

Weekly Summary (08-05-2025)

What I did:

- Tried changing the calibration offsets to reduce the YPR drift. Did not yield significant results. Decided to focus on getting angles from raw acceleration values
- Found out true YPR movements and verified them with MPU 6050 documentation.
- Created an Arduino sketch which outputs only pitch and roll angles from the accelerometer readings (can be helpful in knowing the sensor's calibration and accuracy)
- Categorized previous data based on the presence of accelerometer readings
- Applied butter filter to the previous measurements and found the best suited filtering parameters through trial and error
- Plotted all the previous measurements with filtered accelerometer readings
- Described the important aspects and key trends of each measurement done previously
- Replicated some of the static measurements done previously and obtained similar angle variations.

Problems I faced:

- Not able to get the exact angle but able to capture the change in angle with extension with good accuracy.

Possibilities for future tasks:

- Completing the BOSCH device deflection measurements for 14.3 Kgs
- iPhone recordings of 8.1 Kgs and 14.3 Kgs with and without weights at an extension range of 112 cm to 157 cm

- Simulate the previously done static measurements exactly in the lab and compare both the measurements
- Proceeding with the actual measurements if calibration seems to be proper

Plots and pictures:

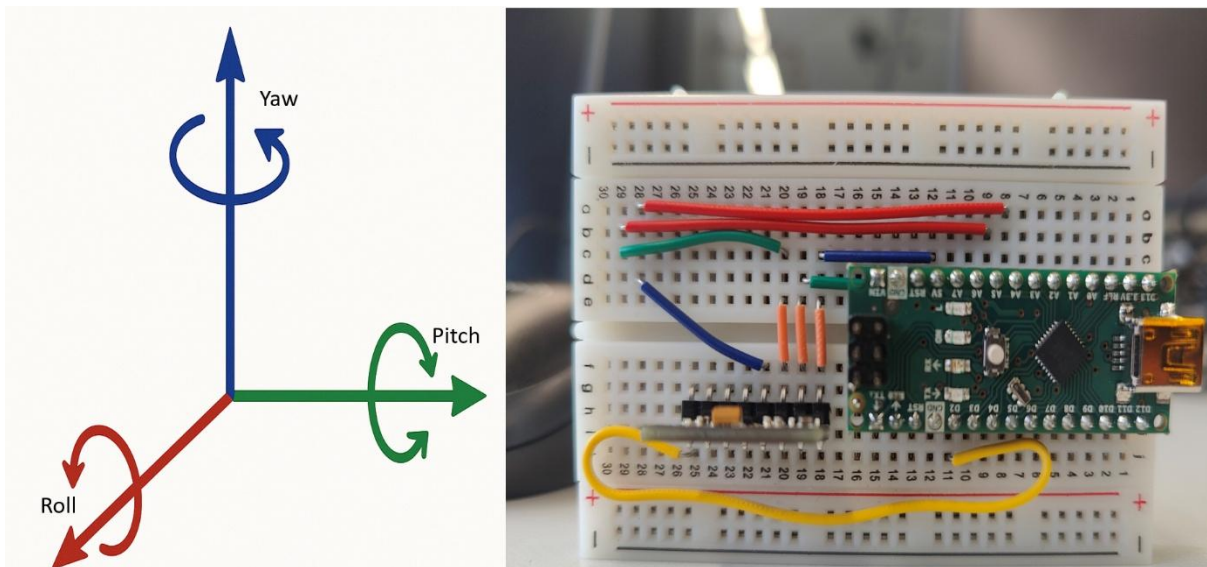


Fig: YPR configuration

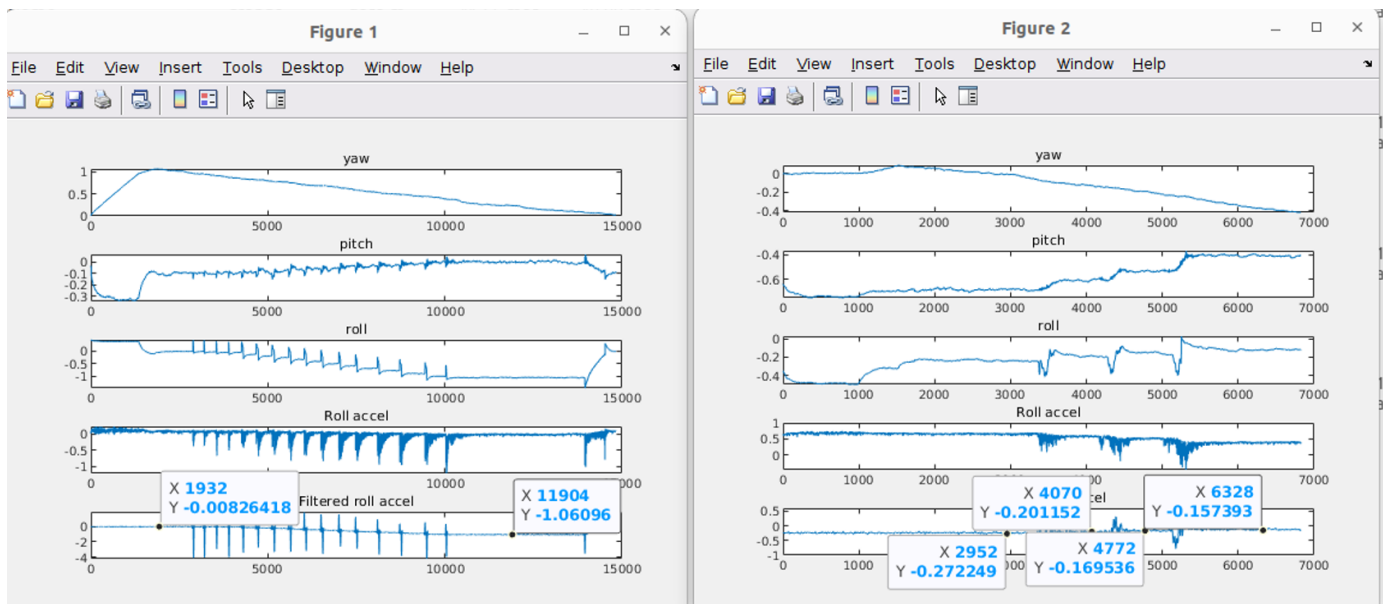


Fig: Figure 1 (Previously measured data from extensions 0 to 1240 mm) and figure 2 (Measured in lab from 900 mm to 1240 mm)