Statistics Seminar

Department of Mathematical Sciences

DATE:	Thursday, April 30, 2015
TIME:	1:15pm—2:40pm
LOCATION:	WH 100E
SPEAKER:	Zuofeng Shang (Purdue University)
TITLE:	A Bayesian splitotic theory for nonparametric models

Abstract

We consider a scalable Bayesian inference procedure for a general class of nonparametric regression models based on the well known divide-and-conquer strategy. Specifically, we first perform independent nonparametric Bayesian inference on each subset split from a massive dataset, and then aggregate those results into global ones. By partitioning the dataset carefully, we show that our aggregated inference results obtain the oracle rule in the sense that they are equivalent to those obtained directly from the massive data (which are computationally prohibitive in practice, though). For example, the aggregated credible sets achieve desirable credibility level and frequentist coverage possessed by the oracle counterparts (with similar radius). The oracle matching phenomenon occurs due to the nice geometric structures of the infinite-dimensional parameter space. As a technical by-product, we develop a new version of uniformly consistent test that applies to a general regression model under Sobolev norm. Hence, no posterior consistency condition is assumed in this paper.