Final Project Guidelines

Written reports due **Wednesday 14 December 2022** (last day of classes)
Project presentations to be scheduled during the last week of classes

1 Overview

The final project will give you the opportunity to explore a current topic in uncertainty quantification, stochastic modeling, and computational statistics. The topic of your project is fairly open: it can be an offshoot of some basic method we discussed in class, or it can be something else inspired by the current literature. Topics related to your research are entirely welcome as long as you would not otherwise explore them as part of your day-to-day work. In other words, you cannot simply duplicate something you are doing for your thesis; the class project should represent a distinct effort. The class project should also involve some *implementation*. Just doing a literature survey is not sufficient; instead, the idea is to "get your hands dirty" and actually try out some new algorithms or analysis of a data set.

One useful guideline is that an appropriate project scope might involve: (1) learning about a particular approach or methodology from a paper; (2) implementing and trying it out on simple problems; and (3) commenting on strengths, weaknesses, relations to other methods, and potential extensions. You could also pursue a comparison of several different approaches to the same problem.

2 Project Proposal

Please send a project proposal via email to both Aimee and Youssef by the evening of **Wednesday 30 November 2022.** The project proposal need not be very formal or long. It can be an email with one paragraph describing what you'd like to do. In this email, please provide links to any paper(s) that are relevant to your idea. We can then iterate as needed to shape the goals and scope of the project into something both manageable and meaningful. Or the response might be to go right ahead.

3 Format

We will schedule **oral presentations** of final projects in the last week of class. Oral presentations will be 5 minutes in length, including questions, so please plan to talk no longer than 3 minutes. We recommend no more than two slides. The idea is just to give a flavor of the project: what is the problem you are investigating; what is the main idea behind the algorithm or approach; what is the main takeaway? People will be able to read your paper later on Canvas and/or to contact you afterwards. These presentations will give everyone in the class an opportunity to learn about the area you have explored, and hopefully broaden our collective perspective!

A **written project report** is also required, officially due on Wednesday 14 December 2022. The writeup should roughly adhere to an "Introduction–Formulation–Results–Conclusions" format. We

are looking for a clear presentation of the mathematical formulation, thorough numerical explorations, and a critical assessment of the results and overall methodology. You may wish to use the SIAM LATEX style files at `https://www.siam.org/Portals/0/Macros/Standard/siamart_190516.zip` for your report.

Please turn in your final project report as a pdf file via Canvas. We plan to make these reports available to everyone else as a learning resource—a collective snapshot of what the class has investigated.

4   Topics

If you've come up with a project idea on your own, by all means pursue it! If you'd like some inspiration, however, please look through the topic list posted separately on the Canvas site.