Machine learning and pose estimation for autonomous grasping with collaborative robots tutorial

Tutorial part 1 : How to save point-cloud and RGB image for SR300

Victor Talbot

July 12, 2018

in this tutorial we will see how to get cloud points and images from a ROS topic.

For this tutorial you will need *ros kinetic*, *Point cloud library*, *Realsense* and *OpenCV*. You can see my previous tutorial for installation.

1 Software installation

Start by navigating to your catkin and open a terminal.

```
cd ~/catkin/src
catkin_create_pkg robot_grasping roscpp std_msgs sensor_msgs
cd robot_grasping
```

Open the file package.xml and add the dependencies *cv_bridge* and *image_transport*. Do the same for the CMakeList.txt.

In your terminal:

```
mkdir src
cd src
```

Get the two files,printer_pointcloud_ros.cpp and printer_rgb_ros.cpp in m github and copy it here.

modify the CMakeLists. txt with :

```
add_executable(printer_pointcloud_ros
... src/printer_pointcloud_ros.cpp)

target_link_libraries(printer_pointcloud_ros
...${catkin_LIBRARIES} ${PCL_LIBRARIES}
...${OpenCV_LIBS})

add_dependencies(printer_pointcloud_ros
${${PROJECT_NAME}_EXPORTED_TARGETS}
${catkin_EXPORTED_TARGETS})

add_executable(printer_rgb_ros src/printer_rgb_ros.cpp)

add_dependencies(printer_rgb_ros

${${PROJECT_NAME}_EXPORTED_TARGETS}
...${catkin_EXPORTED_TARGETS})

target_link_libraries(printer_rgb_ros ${catkin_LIBRARIES}
...${PCL_LIBRARIES} ${OpenCV_LIBS})
```

now open a terminal a do

```
cd ~\catkin
catkin_make
```

If all these past correctly you will see a confirmation message. If you have an error compare your CMakeList.txt and Package.xml to mine

2 Getting started

Now you have your package ready you can start recorded data. First lunch a roscore by typing in a fresh terminal:

```
roscore
```

Now plug your camera and run :

```
roslaunch realsense2_camera rs_rgbd.launch
```

rostopic list now you can check if the camera run corectly by looking at the ros topics.

```
rostopic list
```

You will see all the topics running on ros. You need to see the two following topics: /camera/depth_registered/points et /camera/color/image_rect_color.

3 Getting data

Once everything works correctly you can start saving your data. Open a terminal a create a data folder.

```
cd ~\catkin
mkdir data
cd data
```

This folder will contain all the data you will collect.

3.1 Pointcloud

To get pointcloud lunch:

```
rosrun projet_victor printer_pointcloud_ros
input:=/camera/color/image_rect_color
```

You will have to press 1 to take a picture.

3.2 RGB

To get RGB lunch:

```
rosrun projet_victor printer_rgb_ros
input:=/camera/color/image_rect_color
```

You will have to press the space bar to take a picture. To quit the windows press ctrl+c.

The picture will be saved in your data folders with correct name for neural processing.

If you want more information the code is fully commented and you can send me an email at vpj.talbot@gmail.com