ADVANCE DISTINGUISHED LECTURE SERIES
Department of Statistics

Professor Marc G. Genton

Department of Statistics
Texas A&M University

THURSDAY
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Dickens 207

Hosted by:
Juan Du
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Prof. Marc G. Genton, one of the leading researchers in spatial and spatio-temporal statistics, has published over 110 articles in scientific journals, has edited a book on skew-elliptical distributions, and has given over 200 presentations at conferences and universities worldwide. He is currently a Professor of Statistics at Texas A&M University, the Director of the Program in Spatial Statistics (PSS), and a Deputy Director for the Institute of Applied Mathematics and Computational Science (IAMCS). He is a Fellow of the American Statistical Association, of the Institute of Mathematical Statistics, and elected member of the International Statistical Institute. In 2010, he received the El-Shaarawi award for excellence from the International Environmetrics Society. He is also the winner of 2010 Distinguished Achievement award from the Section on Statistics and the Environment of the American Statistical Association for his theoretical, methodological, and computational contributions to robust statistics; spatial and spatio-temporal statistics; and multivariate analysis with diverse applications.

Functional Boxplots for Complex Data Visualization

In this talk we propose an informative exploratory tool, the functional boxplot, for visualizing functional data, as well as its generalization, the enhanced functional boxplot. Based on the center outwards ordering induced by band depth for functional data, the descriptive statistics of a functional boxplot are: the envelope of the 50% central region, the median curve and the maximum non-outlying envelope. In addition, outliers can be detected in a functional boxplot by the 1.5 times the 50% central region empirical rule, analogous to the rule for classical boxplots. The construction of a functional boxplot is illustrated on a series of sea surface temperatures related to the El Nino phenomenon and its outlier detection performance is explored by simulations. As applications, the functional boxplot and enhanced functional boxplot are demonstrated on children growth data and spatio-temporal U.S. precipitation data for nine climatic regions, respectively. We will also discuss recent extensions of the above methodology. The talk is based on joint work with Ying Sun.

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