Final Project Proposal (a.k.a., Homework 08)

Submission due to Gradescope at **11:59pm on 04/04/2023**

For the final project this semester, you will use the MATLAB skills you've learned to answer 4 engineering/science/mathematics problems. Two of these problems will be the same for the entire course and completed using MATLAB Grader, just like the homework all semester. The other two problems will be proposed and solved by you; the purpose of this assignment is to conceptualize and propose the problems you intend to solve. You can use problems from homework assignments in other courses, or you can generate problems of your own that you find interesting.

The coding requirements for the final project are that, between the 2 problems, you must:

- Generate at least one plot.
- Use at least one looping structure (e.g., a for-end or a while-end structure).
- Use at least one conditional structure (e.g., an if-elseif-end structure), and provide a flowchart for the corresponding script.
- Import data in some form.

The conceptual requirements for the final project are that:

- The problems should not be trivial extensions of problems we've already solved for HW. For example, simply changing the definition of the k^{th} term of some infinite series summation– we've already solved this problem on HW and simply changing the algebra isn't really solving a new problem.
- The 2 problems you choose must be related to STEM (Science, Technology, Engineering, and Mathematics). This is a broad umbrella, so most anything you choose will probably work, but I encourage you to pick problems that will help you become more familiar with how you might use MATLAB to solve problems relevant to your engineering discipline.
- For at least one problem, you must extend the original question in a way that demonstrates the benefits of computer programming.
  - For example, if the original problem requires you to perform a single calculation for a fixed set of parameters, you could write a script to repeatedly perform the calculations for various combinations of the parameters.

The Homework 08 deliverable is a proposal of the 2 problems you will solve in your final project. For each problem, you should:

- Provide/define the problem statement. Include the givens, any relevant schematics, and clearly define the question you hope to answer.
- A short description of how you will answer the question using MATLAB. Think of this as a written (very) rough draft of your code for each problem (i.e., pseudocode). Specify when you will use loops and/or conditional structures, which results you will plot, etc.
- Typeset your problem proposals and combine them into a single document for submission.

If you have any questions regarding these problem proposals, please come to my office hours on Friday morning or Pranav's (our grader) office hours over the weekend. You can find the times and locations/Zoom links for office hours on the course Canvas page.