

ME599-004: Data-Driven Methods for Control Systems

Winter 2025

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Final Project Report Guidelines

Due Date: Noon Apr 25 (Fri), 2025

Content

Your report should resemble an academic paper. It should have, at least, the following themes.

- Abstract: This portion should contain a *brief summary* of the report.
- Introduction/Background: This should explain, *in general*, what you are trying to accomplish and why it is important. It should discuss what others have done about the subject, and where what you are working on falls into. Let the reader see the big picture.
- Problem Statement: This should be a *concise statement* of what your report addresses. If applicable, write it mathematically and include appropriate diagrams, images, etc, to aid your statement.
- Method(s): *Specify and describe in details* what method(s) you are using in answering the problem, and explain why you are using the method(s) you choose. Present any preliminary ideas or concepts that are critical to understanding your method. Include any relevant equations, diagrams or algorithms.
- Results and Discussions: Show your results and discuss them. Highlight important take-aways in your discussion.
- Conclusion: Expound on your final thoughts.
- References
- Appendices: This should contain any additional relevant information including all, or links to all, codes (and data) needed to replicate the results in the report.

Format

Page limit: minimum 9 pages and maximum 15 pages *including* figures, tables, references *but excluding* appendices. You can use a font size as small as 11pt with single line spacing. No title page is necessary, but be sure to write the name of team members on the first page. If your report exceeds this limit you should rethink the way you present the contents: can multiple graphs be presented on the same figure? Can a statement be made more concise?

Figures and Tables

- Ensure that you explain all your results and reference your figures and tables in the text where appropriate. Think about the best way to present your results so that they aid in the understanding of your report. A well thought-out figure or table will make your report clearer.
- Tables vs. text: tables win.
- Graphs vs. tables: graphs usually win. In some cases, you might want to see the digits in a table.
- Make sure you label the axes properly with a readable font, complete with the units used.

- One set of data per plot vs. multiple sets of data per plot: When plotting the same quantity for different parameters, you should show all results in one plot, within reason. Make sure to include legends as necessary.
- When two or more graphs have the same x and y axes, and the data in the graphs are meant to be compared, make sure the graphs have the same ranges on the x and y axes.
- Make sure tables and figures have a descriptive caption and that the caption is in the same page as the figure. Whenever possible, captions should be verbose enough that they can be understood out of the context of the main text. There is no need for a figure title in addition to the caption.
- All figures should good resolution; it should also be easy to read all fonts on all figures.
- Refer to figures explicitly in the text. Figures have a purpose and this should be stated when referring to it. e.g., what did that particular plot tell you? Highlight anything worth noting.

Equations

- Explain all variables and symbols.
- Present equations and computations in a clear and rational manner.
- Use equation typesetting software (such as MS Equation Editor or \LaTeX).
- State any assumptions or simplifications made.

Writing Style

- Avoid “will” as much as possible. E.g. “...drag will increase.” vs. “...drag increases.” Search for instances of “will” and see if they are really necessary.
- Which vs. that: Some people use “which” when they should be using “that”. Make sure you go “which” hunting before submitting.
- Wordiness. When proof reading, look for a way of eliminating unnecessary words, e.g., “It should be noted...” would sound better as “Note that...”.
- Spell checking: please check before submitting.

NOTE: Your report is worth 15 points; your presentation is worth 5 points.