Joint Colloquium Lecture of Institute for Mathematical Sciences and Department of Statistics and Applied Probability

Inference for a Class of Non-homogeneous Gaussian Processes and Applications to Survival Analysis

Professor Vijay Nair
Department of Statistics
Department of Industrial & Operations Engineering
University of Michigan, Ann Arbor

Date	Monday, 29 Oct 2007
Venue	Faculty of Science S16-05-102 (Lab 2) National University of Singapore
Time	3:00 pm - 4:00 pm
About the Speaker	Professor Vijay Nair is the D. A. Darling Professor and Chair of the Department of Statistics and a professor in the Department of Industrial & Operations Engineering in the University of Michigan, Ann Arbor, USA. Professor Nair received his Ph.D. from University of California, Berkeley in 1978. He was a research scientist in the Bell Laboratories from 1978 to 1993. He then joined the University of Michigan where he has been the chair of its statistics department since 1998 and the D. A. Darling Professor since 2002. Professor Nair is a senior member of the American Society for Quality, an elected member of the International Statistical Institute and fellow of Institute of mathematical Statistics, the American Statistical association and the American Association for the Advancement of Science. He has received several honours for is contribution to statistics. They include the Adolphe Quetelet Medal from the International Statistical Institute (1999) and the Jack Youden Prize for best expository paper in Technometrics (2001). Professor Nair's research interest is in the area of statistics in Engineering, network tomography, spatial modeling, quality and productivity improvement, reliability, robust design for variation reduction, process monitoring and control etc.
Abstract	We consider a class of non-homogeneous Gaussian processes obtained through time-transformations of a Wiener process with linear drift. This class provides a flexible family for modeling degradation data, where the time-transformation function is interpreted as the cumulative degradation function. The threshold-crossing distributions (failure time distributions) for the processes are easily obtained. We discuss nonparametric inference for the time-transformation (cumulative degradation) function, semi-parametric inference for time-independent covariates, and large-sample results under different asymptotic regimes. Connections to an interesting variant of the Neyman-Scott problem will be mentioned.

Jointly organized by


IMS
Institute for Mathematical Sciences


NUS
National University
of Singapore
Department of Statistics and
Applied Probability