STA496/497/4001 Assignment 1 The Bayesian Lasso

Due: 11:59pm March 22, 2019.

Weight: 50%

Instructions: This is a group project for groups of three. Email the finished report as a PDF file of at least 4 pages to simpson@utstat.toronto.edu.

Task: Read *The Bayesian Lasso* by Park and Casella and write a summary and a critique of the model contained therein. In particular, discuss the links with the classical LASSO as well as the implications of the prior distribution. The main question to be asked is "Does this work?". This question should be addressed through prior simulations, theoretical work, and posterior simulations with fake data.

The report should contain simulated data, model fits, and a discussion of the theoretical aspects. If useful, code extracts should be included. The report should be targeted at a person familiar with Bayesian statistics who does not know anything about Bayesian models of sparsity.

Marking scheme:
- A+: A report without substantive errors that could be given unchanged to the *Target Audience*. It should cover all points in the project description in sufficient depth. All conclusions should be sensible and well justified.
- A: Would require some relatively minor work before being usable by the *Target Audience*. Some errors or omissions, but basically sound and well put together. Most issues covered well.
- B: Would require substantial revisions before being useful to the *Target Audience*. Some serious errors or omissions, but some other components of a good standard.
- C: Not suitable to be given to the *Target Audience*. Major errors or omissions, but so me under- standing of the material demonstrated.
- D: Enough major errors that little understanding of the material has been demonstrated in the project work.
- Fail: Fails to meet the standard of a D.