ECE180DA : Lab 4 Report

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Tasks Planned

- Complete IMU Tutorial
- Complete Midterm presentation and final project proposal
- Some reorganization of the github
- Hand tracker object

Tasks Completed

- IMU Tutorial completed
  - Ordered female to female cables for the IMU
  - Soldered headder pins onto IMU (careful to not damage any of the traces nearby the pins)
  - Setup BerryIMU on the raspberry pi with all dependencies
  - Recorded data with the IMU following steps dictated, evidence below

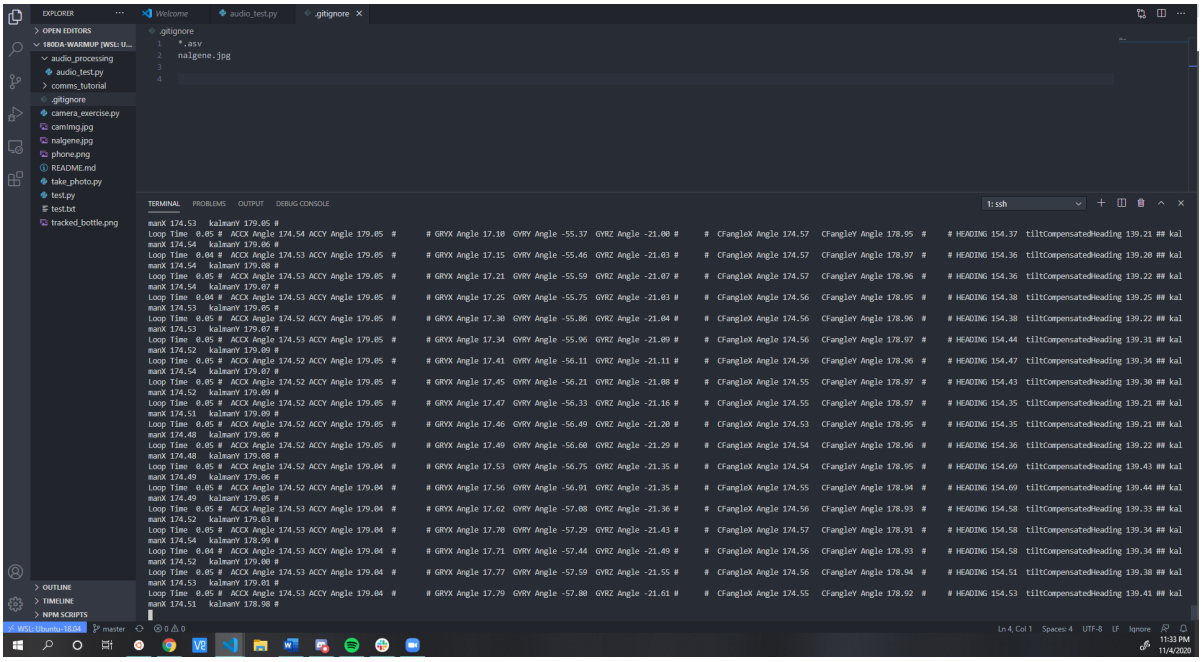

Figure 1: IMU Data Recording

  - Played around with threshholding values to determine between two classes of movements
  - Planned out design for a more robust classifier
    - Record data on a sliding window (seems like 20 samples is reasonablegiven a 1 second window)
    - create labeled training set of various gestures (and garbage movements aswell)

    * use cvxpy and soft SVM to create decision boundaries for multiclass classification (either one v one or one v all)
    * can train on randomly error prone data aswell to increase robustness
    * actual interproduct should execute quite quickly

- Completed midterm presentation with team, discusses moving more in the direction of creating a virtual desktop (upon which the apps can be run on and act more as stretch goals)
- As midterm presentation helps to refine final project presentation these have been complementary tasks (the above task)
- created rough API for hand tracker (ensuring can interface well with Nico's image processing functions)

Future Direction

- complete implementation of hand tracker
- write general script for training classifiers for our gesture recognition (and I suppose whatever else we would be inclined to classify)
    - go ML!
- make a do.sh script to handle linting with set of paramaters (not necessary rn just nice)
- start some preliminary integration depending on progress of others