Robotics Club, IITG
IIT Guwahati

Documentation: Realsense

6th January, 2019

OVERVIEW

This documentation represents the steps, obstacles and the work progress on the Intel Realsense Camera and its data collection for the Complex YOLO Algorithm.

SPECIFICATIONS

1) Setup and Data extraction

a) Install the following linux distribution Intel RealSense Viewer {Link: https://software.intel.com/en-us/realsense/d400/get-started } Follow the steps given in the link.

b) In there you get a link for linux distribution of the software and a link for linux setup.

Link: https://github.com/IntelRealSense/librealsense/blob/development/doc/distribution_linux.md Follow the instructions in the distribution_linux.md and bam, you successfully installed Intel Realsense SDK 2.0.

PS. But there are more issues to come, At Least in our case.

c) Now connect the Realsense with a USB cable Type C wire to the subject device and follow the steps below:

1) Open Up the Terminal (Ctrl+Alt+T)

2) Command: realsense-viewer

3) A window will pop up. Make sure a pop up comes notifying the device is detected.

4) Make sure you set a tick mark on the Advanced Mode in the More options.

5) Turn on the stereo Mode and RGB Mode.

6) If no errors, you are good to go:

Else: we suffered from "Incomplete Video Frames Error", The reason was that the firmware was not updated.

e) Error correction: There would be a pop up that your realsense has old firmware, need to install the latest version. Click on Update now and you will be directed to a link :

https://downloadcenter.intel.com/download/28377/Latest-Firmware-for-Intel-RealSense-D400-Product-Family?v=t

f) Click on How to install Instructions: Linux Distribution and in the new tab, open up the pdf for the instructions on how to update.

{ Pdf Link: https://www.intel.com/content/dam/support/us/en/documents/emerging-technologies/intel-realsense-technology/Linux-RealSense-D400-DFU-Guide.pdf }

g) Follow Pages: 8 and 9 in the pdf after you have connected the Realsense to the subject device. (In Step 8, it may happen that a number of USB bus pops up for the same Realsense. Try using the other if the first option won't work.)

And bam, you are done.

2) Pyrealsense2: Library to generate RGB D matrices.

I have mentioned the sources that we used for better understanding of the commands used to generate RGB matrices and Depth Heat map matrices.

a) https://github.com/IntelRealSense/librealsense/tree/master/wrappers/python (The readme.md in this link contains some specific examples, great way to start)

b)https://github.com/IntelRealSense/librealsense/blob/master/wrappers/python/examples/opencv_pointcloud_viewer.py

Both of the codes are sufficient enough to understand how to generate the point cloud required and we cleaned the code to mere 10-15 line code.

FUTURE WORK

1) We still don't know some specific elements used in the example in the Link 2. Need to explore more...

2) Structuring the data for the Complex YOLO algorithm.

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