Colorado State University's Information Science and Technology Center (ISTeC)

presents <u>two</u> lectures by

Dr. Jianqing Fan

Frederick L. Moore Professor of Finance,
Director of Committee of Statistical Studies
Princeton University

ISTeC Distinguished Lecture

in conjunction with the
Statistics Department Seminar Series

"High-Dimensional Statistical Learning and Inference"

Wednesday, April 11, 2007
Reception: 2:30 – 3:00 p.m.
Lecture: 3:00 – 4:00 p.m.
Glover Building Room 201

●

Statistics Department Seminar

sponsored by ISTeC

"Statistical Analysis of DNA Microarray Data"

Thursday, April 12, 2007
Lecture: 3:05 p.m.
Clark Building Room A202

ABSTRACTS

"High-Dimensional Statistical Learning and Inference"

Thanks to technological innovation, the availability of large-scale and complex data is widely available nowadays in many emerging scientific problems. The challenge of high-dimensionality characterizes many contemporary statistical problems from frontiers of scientific research and technological development. In high-dimensional statistical research, low-dimensional structures are needed to be explored in order to circumvent the issue of noise accumulation with dimensionality. The talk will cover a number of important high-dimensional statistical problems from genomics, machine learning, and finance. These include various emerging issues from the analysis of microarray data such as normalization, significance analysis, and disease classification; variable selection and feature extraction from high-dimensional statistical learning; sparse classification; high-dimensional covariance matrix estimation for asset allocation and portfolio management. All of these problems have their distinguished characters from the context of their applications, but nevertheless share similar challenges with high dimensionality and admit features of sparsity. The challenges of variable selection and feature extraction in high-dimensional space will be addressed.

"Statistical Analysis of DNA Microarray Data"

Microarray techniques have been widely used to monitor gene expression in many areas of biomedical research. They have been widely used for tumor diagnosis and classification, prediction of prognoses and treatment, and understanding of molecular mechanisms, biochemical pathways, and gene networks. Statistical methods are vital for these scientific endeavors. In this talk, I will review recent developments of statistical methods for analyzing data from microarray experiments. Emphasis has been given to normalization of expression from multiple arrays, selecting significantly differentially expressed genes, and tumor classifications.

SPEAKER BIOGRAPHY

Jianqing Fan (http://orfe.princeton.edu/~jqfan/) is the Frederick L. Moore '18 Professor of Finance and Director of Committee of Statistical Studies at Princeton University, and president-elect of the Institute of Mathematical Statistics. He is the Co-editor (-in-chief) of *"The Annals of Statistics"* and an associate editor of "*The Journal of American Statistical Association,*" and was an editor of *"Probability Theory and Related Fields*" (2003-2005). After receiving his Ph.D. in Statistics from the University of California at Berkeley, he has been appointed as an assistant, associate, and full professor at the University of North Carolina at Chapel Hill (1989-2003), as a professor at the University of California at Los Angeles (1997-2000), a professor of Statistics and Chairman at the Chinese University of Hong Kong (2000-2003), and as a professor at the Princeton University (2003--). He has coauthored two popular books on "Local Polynomial Modeling" (1996) and "Nonlinear Time Series: Parametric and Nonparametric Methods" (2003), and authored or coauthored over 100 articles on computational biology, financial econometrics, semiparametric and non-parametric modeling, statistical learning, nonlinear time series, survival analysis, longitudinal data analysis, and other aspects of theoretical and methodological statistics. He is an elected Fellow of the American Association for Advancement of Science. He won The 2000 COPSS President's Award, given annually to the best statistician under age 40 worldwide, and the Humboldt Research Award.

To arrange a meeting with the speaker, please contact his host, Professor Haonan Wang, Statistics Department, at (970)491-2449 or Haonan.Wang@ColoState.EDU.

ISTeC (Information Science and Technology Center) is a university-wide organization for promoting, facilitating, and enhancing CSU's research, education, and outreach activities pertaining to the design and innovative application of computer, communication, and information systems. For more information please see ISTeC.ColoState.edu.