Homework 4

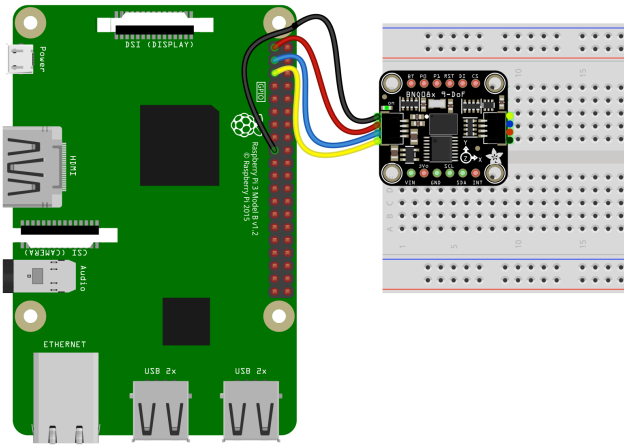
Team members:

Andrew Sonnier- 100% Contribution

Team Member Contribution:

	Andrew Sonnier
Laptop	100%
IBM Cloud	100%
Pi	100%

Raspberry Pi Schematic for BNO805 IMU over I2C:



Design Choices:

The two major design choices for this homework assignment, the imu and the model used for learning.

FOr the IMU, it was chosen to use an Adafruit BNO085 for its low cost, accessibility as well as the advantages of the chip such as its on board sensor fusion and built in magnetometer. These features make it one of the best. This was connected to the raspberry pi using the sparkfun qwicc connectors which is a breakout shim to make i2c easy.

It was chosen to use libsvm as recommended by the teaching staff. For training and classification, I used the “easy.py” script libsvm recommends on their website and github which chooses the best parameters given a dataset with the highest success. After a couple of training attempts, I used exclusively quaternions to train the model which yielded the best result. I used

a smaller, real dataset for training rather than producing a synthetic dataset. More information about the easy.py script and libsvm recommends can be found at the following link.
https://www.csie.ntu.edu.tw/~cjlin/papers/guide/guide.pdf