Henry Kou: 204921239, Team 6, EE180DA **Week 1 Lab Report**

1. **Action Items (plan)**
    a. Purchase parts - **in progress (Rpi received, IMU in transit)**
    b. Project proposal draft - **completed**
        i. Researched ideas from previous projects including GTUber.
        ii. Organized requirements and brainstormed ideas in doc: https://docs.google.com/document/d/14qEbNp-ccn-4xFTJozqWrSGkgyK1If69mKqUCWvCHLw/edit?usp=sharing
        iii. Team proposed 4 main ideas with potential implementations:

- "Workout Warrior"
    - Covid era, self workout device can attach to you and aid in working out.
    - Use of open cv for pose tracking, imu on a workout bar?
    - Possible competition aspect with multiple setups or leaderboard.
- "Drowsy/reckless Driver Detection"
    - Mount in car device can detect your tiredness and aid in finding help
    - Two cameras? one towards face and one towards road, opencv detect closing eyes or drifting
    - App notification and voice guidance?
    - Prevent sleep, start conversation with the driver?
    - Detects if the driver is using a phone while driving.
    - Detects traffic light transition. E.g. alarm when a red to green transition has been detected and the driver has not moved. Can also use the tail light of the car ahead.
    - Might be hard to implement due to hardware limitation.
- "Micromouse POV"
    - Spin on micromouse project in IEEE, have vision processing on a small robot car to race a path.
    - Real time control of a motorized system with a heads up display and remote controller
    - Kind of like drone racing with RC cars?
    - I have been working on a micromouse car this summer. I can design another with camera capabilities for the project?
- "CoronAvoid/ Covid prevention"
    - Detects when another person is less than 6 feet away from you.
    - Crowd detection, no mask detection, etc.
    - Listens for coughing, sneezing, etc in the environment.
    - Logs every detection. This includes time, picture of environment, location(if we have gps).
    - Take logged data and determine if the user should self quarantine.

        iv. After voting, the team decided upon "Workout Warrior" for the draft. (See draft submission)

    c. Tutorial 1 Intro to HW
        i. Task 1: Install OS - **completed**

Installed OS Raspberry Pi Lite on RPi via microSD card. Observations included flashing green light as the OS was verified and steady state as on after loading period was completed. MicroSD card is now titled boot(E:) and contains several files of relevance.

ii. Task 2: SSH via Wired connection - **completed**

Accessed SSH on the Rpi through wired microUSB interface. Changed microSD card files: ssh, config.txt, cmdline.txt. Had initial issues with improper boot up, but after reinstallation of OS, wired connection success.

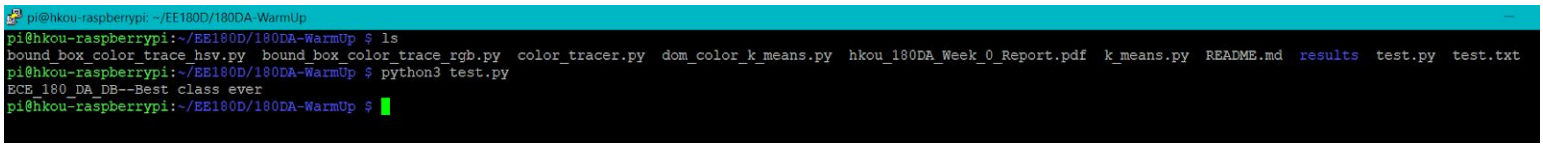
iii. Task 3: SSH and other functions via Wireless connection - **completed**

Accessed SSh on Rpi through 2.4Ghz network at home after adding file wpa_supplicant.conf onto microSD card and reboot. Able to ping google.com, and installed Vim, git and conda.

iv. Task 4: Git clone repo, output python - **completed**

Git cloned 180DA-WarmUp repo onto RPi, and ran python script aboard the RPi with the command $python3 test.py.

Output:



Uploaded screenshot onto RPi and git pushed the changes onto remote repo. No merge conflicts encountered.

2. **TODO Items:**
    a. Expect arrival of BerryIMU
    b. Get a head start on BerryConda tutorial with MQTT subscriber
    c. Continue flushing out details for the final project proposal on Workout Warrior with team 6.
3. **Errors Encountered**
    a. Editing cmdline.txt during the wired SSH setup, make sure Rpi boots up properly as the rootwait will be at the end of the document. Initially didn't find that so reinstalled OS and then it worked.
    b. When configuring wifi, did not know the RPi used only 2.4 GHz network, and was trying to config for 5GHz network. Connected successfully to 2.4GHz network.