

Saw Swee Hock Public Lecture in Statistics Statistical Challenges at the age of data explosion



by Professor Jianqing Fan

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December 28, 2009 (Monday)

5:30 p.m. - 6:30 p.m.

Room 223, Knowles Building, HKU
Tea Reception at 5:15 p.m.

About the Talk

Technological innovations have revolutionized the process of scientific research and knowledge discovery. The availability of massive data and challenges from frontiers of research and development have reshaped statistical thinking, data analysis and theoretical studies. The challenges of complex and high-dimensionality arise in diverse fields of sciences and the humanities, ranging from computational biology and health studies to financial engineering and risk management. In all of these fields, variable selection and feature extraction are crucial for knowledge discovery. Sparsity and suprious correlaitons arise frequently in such a large statistical data analysis. We first give a comprehensive overview of statistical challenges with high dimensionality in these diverse disciplines. We then approach the problem of variable selection and feature extraction using a unified framework: Large-scale screening and small-scale searching. The penalized likelihood methods will be introduced for the small scale searching. Issues relevant to the choice of penalty functions are addressed. Other related problems with high-dimensionality are also discussed.

About the Speaker

Jianqing Fan is Frederick L. Moore Professor of Finance and Director of Committee of Statistical Studies at Princeton University. He received many awards and honors, including the 2000 COPSS Presidents' Award which is given annually by the Committee of Presidents of Statistical Societies to an outstanding statistician under age 40, the Humboldt Research Award for Lifetime Achievement in 2006, the Morningside Gold Medal of Applied Mathematics in 2007 which honors triennially an outstanding applied mathematician of Chinese decent, Guggenheim Fellow in 2009, and being an invited speaker at the 2006 International Congress for Mathematicians. He is Follow of American Associations for Advancement of Science, Institute of Mathematical Statistics, and American Statistical Association, President of International Chinese Statistical Association and past President of the Institute of Mathematical Statistics (2006-2009). He has been on the editorial boards of many journals including Econometrical Journal published by Royal Economics Society as Co-editor, The Journal of American Statistical Association as Associate Editor, The Annals of Statistics as Co-editor-in-chief (2004-2006), and Probability Theory and Related Fields as Editor (2003-2005). He has co-authored two highly-regarded books, titled "Local Polynomial Modeling" (1996) and "Nonlinear time series: Parametric and Nonparametric Methods" (2003), and authored or co-authored over 150 articles on computational biology, financial econometrics, semi-parametric and non-parametric modeling, statistical learning, nonlinear time series, survival analysis, longitudinal data analysis, and other aspects of theoretical and methodological statistics. He has been consistently ranked as a top 10 highly-cited mathematical scientist since the establishment of such ranking.

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All interested are welcome

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