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ECE 16
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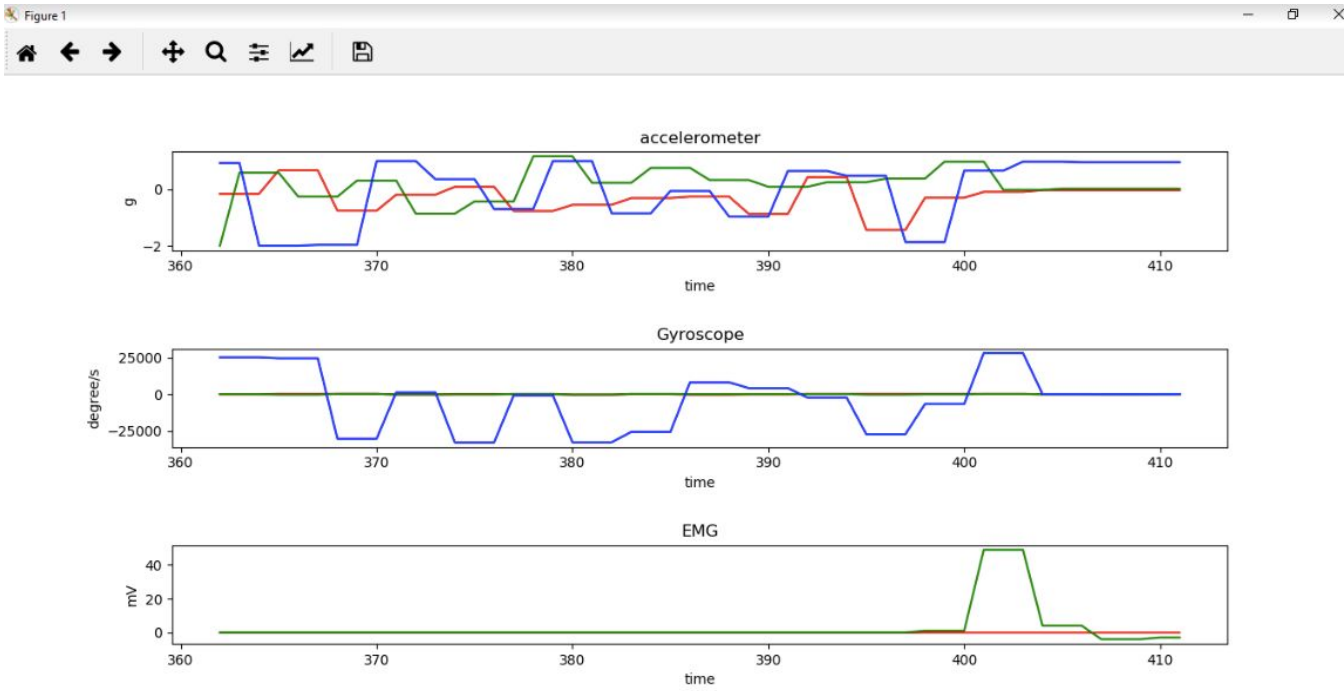
Objective 6: Bluetooth Integration

For this final objective, we put all the pieces that we learned from the previous objectives and incorporated bluetooth. We got put into working in partners (I worked with Luc Bell and Zhaowei Yu) and all contributed to the code.

Using our Arduino's, we firstly set up one of them as the Client/Central account and the other one as the Server/Peripheral. The peripheral board states all of the services and characteristics while the central is the one who reads the information given from the peripheral. We also added both emg shields to the peripheral arduino with one of the jumpers reading A0 and the other one reading A1. Coding-wise, we added services/characteristics for the gyroscope, accelerometer and the 2 EMG sensors. We also used ISR to sample at a constant of 200Hz and got the communication going by using the same UUID.

After verifying we got communication from the two arduinos and tested that all the sensor readings were correct, we then moved on to receiving and plotting in real time and managed to get one subplot with the 3 accelerometer readings on the same axis, one subplot with the 3 gyroscope readings on the same axis, and one sublot with the 2 EMG readings on the same axis as shown in the pictures below(x,y,z corresponds to red,blue,green). Challenges including learning and understanding the animation.py code from Zhaowei's code since I have not used animation before.



Extra Credit: The task for the extra credit was to calculate the actual maximum frequency received on the central arduino. Therefore, we added to the peripheral arduino code to read time in the beginning of the readSensor function and at the end of the main loop. The highest reading ended up being about 2800 microseconds which converts to 335Hz.