

# ECPS204 Setup-Part A

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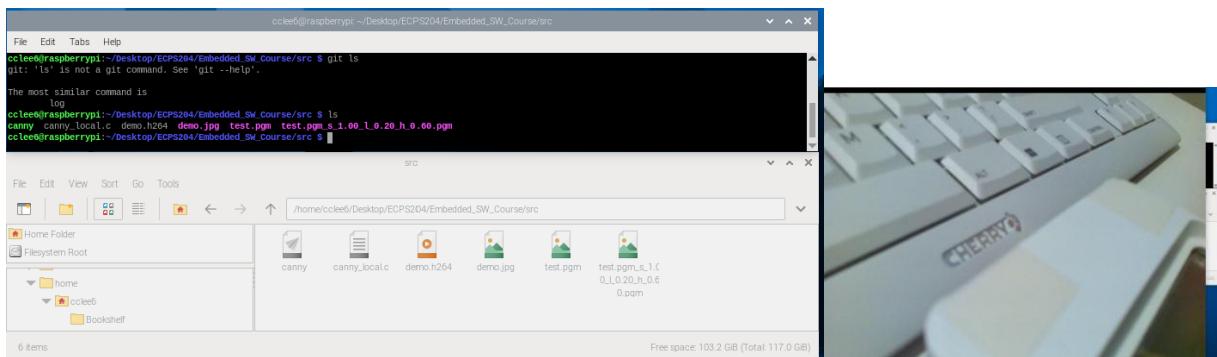
## Project Description (2 pts)

- The purpose of this project is to set up Raspberry Pi with the camera and canny.c compilation environment. Furthermore, we want to test different results of canny.exe with at least 4 sets of parameters input.
- We expect to see the directory of the files used and captured images and videos. Furthermore, we expect to see the difference between each trials with comments prepared.

## 1. Experimental Setup (4 pts)

- For this project, I set up a Git repository to exchange files between my RPi and laptop. Following the instructions, I get each step done and recorded.
- I had to use libcamera to do simple camera control since I'm using RPi 5 with newer SW.
- In the canny parameters comparison part, I choose to change one parameter at a time to control the changes.

## 2. Results (6 pts)



This is the directory and files I used for this project. On the right-hand side is the captured image.

Canny application with different parameters and comparison.

Parameter Sets $\langle \text{sigma} \rangle / \langle \text{tlow} \rangle / \langle \text{thigh} \rangle$	Results	Comment and observation
1.0/0.2/0.6		Example Command
1.0/0.2/0.2		By tuning $\langle \text{thigh} \rangle$ down to 0.2, there are too much noise kept.
1.0/0.2/0.9		By tuning $\langle \text{thigh} \rangle$ up to 0.9, there are way less noise kept.
1.0/0.8/0.6		By tuning $\langle \text{tlow} \rangle$ up to 0.8, this set is probably not making sense. Since the lower threshold is now higher than higher threshold.
2.0/0.2/0.6		By tuning $\langle \text{sigma} \rangle$ up to 2, edges become clearer and simpler (strong edges).

### **3. Problems and Discussion (6 pts)**

- First, I was a little stuck by the camera library but that was an easy fix by switching to libcamera.
- Setting up the repository took me a little bit of time since I would need the passkey to operate git access on my RPi.
- Other parts are fine and clear.

### **4. Conclusion (2 pts)**

- After setting up the environment and RPi, the camera functioned as expected.
- After testing canny with different parameters, I came up with the conclusion that the `<sigma>` defines the magnitude of smoothing; `<tlow>` defines the lower threshold to remove an edge; `<thigh>` defines the higher threshold to keep an edge.