Robot Setup:

Github Links and Additional Resources:

Camera

- https://github.com/jacksonliam/mjpg-streamer
  https://github.com/inactivitytimeout/labists_pi_car/blob/main/Technical.md

Usage Instructions

Connection:

Connecting to the wifi:

- Power the robot on
- Look for the wifi network “RPiRobot2” and hit connect. If you don’t see the network, give the robot a minute or two to start up
- If prompted to enter a pin off the label, select connect with security key instead
- Password is “password123”

Connecting to the command prompt:

- You must first be connected to the wifi
- In command prompt enter “ssh pi@192.168.16.2”
- When prompted, the password is “raspberry”

Connecting to FTP:

- These instructions use WinSCP, but any FTP software should work
- Host name: 192.168.16.2 ; Username:pi ; Password: raspberry

Connecting via ethernet:

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Camera:

Starting the video web server:

- Navigate to Home Folder “cd $HOME” or “cd ~”
- sudo LD_LIBRARY_PATH=’pwd’ ./mjpg_streamer -i "./input_uvc.so -d /dev/video0" -o "./output_http.so -p 8080 -w ./www" & On the PC: http://<car_ip_address>:8080/javascript.html

    - If an output file is needed or input is changed, either can be changed according to Liam Jackson's file.
    - For example, to get jpg images: sudo LD_LIBRARY_PATH='pwd' ./mjpg_streamer -i "./input_uvc.so -d /dev/video0" -o "./output_file.so"
    - *Jpg images will go in the ~/tmp folder*
- If ./mjpg_streamer is not autofilling
    - "cd mjpg-streamer/mjpg-streamer-experimental/"
    - Run the command "make"
- If you get the error "sudo: ./mjpg_streamer: command not found"
    - Stop the process with ^c
    - "cd mjpg-streamer/mjpg-streamer-experimental/"
    - Run the command without setting the PATH: sudo ./mjpg_streamer -i "./input_uvc.so -d /dev/video0" -o "./output_http.so -p 8080 -w ./www" & On the PC: http://192.168.16.2:8080/javascript.html

Input plugins:
- input_file
- input_http
- input_opencv (documentation)
- input_ptp2
- input_raspicam (documentation)
- input_uvc (documentation)

Output plugins:
- output_file
- output_http (documentation)
- output_rtsp (not functional)
- output_udp (not functional)
- output_viewer (documentation)
- output_zmqserver (documentation)

Movement Control
- Start by navigating to the controller.py file
    - ~/Desktop/newCapstone/middleware/devices/
- Start controller.py with "python3 controller.py"

Drive Commands
- f <runtime> : forward for given runtime, if not provided, runtime = 0.28 seconds
- l <runtime> : left turn for given runtime, if not provided, runtime = 0.28 seconds

- r <runtime> : right turn for given runtime, if not provided, runtime = 0.28 seconds
- b <runtime> : backwards for given runtime, if not provided, runtime = 0.28 seconds

Chassis Control Commands

- lights <T/F> : turn headlights on or off
- Servo <angle in degrees> : rotate the camera up or down to position

Additional Information

- Runtime in seconds float
- Servo angle is 90 default