STAT 882: Nonparametric Bayesian Inference
Winter 2009

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Lecture Hours:  TTh BE 134A, 1:30-2:48pm

Text:
There is no required text book for this course. The lectures will be based on the instructors’ notes and a collection of papers that will be handed out during the quarter. References for a few of these papers appear at the end of this syllabus.

Course Description:
Nonparametric Bayesian inference has drawn significant attention in recent years in both the statistics and machine learning communities. By placing probability distributions on families of functions or measures, it offers a way to make use of the Bayesian calculus without the parametric handcuffs. This course discusses the theoretical concepts, computational issues, and modelling uses of nonparametric Bayesian methods. The focus will be on Dirichlet process and its variants. Core topics include constructions and properties of Dirichlet Process, the suite of Monte Carlo methods for efficient computations, and the applications of nonparametric Bayesian methods to regression, density estimation, ANOVA, etc.

Prerequisites:
Students are expected to be comfortable with probability and basic Bayesian analysis, and to have some experience with programming in R.

Grading:
Homework  60%
Final project  40%
**Homework:**

Homework will be collected approximately biweekly (making for 4-5 homework assignments during the quarter). Students are encouraged to work together on the problems, but each student must hand in his or her own work. Feel free to ask the instructors for help after making an attempt at the questions.

**Final project:**

Each student is expected to submit a written project report and make an oral presentation at the end of the quarter. Further details on the project will be given in class.

**Suggested reading:**


