

Experiment Problem Set Two
Due Monday, March 18, 2013

Prior to all experiments: check your battery voltage! Charge if necessary.

Run a series of open loop step tests on V1. Pick two values of V1 Ref to use for the steps.

Don't pick a value so small that the robot barely moves. Don't pick a value so large that the robot goes to maximum robot speed.

Values of 0.2 m per sec and 0.4 m per sec might be good numbers, but you should verify.

Run at least five replicants of each experiment.

Use the step system identification button and compute rise time, settling time, overshoot, and time to peak. Record these values for each experiment.

Tabulate the numbers and provide an average value for both experiments.

Write a brief report describing your experiments and observations. Include your table of data as a table. Caption your table appropriately (e.g., Table 1. Step Response parameters for Velocity). Cite your table in the text and call out your relevant numbers. If the numbers for each step are similar, this is important to note. If they are different, you should consider why.

Include a sample experiment for each V1 by plotting V1 and V1 Ref versus time (use matlab for this). Caption your figures appropriately (e.g., Figure 1. Step Response in Velocity for a 0.2 m per sec Command) and cite them in the text (e.g., A 0.2 m per sec step in velocity was given and a typical response is shown in Fig. 1.)

If possible, use your own words to describe things, don't just cut and paste my "e.g."