Computing for Scientists Midterm Projects

Much of science now relies on software that is produced by scientists themselves. While the number one goal of such software is to produce the correct answer or analysis according to the wishes of the scientist, the accessibility, usefulness, and understandability are also important aspects of the code. This makes science more open, transparent and reproducible.

Following this, the goals for the midterm project in Computing for Scientists are:

1. Write code that accurately performance an analysis, simulation, or other workflow; and

2. Demonstrate that this code follows best practices in scientific computing as outlined below.

The code that is created in the midterm project ideally will be used during the final project to analyze data, run the workflow, or be developed into a short package with documentation.

The Project Topic

It's always my goal in work with graduate students to create assignments and projects that promote efficient work. I would like you to pick a topic that would directly benefit either your research (past or present) or work in another course (past or present). That way, you'll be using these techniques on something meaningful, as opposed to being assigned busy work.

That being said, the research backgrounds and subject matter of students in the class varies widely. So, the project topics I will leave largely up to you (with my approval). Students must get approval for the topic, but this approval involves a quick chat normally. I will be looking for the feasibility of the project in the time frame of the midterm and its complexity.

Please submit your topic for approval before **October 12, 2020.**

Project Format

Projects will consist of an R Studio project posted to Github as a git repository and the CS 510 Course Organization page. It will consist of all the code for your workflow, any sample data needed to run the workflow, and your Github commit history.

Note: only material posted on Github will be evaluated. If you have a data set that should remain private, please contact me and we will work out how to handle that.

Peer Code Review

Your visualization and presentation will be scored by your classmates and the instructor. These scores will be averaged to give you the final presentation score. The assessment tool will be developed by us as a class and distributed before the first-draft presentations. Scores for the Final Presentation will consist of the assessment scores of three students and the score of the instructor

(each weighted equally at 25%).

The final exam will occur Thursday May 21 10:45 am - 1:15 pm.

Grading Scheme for Midterm Projects (with Deadlines)

Each assignment within the midterm project series is weighted as follows:

- Project Topic approval: 10 points

- First Draft turned in: 20 points

- Midterm project instructor score: 30 points

- Peer review score: 30 points

- Participation in peer review: 10 points

The timeline for the various assignments is:

- Mon Oct 12, 4 pm: Project Topic approval

- Mon Oct 19, 4 pm: First Draft due

- Wed Oct 28, 4 pm: Midterm project code due

- Mon Nov 2, 4 pm: Peer review of someone else's code due

Note: because of the disruption caused by COVID-19, all deadlines are soft. Please adhere to deadlines wherever you can, especially when reviewing other's code. If you are unable to review code in a timely manner, please let me know and I will reassign your workload.

Methods of Assessment:

- Full credit for satisfactory completion or sufficient improvement during project (compare first and final drafts).

- Assessment tool based on best practices developed by the class.