Public Abstract

First Name:Ye

Middle Name:

Last Name:Liang

Adviser's First Name:Dongchu

Adviser's Last Name:Sun

Co-Adviser's First Name:

Co-Adviser's Last Name:

Graduation Term:SS 2012

Department:Statistics

Degree:PhD

Title:Bayesian Methods on Selected Topics

Bayesian methods are widely adopted nowadays in statistical analysis. It is especially useful for the statistical inference of complex models or hierarchical models, for which the frequentist methods are usually difficult to be applied. Though as a decision-making theory, often there are debates on the prior choices, the Bayesian methods benefits from its computational feasibility, with a variety of Markov chain Monte Carlo algorithms available. Three topics are studied using Bayesian methods. First, the competing risks model for masked failure data is investigated, which suffers from an identification problem. The identification problem and possible solutions are discussed and a Bayesian framework is used for the complex model. The other two topics are relevant, focusing on the lattice system and areal data. For a specific lattice system called generative star-shape model, objective priors are developed in order to achieve better estimations. The last topic is modeling areal data from a special project. A hierarchical model is developed for modeling the bounded outcomes with spatial variation and a Bayesian analysis is performed.