Stat238: Final Project

November 3, 2016

The final project will be in lieu of a final exam. You can work on it alone or in groups of two (in which case, more will be expected in terms of scope).

Project topic

The nature and topic of the project are fairly open-ended. Some possibilities include:

1. development and implementation of a Bayesian analysis of one's own data or data obtained elsewhere,
2. implementation of a Bayesian method/algorithm in the literature, possibly within the NIMBLE platform, or possibly as an R, Python or other software package,
3. evaluation of a Bayesian method or algorithm, for example using a simulation study,
4. replication and extension or assessment of a detailed analysis found in the literature, and
5. contribution to a literature review that involves surveying and assessing the use of simulation/bootstrapping/Bayesian computation in the scientific literature. Briefly, I've noticed that often when I read articles about the earth system (ecosystems, climate, oceans, etc.) in Science or Nature, the authors talk about using 'bootstrapping' or Monte Carlo simulation and then interpret the results in a Bayesian fashion. So the goal would be to better understand what methods are being used to quantify uncertainty and to what degree these types of analyses are actually taking a Bayesian approach. If interested, let me know and I can give some further ideas.

Please send me a short (one paragraph) summary of your proposed project and then find a time to chat with me (either stop by, schedule a time, or come by during office hour) about it. Given the final problem set and exam, you have until November 18 to send me the summary and to talk to me, but you're welcome to do it sooner.

What to turn in

The project will be assessed based on:

1. A project report. This does not need to be long, but should be well-organized and well-written, in the form of a scientific paper. 5-10 pages would be appropriate, but please include your code as an appendix. This is due December 16 at 5 pm.
2. A 10-minute presentation to the class summarizing what you did. This does not need to be very formal - a verbal presentation with a few key figure slides is fine. The presentation period will be at the end of reading week or beginning of exam week, TBD based on feedback from you all.