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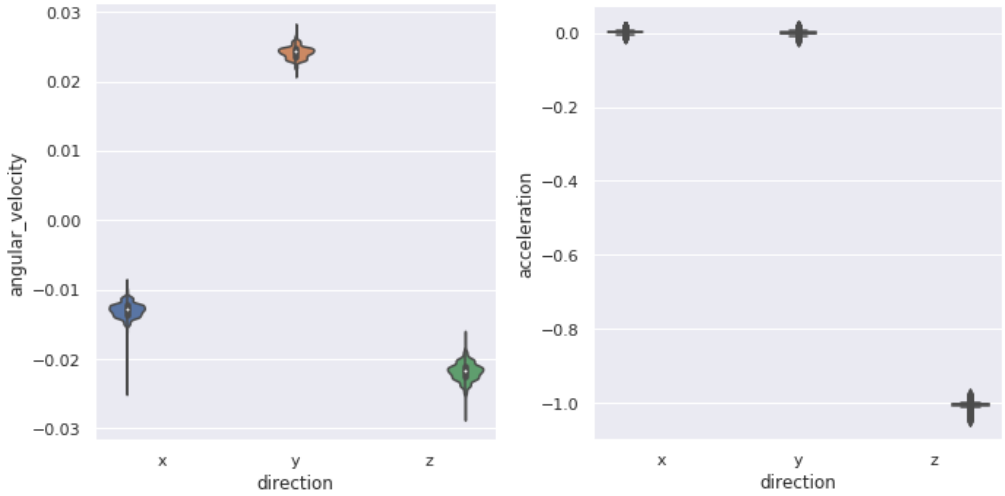
Assignment 2 for Mobile Health and Wireless Systems

Github Link: https://github.com/psturmfels/tilt_measurement

Part 1:

I measured the angular velocity and acceleration over 5 minutes while the phone was not moving, and plotted the recorded values in each plane in a box plot, below:



Direction	Mean of Angular Velocity Around Axis	Standard Deviation of Angular Velocity Around Axis	Mean of Acceleration in Axis Direction	Standard Deviation of Acceleration in Axis Direction
x	-0.012881	0.001041	0.002524	0.002873
y	0.024203	0.000846	-0.000348	0.003575
z	-0.021752	0.001315	-1.0004805	0.004191

Part 2:

We plot the tilt of the device when held still for 5 minutes using the gyroscope only (red), the accelerometer only (blue), and using a complementary(orange). Using only the accelerometer is unbiased but noisy. Using only the gyroscope has very little noise, but incurs drift. Using a combination of both provides the best results.