

Dr. Ahn gave us sample files from a GPS and sensor unit created by someone else. He wanted us to learn how to read this data into matlab to look at the data. For this, we need to understand a function called textread. It's actually a pretty simple function. It'll read data from the file and store it in a predefined array created by the user as seen in the matlab code below.

```
[gtime, ash_heading]=textread('h:/ee531-532/IMU/ash11h50hz.hdg','%f
%f','headerlines',1,'delimiter',' ');

gtime = gtime(:,1) - gtime(1,1);
%ash_heading = ash_heading/180*pi;

figure(1) % Dela Time
plot(gtime, ash_heading); grid;
title('Heading(Data Set: ash11h50hz.hdg, 2/27/2001)')
zoom on;
xlabel('GPS Time [adjusted from start of run] (seconds)');
```

So there are two variables read in from ash11h50hz.hdg. They are gtime and ash_heading. The %f %f sets up the variables as double arrays. The headerlines after that is the number of lines at the beginning of the file to skip. Delimiter delimits characters. Then, all that was done was to find the change in time, which is shown as: $gtime = gtime(:,1) - gtime(1,1)$; After that, the data is plotted as normal.

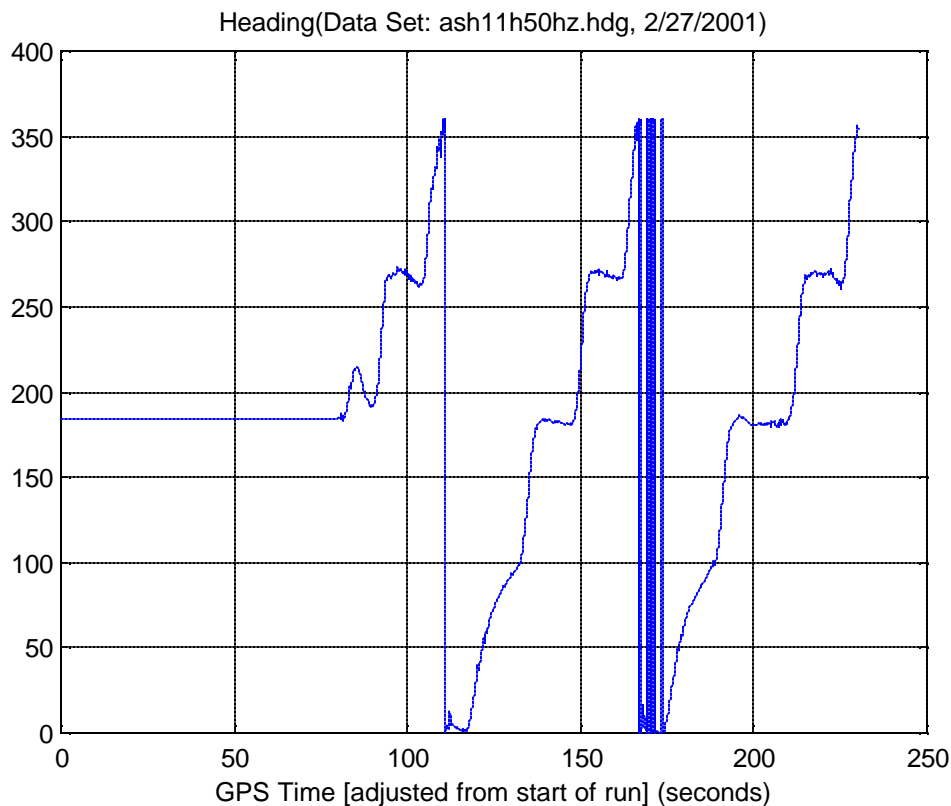


Fig 1- (Plot of ash11h50hz.hdg)

Included with the heading data, there is a file that contains position and velocity values. This data was also read in using the textread function in matlab. The file is called: `ash11h50hz.brw`.

```
[gtime,ecefposx, ecefposy, ecefposz, ecefvelx, ecefvely,
ecefvelz]...
=textread('h:/ee531-532/IMU/ash11h50hz.brw','%f %f %f %f %f %f
%f','headerlines',1,'delimiter',' ');
% read Ashtech ECEF position and velocity data
b = size(gtime);
gtime = gtime(:,1) - gtime(1,1);

figure(1), subplot(311), plot(gtime, ecefposx), grid
title('ECEF X position from data set ash11h50hz.brw')
subplot(312), plot(gtime, ecefposy), grid
title('ECEF Y position from data set ash11h50hz.ena')
subplot(313), plot(gtime, ecefposz), grid
title('ECEF Z position from data set ash11h50hz.brw')

figure(2), subplot(311), plot(gtime, ecefvelx), grid
title('ECEF X velocity from data set ash11h50hz.brw')
subplot(312), plot(gtime, ecefvely), grid
title('ECEF Y velocity from data set ash11h50hz.brw')
subplot(313), plot(gtime, ecefvelz), grid
title('ECEF z velocity from data set ash11h50hz.brw')
```

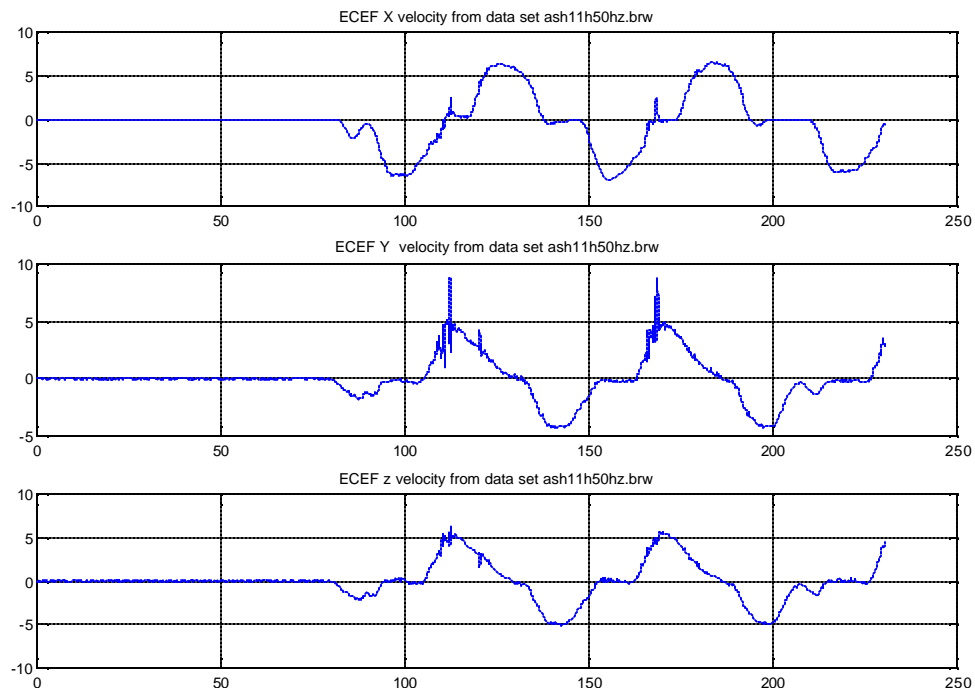


Fig 2 - (Velocity data acquired from `ash11h50hz.brw`)

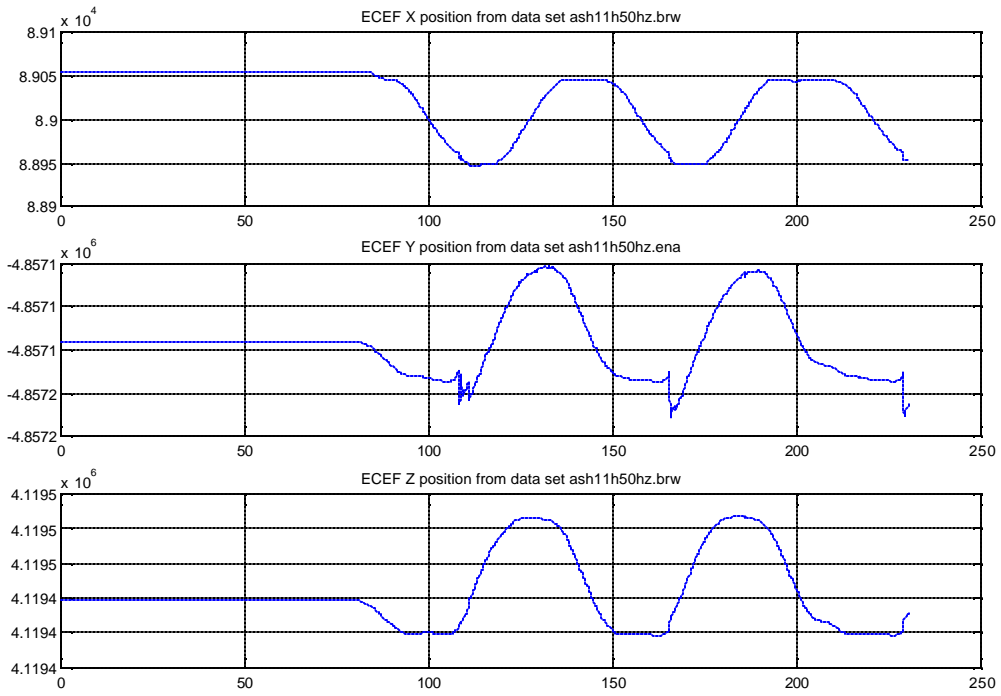


Fig 3 - (Position data acquired from `ash11h50hz.brw`)