Lab: Find the intrinsic and extrinsic matrix for L515

This folder has the following files

A screenshot of a computer

Description automatically generated

Follow the link - <https://github.com/IntelRealSense/librealsense/releases/tag/v2.54.2>

Install: <https://github.com/IntelRealSense/librealsense/releases/tag/v2.54.2> (Install Intel.RealSense.SDK-WIN10-2.54.2.5684.exe)

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Description automatically generated

Task -1 Stream L515 from sdk

* Connect the L515 to laptop
* Using the real sense viewer make sure that the camera is streaming

Graphical user interface, text

Description automatically generated

* Close real sense viewer

Python wrapper:

* Home page: <https://github.com/IntelRealSense/librealsense/tree/development/wrappers/python>
* Install pyrealsense2: pip install pyrealsense2== pip install pyrealsense2==2.54.2.5684 (<https://pypi.org/project/pyrealsense2/> ), <https://pypi.org/project/pyrealsense2/2.54.2.5684/> q
* Tutorials: <https://github.com/IntelRealSense/librealsense/tree/development/wrappers/python/examples>
* Pyrealsense API: <https://intelrealsense.github.io/librealsense/python_docs/_generated/pyrealsense2.html>

Task – 2 Calibrate L515 camera

* Print the chess pattern – **Checkerboard-A4-28mm-9x6.svg**
* Run vscode
* Run MAS512\_2023\_AUTUMN virtual environment
* Run Realsense\_2\_ImageCapture.py
  + Capture image
    - Focus the camera to the chess pattern so that entire board is visible in the frame
    - Press S to capture the image
    - Rotate the camera and capture another image by pressing S
    - The images will be named **color\_image\_1, color\_image\_2, …**
    - Take at least 15 -20 images
    - The images will be saved in the same folder where the Realsense\_2\_ImageCapture.py is located
* Intrinsic calibration
  + Run **cam\_cal\_class.py**
  + This gives you the intrinsic matrix (mtx)
  + This program also saves the intrinsic matrix as **B. npz**
* Extrinsic calibration
  + Run cam\_cal\_class.py
  + This program gives you rotational (rvec) and translational matrix (tvec)
  + Append rvec and tvec horizontally to get extrinsic matrix