
# Vehicle Data Analysis Exercise

Vehicle Dynamics, Planning and Control of Robotic Cars

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# Assignment

These exercises will let you familiarize with real vehicle data. You are supposed to attach the solution of the following homework in the final report that you are going to deliver a few days before the oral exam.

# Exercises

## Exercise 1 - Understanding vehicle data

In this exercise, you are provided with a dataset resulting from a real vehicle testing campaign. The data are reported in Stanford Digital Repository (link).
The dataset is in the file `20130222_01_02_03_grandsport.mat`. As you load it in MATLAB, you will find several variables in the workspace. Follow the data information on the web site.
It is required to complete the following tasks:

- Plot lateral and longitudinal velocity.
- Evaluate the longitudinal speed using the Hall-effect wheel speed sensors and compare the data with the INS data.
- Evaluate the lateral acceleration using the relation with the yaw-rate and the longitudinal speed.
- Comparing the longitudinal acceleration measured by INS with the one obtained by derivation of the longitudinal speed measured from the Hall sensors.
- Evaluate the side slip angle.