AE483: Lab #3 Rubric

T. Bretl

October 29, 2017

Your activities in Lab #3 will be assessed with the following rubric.

(30%) Attendance (assessed individually)

You are expected to attend lab during the section for which you enrolled. If you must be absent on a certain day, please speak with your TA or with Prof. Bretl at least one week in advance.

- (10%) You arrived on time and participated actively throughout the first lab session.

- (10%) You arrived on time and participated actively throughout the second lab session.

- (10%) You arrived on time and participated actively throughout the third lab session.

(30%) In-Lab Demos (assessed as a group)

Your group is expected to show all of the following things to your TA during lab. (More detail about each one is provided in the lab manual.) If you do not finish these things during your lab session, you may show them during any TA's office hours until the time at which your report is due.

From agenda for the first day:

- (2%) You created a movie of control at a constant position in simulation.

- (2%) You created a movie of control at a changing position in simulation.

- (2%) You were able to characterize at least some initial conditions for which the quadrotor does and does not achieve hover with zero yaw at the desired position.

- (2%) You quantified how "good" your controller was in simulation.

- (2%) You described at least one impact of changing the diagonal entries in the weighting matrices Q and R.

From agenda for the second day:

- (3%) You showed your TA a plot of position and desired position as a function of time.

- (2%) You quantified how closely position converged to desired position.

- (2%) You made at least one change to the controller that you thought—with justification—would improve your results.

- (3%) You showed your TA a plot of position and desired position as a function of time after making a change to your controller.

From agenda for the third day:

- (2%) You showed your TA a plot of position and desired position as a function of time for the results in simulation.

- (4%) You showed your TA a plot of position and desired position as a function of time for the results in experiment.

- (1%) You quantified how closely the actual position matched the desired position in experiment.

- (1%) You quantified how closely the results in experiment matched the results in simulation.

- (1%) You justified a change to the controller that would improve the results in some way.

- (1%) You quantified how "good" your controller was.

(40%) Report (assessed as a group)

Your group is expected to submit a report no later than 11:59PM on Friday, November 10. No late submissions will be accepted for any reason. Your report must satisfy the following requirements:

- It is a PDF with size 8.5x11 pages.

- It uses font "Times New Roman" (or similar) and size 12 point.

- It is single-spaced.

- It has 1-inch margins.

- It has a title, a list of authors, and a date.

- It has a minimum of six pages and a maximum of eight pages.

Any report that does not satisfy these requirements will receive zero credit. You are encouraged to submit your report early and to follow up with your TA to confirm that it satisfies requirements. (You may resubmit a new draft of your report with the same filename at any time before the deadline.) The four sections of your report will be evaluated as follows:

- Goal

  - (2%) There is a section with this title.
  - (4%) An engineer would understand what you wanted to do after reading this section.
  - (4%) An engineer would know how successful you were in doing what you wanted after reading this section. (You do not have to be 100% successful.)

- Method of approach

  - (2%) There is a section with this title.
  - (4%) An engineer would be able to implement your method of control design after reading this section.

- – (4%) An engineer would be able to repeat your experiments (both in simulation and in hardware) after reading this section.

- Results

  - – (2%) There is a section with this title.
  - – (4%) There is at least one figure in this section. It, and all other figures in the report, have the following characteristics:
    * Each figure has a descriptive caption.
    * Each figure is labeled, for example, Figure 1, Figure 2, etc.
    * The axes in each figure have descriptive and appropriately sized labels.
    * The tick labels (i.e., the numbers along the horizontal and vertical axes) in each figure are appropriately sized.
    * The lines in the plot (both axis lines and data curves) are sufficiently thick.
    * Plots containing more than one set of data contain a descriptive legend that is appropriately sized.
  - – (2%) An engineer would understand the extent to which results in simulation matched results in experiment, by looking only at the figures in this section, even if he or she ignored every other part of the report.
  - – (2%) An engineer would understand the extent to which the performance of the controller was "good" both in simulation and experiment, by looking only at the figures in this section, even if he or she ignored every other part of the report.

- Discussion

  - – (2%) There is a section with this title.
  - – (2%) An engineer would understand how closely the actual position matched the desired position in each experiment, and would understand at least one possible reason for any difference, after reading this section.
  - – (2%) An engineer would understand how closely the results in experiment matched the results in simulation, and would understand at least one possible reason for any difference, after reading this section.
  - – (2%) An engineer would understand how "good" your controller was, and would understand what you mean by "good," after reading this section.
  - – (2%) An engineer would understand at least one change you made to improve the performance of your controller and would understand the impact of this change in experiment, after reading this section.