

國家理論科學研究中心學術演講

2014 NCTS Industrial Statistics Research Group Seminar

Speaker: Prof. Wei-Yin Loh
(University of Wisconsin, Madison)

Time: 14:00-16:30, Fri., March 7, 2014
(Tea time: 15:00-15:30)

**Topic: A Regression Tree Approach to Identifying
Subgroups with Differential Treatment Effects**

Abstract:

In the fight against hard-to-treat diseases such as cancer, it is often difficult to discover new treatments that benefit all subjects. For regulatory agency approval, it is more practical to identify subgroups of subjects for whom the treatment has an enhanced effect. Regression trees are natural for this task because they partition the data space. We briefly review existing regression tree algorithms. Then we introduce three new ones that are practically free of selection bias and are applicable to two or more treatments, censored response variables, and missing values in the predictor variables. The algorithms extend the GUIDE approach by using three key ideas: (i) treatment as a linear predictor, (ii) chi-squared tests to detect residual patterns and lack of fit, and (iii) proportional hazards modeling via Poisson regression. Importance scores with thresholds for identifying influential variables are obtained as by-products. And a bootstrap technique is used to construct confidence intervals for the treatment effects in each node. Real and simulated data are used to compare the methods.

Place:

***Lecture Room A of National Center for Theoretical Sciences
4th Floor, The 3rd General Building, National Tsing Hua University***

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103 年 2 月 13 日