**Brett Wyton – 45423229 – COMP255 Assignment 1 – Project Movement**

The purpose of this project is to extract specific human activities from a series of given datasets. The data set is recorded by a range of accelerometers and gyroscopes located on the body. They are located on the wrist, chest, hip and ankle. The accelerometer measures the linear movement of the x, y and z co-ordinates of each unit and the gyroscope measures the rotation of each of the devices.

SCRUM Sprint 1: The first sprint will be focusing on the loading of data sets and the visualisation of the data. Signal data will be filtered in the attempt to reduce the micro movements that will get picked up by the sensors.

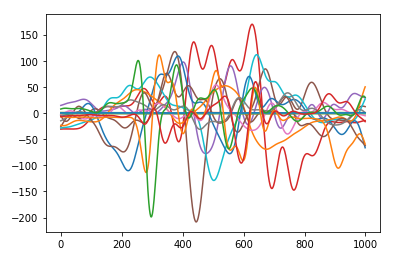
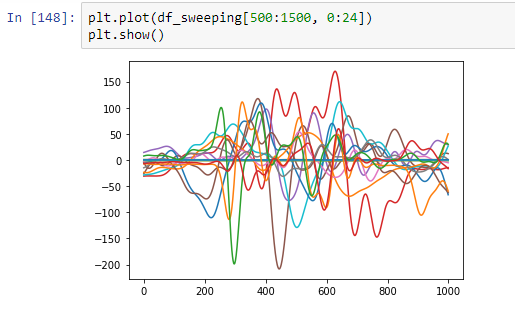
The three most useful technologies used for achieving this were the; pandas, matplotlib.pyplot and scipy libraries. All three working in tandem allowed for the reading of the data files, plotting the data itself and removing noise signal from the plotted data respectively. The activity that I chose to compare was the “sweeping activity”. In the case of the first data set, I recorded the unfiltered signal from the wrist accelerometers and then compared it to the filtered (using a lowpass filter) wrist accelerometer. I repeated this for all the accelerometers (the first four plotted data comparisons) and then used the same method for the gyroscopes. After the individual comparisons between devices were made, in the interest of a complete picture of the noise cancelling process, I compared filtered and non-filtered data plots from all the recording from both the first and the last data sets.



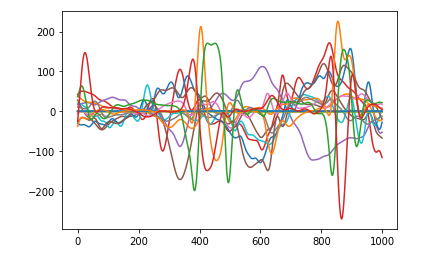
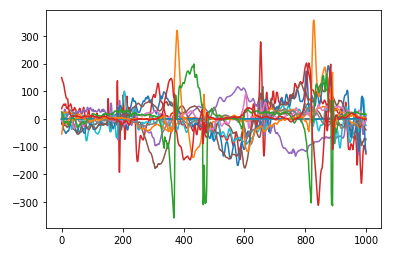
(Wrist accelerometer data plots)



(Ankle gyroscope data plots)



(Unfiltered sweeping data vs filtered sweeping data for dataset 1)



(Unfiltered sweeping data vs filtered sweeping data for dataset 19)