

國家理論科學研究中心學術演講

NCTS Industrial Statistics Research Group Seminar

Speaker: Prof. Yili Hong

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Blacksburg, VA 24061, USA)

Time: 2:00-3:30pm, Fri., December 14, 2012

**Topic: System Unavailability Analysis Based on
Window-Observed Recurrent Event**

Abstract:

Many service industries require high level of system availability to be competitive. An appropriate system unavailability metric is important for business decisions and to minimize the operation risks. In practice, a system can be unavailable for service due to multiple types of events, and the durations of these events can also vary. In addition, the data which record the system operating history often have a complicated structure. In this paper, we develop a framework for estimating system unavailability metric based on historical data of a fleet of heavy-duty industry equipment, which we call System A. During the useful life of System A, repairs and maintenance actions are performed. However, not all repairs or maintenance actions were recorded. Specifically, the information on event times, types and durations is available only for certain time intervals (i.e., observation windows), instead of the entire useful life span of the system. Thus the data structure is window-observed recurrent event with multiple event types. We use a nonhomogeneous Poisson process model with a bath-tub intensity function to describe the recurrent events and a truncated lognormal distribution to describe the event durations. We then define a conservative metric for system unavailability, obtain an estimate of this metric and quantify the statistical uncertainty.

This is a joint work with Ming Li and Brock Osborn from the Applied Statistics Lab at GE Global Research.

Place:

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

*** 歡迎參加，敬請張貼 ***

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