on bin 3