

MECH 4420 Lab Manual

Once the system is powered up in the trunk (main 12 volt line must be connected), the left button in the ashtray turns on the computer (and re-boots it if the CPU locks up). There are two executables for the class, which are located in the MECH4420 folder on the desktop. The file names and data available is shown below (if anyone needs brake pressure for the final project I can generate that as well). Datafiles are numbered consecutively with the current date as : Datafile_060918_000.txt and are stored in the datafiles folder inside the MECH4420 desktop folder.

lateral_log.exe	longitudinal_log.exe
GPS Position	GPS Position
GPS Velocity	GPS Velocity
Wheel Speed	Wheel Speed
Yaw Rate from Car	Engine Torque
Lateral Accelerometer from Car	ABS Flags
X,Y,Z Crossbow Accelerations	X,Y,Z Crossbow Accelerations
Roll, Pitch, Yaw Rates from Crossbow Gyros	Roll, Pitch, Yaw Rates from Crossbow Gyros
Vehicle Yaw from Beeline	
Vehicle Roll from Beeline	

Once the code opens you should see (make sure there are no error messages):

```
Starfire port (17) opened
Crossbow port (18) opened
Comm port 19 opened
CAN OPENED CORRECTLY
```

At this point use the following keys to:

```
r > start/stop running code
c -> start/stop continuous display of data
d -> one time display of data
f -> start/stop file log
h -> Help (just displays the above commands)
ESC ->quit program (follow instructions, you'll have to hit ESC a second time).
```

Make sure the starfire data is coming in at 5 Hz ("SF RMS Sec" data line). DO NOT SAVE DATA WHILE CONTINUOUSLY DISPLAYING DATA TO SCREEN.

In the datafiles folder there is a matlab program called "check_todays_data(run_number)" that checks the data from the current days data. Start Matlab (on the Desktop) and change directory to: C:\Documents and Settings\GAVLAB\Desktop\MECH4420\Datafiles" (this will be on the drop down directory menu bar). Then >>>check_todays_data(0); Make sure the average sample time is about 0.0311 seconds (this is displayed on the Matlab screen and is also one of the plots generated), otherwise the data log is probably bad).

HOLD THE MONITOR SO IT DOESN'T FALL DURING TESTING.

Lab 1 ideas

Compare $\frac{1}{4}$ mile with simulation using different shift points

Compare $\frac{1}{4}$ mile simulation with corrected and uncorrected accelerometer.