The Chinese University of Hong Kong
DEPARTMENT OF STATISTICS

55 55th ANNIVERSARY OF CUHK
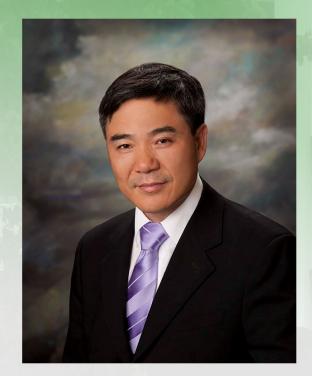香港中文大學 55周年

香 港 中 文 大 學
統 計 學 系

FACULTY DISTINGUISHED LECTURE SERIES 2018-19

STATISTICS: GENESIS OF MACHINE LEARNING AND AI

Professor **Jianqing FAN**

Department of Operations Research and Financial Engineering, Princeton University

Frederick L. Moore '18 Professor of Finance, Professor of Statistics, and Professor of ORFE, Princeton University
Chairman of Department of ORFE, Princeton University (2012—2015)
Guy Medal in Silver (2014)
Elected Academician, Academia Sinica (2012)
Morningside Gold Medal for Applied Mathematics (2007)
President of the Institute of Mathematical Statistics (2006—2009)
Committee of Presidents of Statistical Societies (COPSS) Award (2000)

Date: 29 March 2019 (Friday)
Time: 2:30 pm — 3:30 pm
Venue: Room LT2, Lady Shaw Building,
              The Chinese University of Hong Kong
              (Tea reception after the talk)

Abstract

This talk first gives an overview on how statistical and computational methods have evolved with growing dimensionality and sample sizes and become the foundation of modern machine learning and AI. It will also outline how ideas of trading modeling biases and variances have been developed into high-dimensional statistics and machine learning, with focus on deep learning models. We will outline the challenges of statistical sciences at this crossroad and offer some prospects. We will offer a general robustification principle and show how to use factor adjustments to deal with dependent measurements. In particular, Factor Adjusted Robust Multiple testing (FarmTest) and Model selection (FarmSelect) will be introduced for high-dimensional statistical inference and model selection. The effectiveness of these methods will be revealed with an application to predicting bond risk premia using macroeconomic time series. Further insights on the prospects of machine learning and AI will be offered.

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For enquiries please contact Miss Esther TAM (Tel: 3943 7931)
http://www.sta.cuhk.edu.hk/Events/UpcomingEvents.aspx