

Plots used for calibration

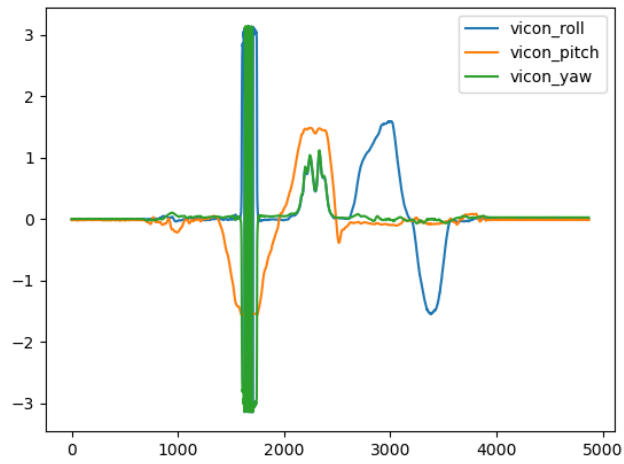
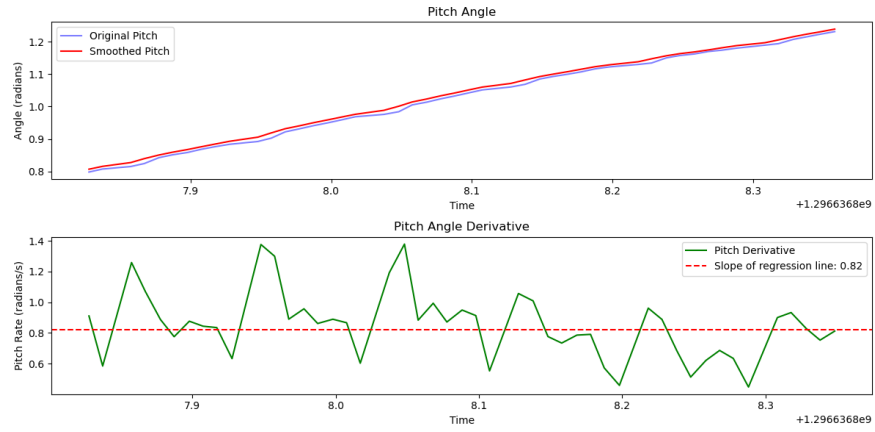
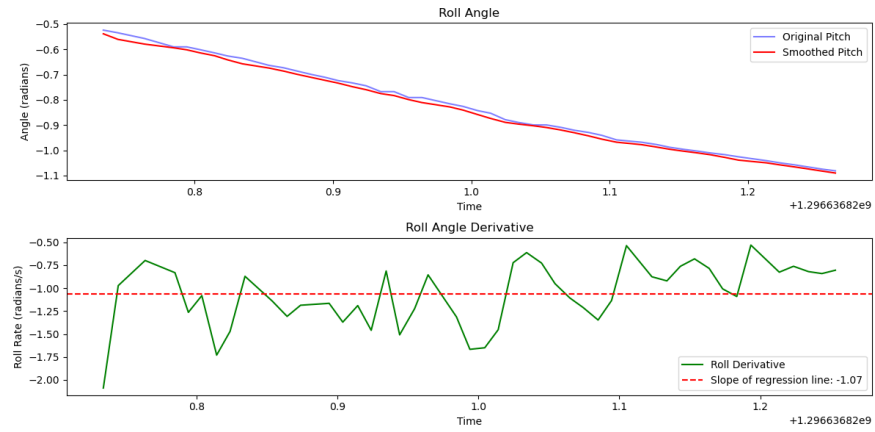


Figure 1: Euler angles plot



(a) Constant Slope Pitch Plot

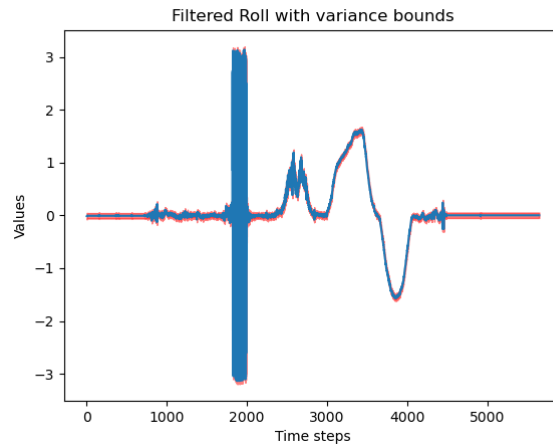


(b) Constant slope roll angle

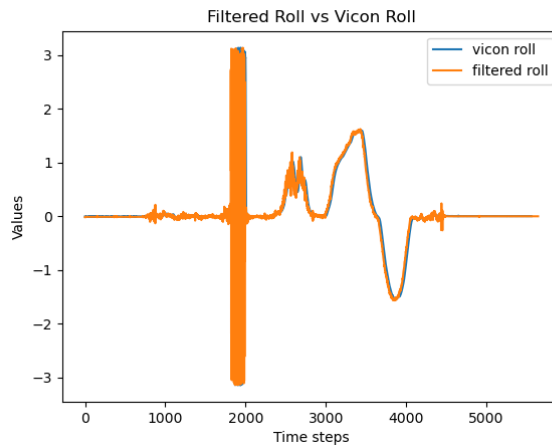
Figure 2: Regions of constant slope pitch and roll angles

Analysis and Debugging of UKF

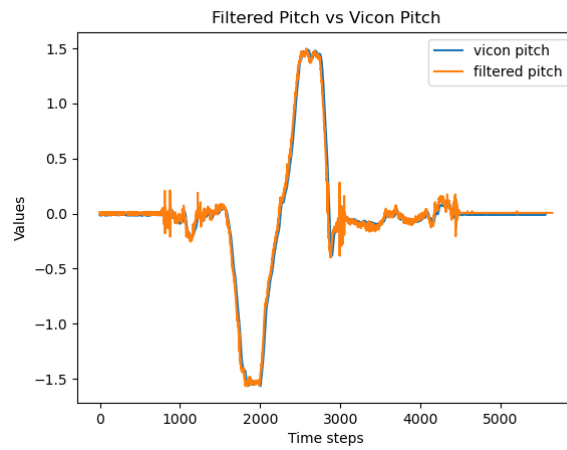
I have attached the plots of filtered Euler angles and angular velocities - mean + variance bands. Also attached are the filtered data comparisons with those obtained from Vicon data and gyro readings.



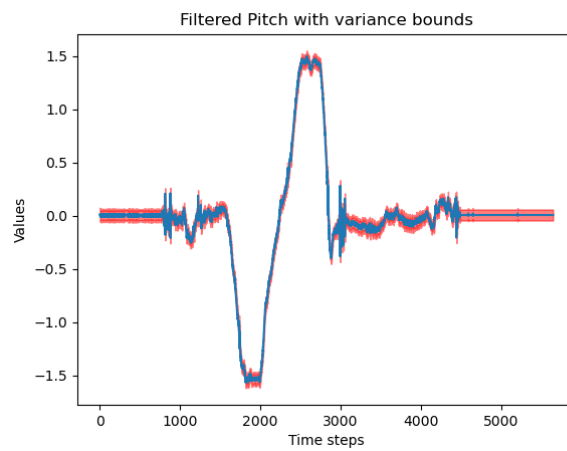
(a) Filtered Roll with Variance Bounds



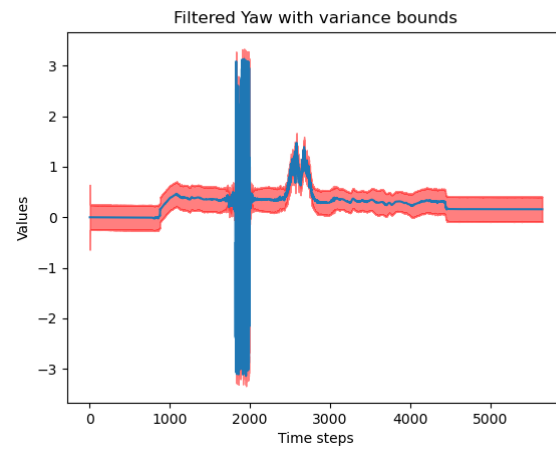
(b) Filtered Roll and comparison with Vicon



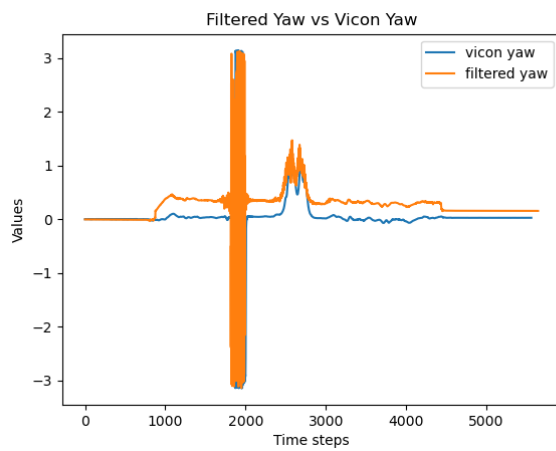
(c) Filtered Pitch and comparison with Vicon



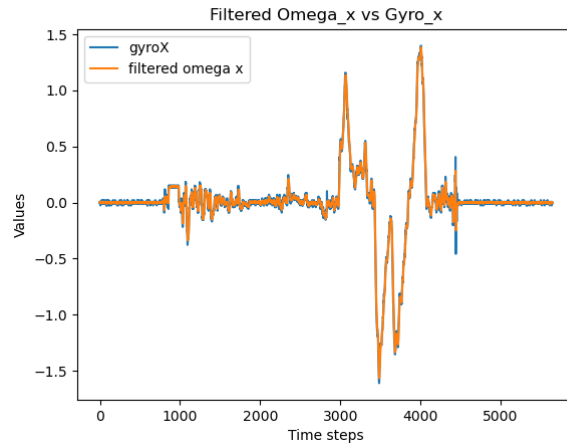
(d) Filtered Pitch with Variance Bounds



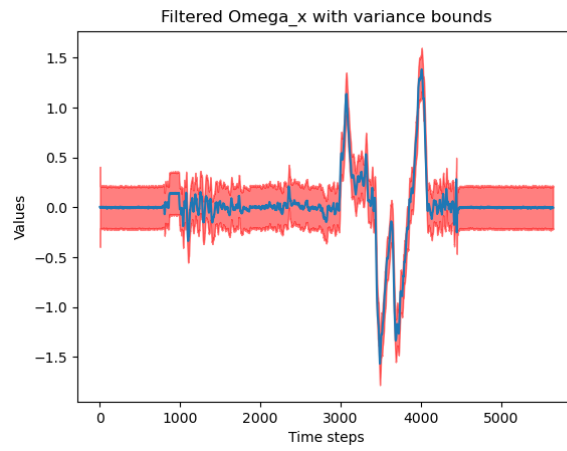
(e) Filtered Yaw with Variance Bounds



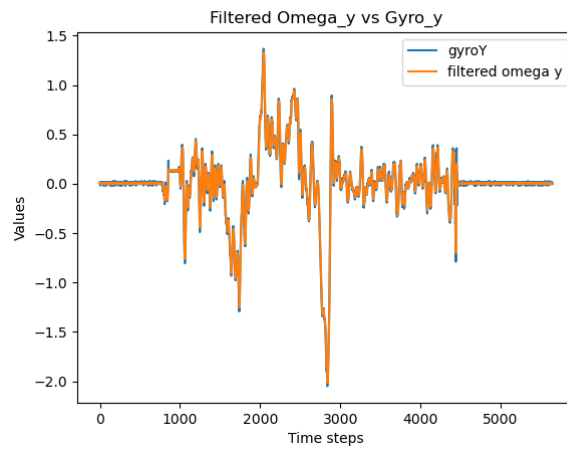
(f) Filtered Yaw and comparison with Vicon



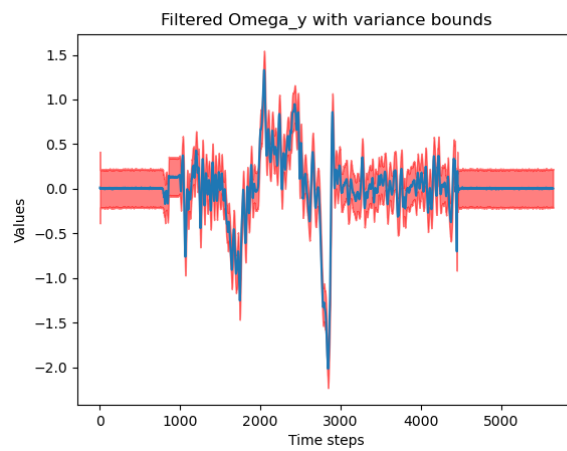
(g) Filtered OmegaX and it's comparison with gyro readings



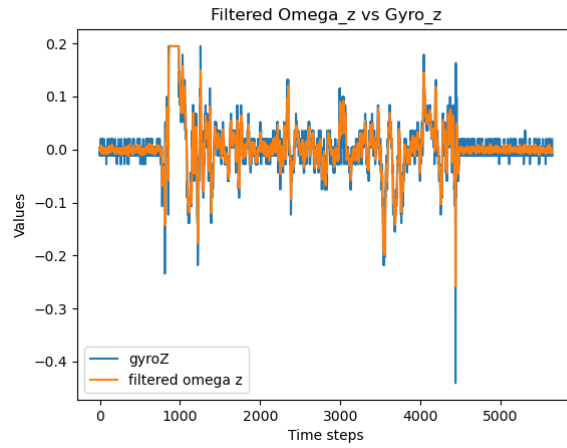
(h) Filtered OmegaX with Variance bounds



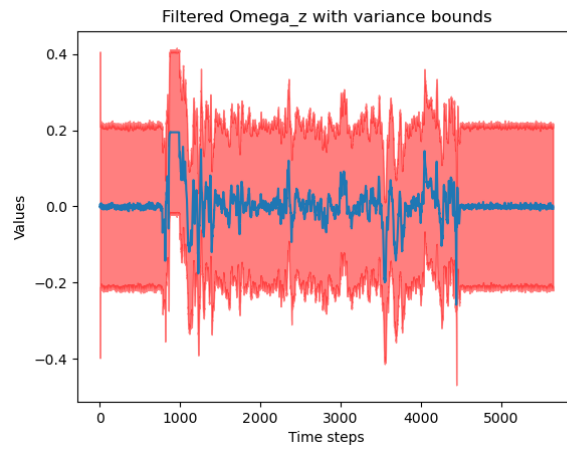
(i) Filtered OmegaY and it's comparison with gyro readings



(j) Filtered OmegaY with Variance bounds



(k) Filtered OmegaZ and it's comparison with gyro readings



(l) Filtered OmegaZ with Variance bounds