Stats C180/236 Introduction to Bayesian Statistics

Course site on CCLE: `https://ccle.ucla.edu/course/view/17W-STATSC180-1`.
Instructor: Qing Zhou (zhou@stat.ucla.edu), OH: Wed 12:30-1:30pm, MS 8979.
Prerequisite: Stats 200B or 100B; 202C or 102C (recommended).
Programming skills (R, C/C++, Matlab, etc.).

Assignments

1. Homework assignments (50%).
2. Final paper (50%): Due Friday of final exam week.

Topics

Introduction to Bayesian statistics and computing. Below is a tentative structure of the course:

1. Fundamentals of Bayesian inference: prior and posterior distributions, decision theory, point and interval estimations, single-layer models.
2. Hierarchical models: hyperparameters, hyperprior, shrinkage, Stein estimators.
3. Bayesian missing data problems: missing data, data augmentation, Gibbs sampler, incomplete normal data, mixture models.
4. Bayesian nonparametrics: Dirichlet process models, Gaussian process models, density estimation.

References

- Text book: Gelman et al., *Bayesian Data Analysis* (3rd edition, 2013).
- Lecture notes: to be posted on the CCLE site.