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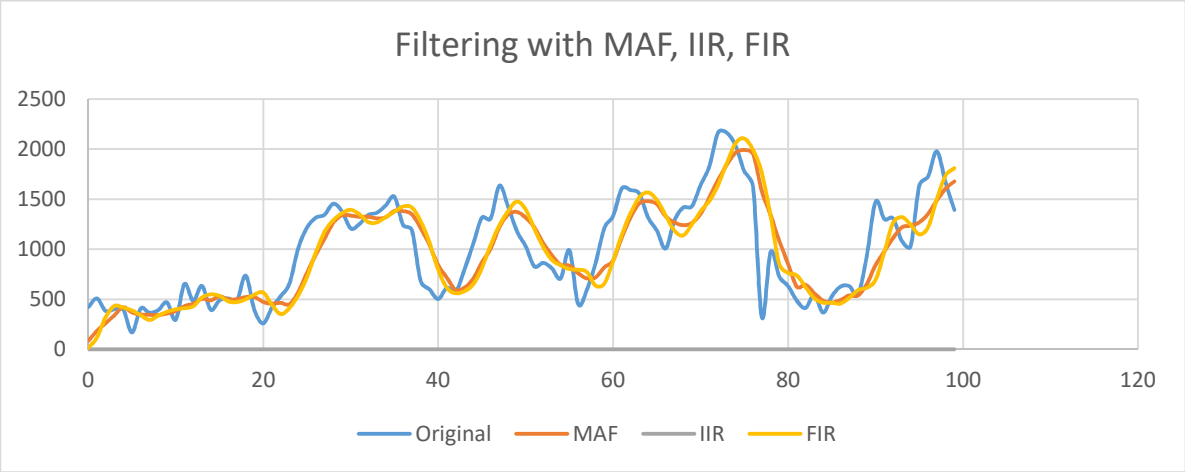
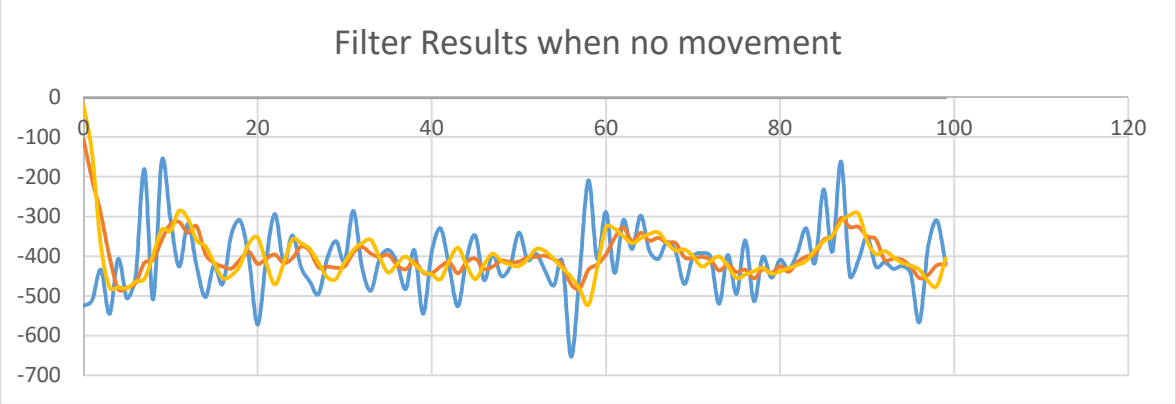
ME433 - Marchuk
5/12/2018

HW10:



(Samples taken while moving board back and forth in z direction)



(Samples taken while board still)

I was unable to get the IIR filter to work and after some research thought it was not the best filter. Although it requires more calculations, I believe the **FIR filter worked best** at removing small bits of noise, while maintaining the original data. The results with no movement indicate that the filtered data remained within a 100 +/-, reducing major noise. The FIR values were selected via the matlab function fir1(4,0.1) since we will use 5 samples and target a cutoff frequency of 5Hz, which is 1/10th of half the data collection frequency of 100Hz. The weights for the FIR filter were:

0.0338 0.2401 0.4521 0.2401 0.0338

The MAF filter was applied using weights of all 0.2, also with 5 samples. The IIR filter was applied using weights of 0.2 for the new data and 0.8 for the previous average.