Project for STAT 535 – Spring 2014

You will analyze a data set of your choosing, using any appropriate Bayesian method we have discussed in this class.

The data set could be one that is of personal or academic interest to you and that fits one of the methods of Bayesian analysis studied in STAT 535 (or some closely related Bayesian method that you can implement). It should be a real data set which you have not analyzed before and which has not been analyzed in a textbook (using the methods of this course, anyway).

You should write a concise report summarizing your analysis. The report should be no longer than five (typed) pages, not counting any WinBUGS or R output, graphs, etc., which you may wish to include as support or illustration for your analysis.

The style of the report is up to you, but the best reports will address many of the questions and details studied in class when we discussed the relevant type of analysis.

Some things to include (depending on the data set and choice of model) might be:

- An introduction and discussion of the data set itself
- A statement of the model, including choice of data distribution and choice of prior distribution
- Discussion and justification of prior parameter choices
- Summary results for any relevant point estimates, interval estimates, or predictions
- Discussion of variable selection approach (if appropriate)
- A summary of model checking, both in terms of checking for model adequacy and (if appropriate) diagnosing MCMC convergence issues
- Any remedial action you took to fix an inadequate model, if applicable
- Your overall conclusions about the data, based on your analysis

The report will be due *on or before* April 25, 2014 at 4 p.m., and (for students taking the course for graduate credit) will count as 10% of your overall course grade. The project is optional for undergraduate students. Undergraduate students doing the project will receive between 1 and 7 points added to their final exam scores, depending on the quality of the submitted project.