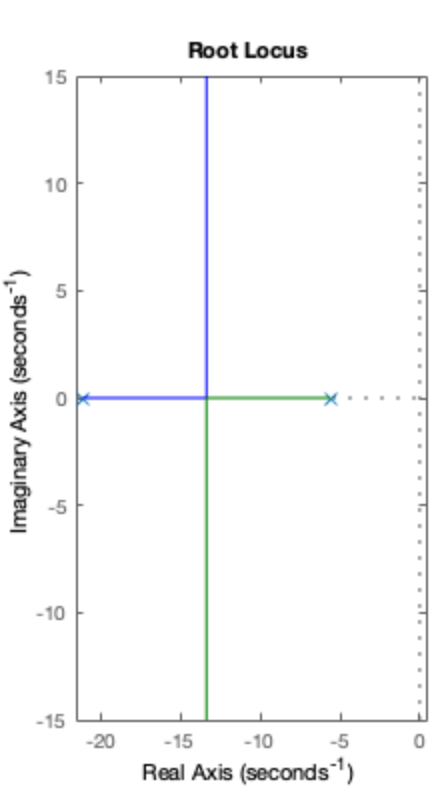
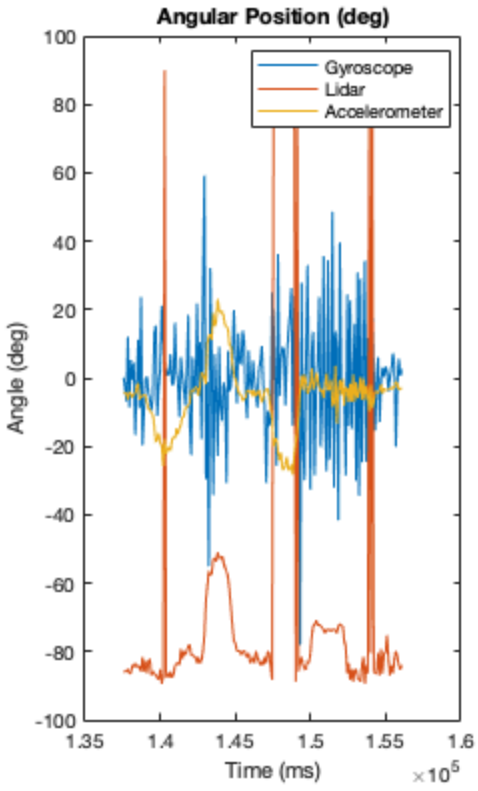
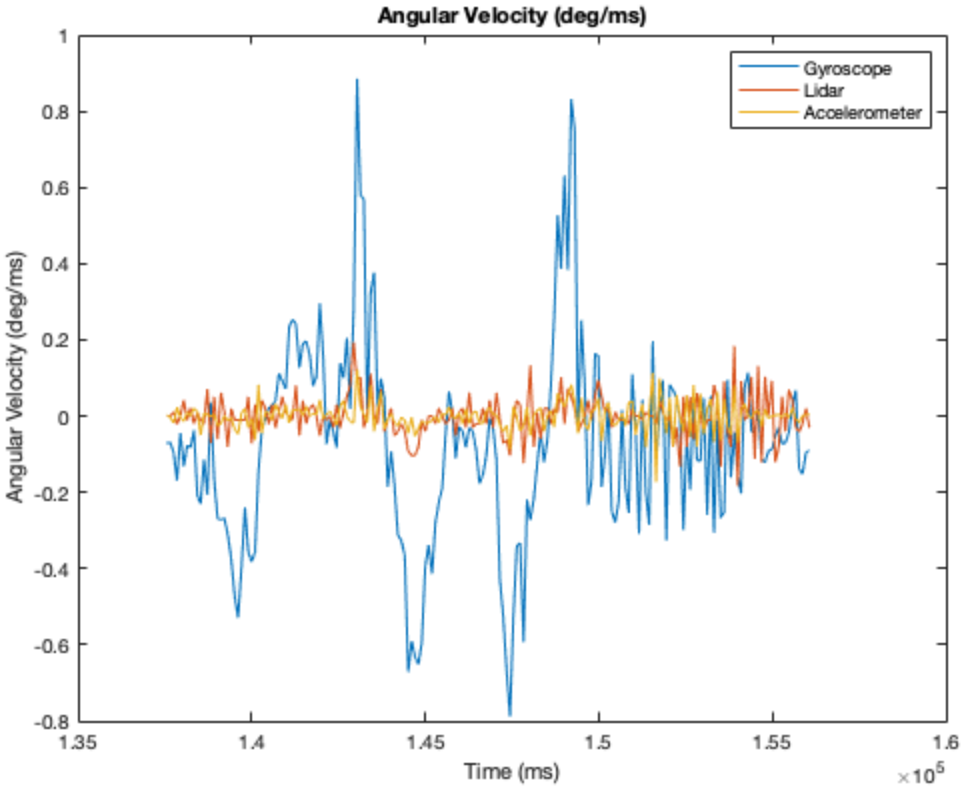
```
%reading .csv file
%data=csvread('data.csv')
clear all
load('data.mat')
h=125;  %mm
w=95;   %mm

accx=data(1:191,1);
accy=data(1:191,2);
axccz=data(1:191,3);
gyrox=data(1:191,4);
gyroy=data(1:191,5);
gyroz=data(1:191,6);
pitch=data(1:191,7);
roll=data(1:191,8);
lidar=data(1:191,9);
time=data(1:191,10);

%calculating angle from lidar data
l_tangle=w./(h-lidar);
l_angle=atand(l_tangle);

%calculating gyroscope angle
for i=1:length(time)-1
    g_angle(i)=(gyrox(i+1,:)-gyrox(i,:))*(time(i+1,:)-time(i,:));
end

%calculating velocity from lidar
for i=1:length(time)-1
    l_vel(i)=(lidar(i+1,:)-lidar(i,:))/(time(i+1,:)-time(i,:));
end

%calculating velocity from IMU accelerometer data
for i=1:length(time)-1
    p_vel(i)=(pitch(i+1,:)-pitch(i,:))/(time(i+1,:)-time(i,:));
end

%making plots
figure(1)
plot(time(1:190),g_angle')
hold on
plot(time(1:190),l_angle(1:190))
hold on
plot(time(1:190),pitch(1:190))
hold off
title('Angular Position (deg)')
xlabel('Time (ms)')
ylabel('Angle (deg)')
legend('Gyroscope', 'Lidar','Accelerometer')

figure(2)
plot(time(1:190),gyrox(1:190))
```

```
hold on
plot(time(1:190),l_vel')
hold on
plot(time(1:190),p_vel')
hold off
title('Angular Velocity (deg/ms)')
xlabel('Time (ms)')
ylabel('Angular Velocity (deg/ms)')
legend('Gyroscope', 'Lidar','Accelerometer')
```







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