THE UNIVERSITY OF HONG KONG
DEPARTMENT OF STATISTICS AND ACTUARIAL SCIENCE

STAT6011/7611/6111/3317   COMPUTATIONAL STATISTICS

Take-home midterm project, due on October 31

All numerical computation MUST be conducted in Python, and attach the Python code.

1. Follow the JRSS-B (2008, 70, pp. 589–607) paper "Marginal likelihood estimation via power posteriors" by Friel and Pettitt to analyze the data set "pine.txt".

   (a) Focus on Section 3, the part before Section 3.1, which describe the main idea.

   (b) Understand Section 3.2.2, where equation (7) is the approximation formula.

   (c) Follow Section 4.1.1 to reproduce Table 1.

Other useful references include

   1 Chib, S. (1995) Marginal likelihood from the Gibbs output. J. Am. Statist. Ass., 90, 1313–1321.

   2 Chib, S. and Jeliazkov, I. (2001) Marginal likelihood from the Metropolis–Hastings output. J. Am. Statist. Ass., 96, 270–281.

   3 Han, C. and Carlin, B. P. (2001) Markov chain Monte Carlo methods for computing Bayes factors: a comparative review. J. Am. Statist. Ass., 96, 1122–1132.

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