

MATH 680 Computation Intensive Statistics

November 5, 2018

Course Project Information

Each student will do some research in statistical computing for the course project. This research should make some contribution to the field.

- Students can collaborate in pairs of two and write one report. But students with a project by collaboration must describe role and contribution in collaboration, and the nature of collaboration.
- You are encouraged to discuss your project with other students and faculty.
- A well-written project technical report must be submitted. I expect that this could be around 10-15 pages. This report should carefully and correctly describe the statistical models, algorithms, and simulation studies in the project. For collaborative projects by two persons, the reports must correspondingly reflect larger amounts of efforts.
- Computer code must be submitted, and should be properly commented and indented.
- Simulation studies must be included.

Example projects.

- Find an interesting article in the Journal of Computational and Graphical Statistics, write computer code for the proposed algorithms, reproduce the simulation studies in the article, and create new simulation studies that add to the understanding of the statistical methods.
- Create an R package for some useful algorithms in statistical computing. Submit this package to the CRAN repository, write a manual with examples, and perform simulation studies.
- Find or create a better algorithm to fit a statistical model, or an algorithm to fit a new statistical model. This will involve optimization. Perform simulation studies.
- Analyze data using computationally intensive methods. Perform simulation studies.
- Establish new theoretical properties for algorithms. Perform simulation studies.

You are required to submit 10-mins presentation slides (on Mycourses) that describes your project with methodology and initial results by November 28, 2018. Then the students will be assigned with the review task for evaluating other teams' projects and submit corresponding review reports.

The project final technical report and code must be submitted on Mycourses by December 12, 2018. The project grade is based on the combined rating from the student peer review and instructor's judgment of the quality of the report.