Lab Assignment 4, ORFE 569
(Optional with 20% Extra Credits of Final term paper)
Due by 11:59pm on May 14, 2007 with Final term paper

Objective: The objective of this assignment is to construct a program (Fortran or C, or whatever computer language) to compute Bayes factor for your assigned model versus another model of your choice (in many case, it would be GBM with the same noises). The program implements the Bayesian model selection via filtering.

A sets of sample Fortran 77 programs (`bayesfactors-jsvgbm-gbm.f` and `parbf.f`) with a simulated data set (smlt-jsvgbm.dat) are provided on the course website (in **Two Key Papers** Section) for your reference. Also, `bfed1.f`, a related Fortran program to compute Bayes factor for each trade, is provided there.

In Problem 4 of Homework 4, you have written down the recursive algorithm. Use it to construct your program. Then, you will test your programs using a simulated data set you generate for Lab Assignment 2.

If you have done Lab Assignment 3, debugging for Lab Assignment 4 is similar. It is always good to check for each other!

A team of two is allowed and both students can submit a joint Lab Assignment 4.

For the simulated data set, produce suitable figures and tables such as Figures 1 and 2 and Table 2 in Kouritzin and Zeng (2005).

After your program passing the test, you may apply your program to real data set of stock or bond and obtain Bayes factors. You shall produce suitable tables like Table 3 in Kouritzin and Zeng (2005).

You only need to email me your two sets of programs. One set of program for simulated data and the other for real data. Each set should include programs and parameter files and the corresponding data set.

The writing and results of this assignment shall be incorporated into the Final term paper.