Applied Bayesian Inference: Assignment 1

Susumu Shikano

Document version: November 27, 2018

- First, read carefully the slide `WS18_Bayes05_Intro_JAGS.pdf`

- Use the data `Bayes_Student_Survey.RData` in ILIAS.

- Submit your R-code in ILIAS! Do not forget to comment which part corresponds to which task! You do not have to put the results on the code since I can replicate your code on my PC.

- Deadline: 05. December 2018

1. Estimate the parameters of a bivariate regression via OLS. You can choose a dependent variable and one independent variable from the dataset for yourself.

2. Run the MCMC to obtain the posterior of the same regression model above with 5 chains. You have to run first 200 iterations without collecting posterior. Thereafter collect your posterior in 1000 iterations. Use the same prior as you can find in the slide.

3. Check the convergence based on visible inspection and the Gelman-Rubin-Statistics.

4. Report the posterior by using `summary()` and `plot()`.

5. Calculate the probability that the regression slope takes a positive value.

6. Do the tasks 2-4 by using another set of prior, which you can freely choose.