



Statistics and Actuarial Science Seminar

Title: Approximate Bayesian inference for changepoint models with and without dependence

Speaker: Jason Wyse (UCD)

Date: Thu 16th December 2010 at 3:00PM

Location: Statistics Seminar Room- Library building

Abstract: Changepoint models are ubiquitous in statistics. This talk aims to compare and contrast MCMC and exact filtering recursions analyses for these models, and also to investigate methods to provide simulation-free approximate inference when there is dependency within data segments. The first part of the talk introduces a collapsed changepoint sampler which avoids the need to use reversible jump MCMC to mix over the number of changepoints. This sampler is compared with the exact inference approach based on filtering recursions proposed by Fearnhead (2006). In particular, we focus on prior sensitivity. The second part of the talk focuses on relaxing independent data assumptions in changepoint models. This assumption is unrealistic for many situations, where dependency between adjacent data points is either suspected or has been demonstrated to exist. The aim of this work is to combine the filtering recursions methodology for multiple changepoint problems of Fearnhead (2006) and the INLA methodology of Rue et al (2009) to allow for approximate inference when the assumption of independent data within segments is relaxed. This leads to a broadening of the class of models which may be analysed using approximate deterministic approaches, and this is achieved for some multiple changepoint models which would be infeasible to analyze using trans-dimensional MCMC.

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