

Assignment: Image reader

In this assignment the use of opencv within ROS2 must be demonstrated. USB camera images must be captured by a ROS2 node (USB camera driver node) and published. The published images must be read by another node (Image reader node). This reader node will apply OpenCV functionality. The applied functionality must be visualized in the RVIZ2 node.

Task1: Usb_cam node

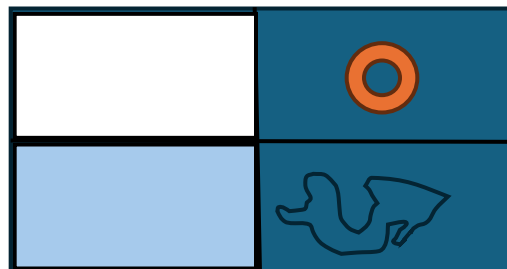
The usb_cam package must be installed. You should install the package in your assignment workspace. Give the package the name: “usb_cam_yourname”. For the parameters you need to control you must create a yaml configuration file.

Task2: Reader node

Create a node that reads (subscribes to) the image messages from the Usb_cam node. On the following manipulations are applied by using opencv.

1. Divide image in 4 equal parts. The division lines have to be clearly visible in the output (RVIZ).
2. Image change to be applied
 - a. The first part (blok) you make white
 - b. In the second part you add a circle (circle color is a parameter)
 - c. In the third part you set the blue channel (**BGR**) to 0.
 - d. In the fourth part you apply edge detection. The edges must be visualized in the image.

Sketch of output image:



Task3: Launchfile

Create a launch file (xml) that starts alle nodes with the necessary parameters.

Deliverables:

- Package: usb_cam_yourname_pkg
- Package: image_reader_yourname_pkg
- Launch file

Everything delivered in a zip file