Lilac International Conference on Application of Statistics

LICAS 2015

July 1st-2nd 2015
Harbin China

Organizer: Department of Mathematics, Harbin Institute of Technology

Co-Organizer: Mathematical Society of Heilongjiang Province

Sponsors: School of Science, Harbin Institute of Technology

               International HIT, Harbin Institute of Technology

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Scientific Committee

(Last name of members ordered by alphabet)

Zhidong Bai	Northeast Normal University,
(Honorary Chair)	National University of Singapore
Jiti Gao (Chair)	Monash University
Changlin Ao	Northeast Agricultural University
Minghao Chen	Harbin Institute of Technology
Yongqiang Fu	Harbin Institute of Technology
Zhong Guan	Indiana University South Bend
Chong Sun Hong	Sungkyunkwan University
Minghui Jiang	Harbin Institute of Technology
Lei Li	Chinese Academy of Sciences
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Qi Liang	Sun Yat-sen University
Shengqiang Liu	Harbin Institute of Technology
Jun Meng	Northeast Agricultural University
Qiwen Ran	Harbin Institute of Technology
Jihong Shen	Harbin Engineering University
Jian Shi	Chinese Academy of Sciences
Tie Su	University of Miami
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Yuwen Wang   Harbin Normal University

Yuxue Wang   Northeast Petroleum University

Boying Wu   Harbin Institute of Technology

Zhibin Yan   Harbin Institute of Technology

Chunrui Zhang   Northeast Forestry University

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Xian Zhang   Heilongjiang University

Zhiwei Zhang   U.S. Food and Drug Administration

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Wei Liu	Harbin Institute of Technology
Li Wang	Harbin Institute of Technology
Haiyu Wen	Harbin Institute of Technology
Yongchun Zhou	Harbin Institute of Technology

Personal Introduction of Scientific Committee

(Last name of members ordered by alphabet)

1. **Zhidong Bai**(Honorary Chair) is a professor of School of Mathematics and Statistics in Northeast Normal University, an academician of Third World Academic of Science, an academician of American Institute of Mathematical Statistics, a member of International Statistical Association, a member of International Association for Mathematical Statistics, a member of International Chinese Statistical Association, an executive director of Probability and Statistics Society of China, a member of Mathematic Association of China, a distinguished professor of Jilin Province, an editorial board member of *Journal of the Multivariate Analysis* and *Journal of Statistical Planning and Inference,* a subeditor of *Statistica Sinica,* a subeditor of *Sankya,* a Reviewer of *Mathematical Review* and *Zentralblatt fur Mathematik*.

2. **Jiti Gao**(Chair) is a professor of Econometrics and Business Statistics Department in Monash University, an elected fellow of the Academy of the Social Sciences in Australia, the Richard Snape Chair of Business and Economics, Monash University, Australia, a member of the Research Evaluation Committee of the Excellence for Research in Australia, an elected member of International Statistical Institute, a

founding member of the Society for Financial Econometrics, a member of Econometric Society, a member of the Australasian Standing Committee of the Econometric Society, the executive chair of the 2011 Econometric Society Australasian Meeting, an associate editor of *Journal of Econometrics*, an associate editor of *Econometric Theory*.

3. **Changlin Ao** is a professor of the School of Science in Northeast Agricultural University, a deputy director of Agricultural Systems Engineering Professional Committee, Systems Engineering Society of China, an executive director of Agricultural Systems Engineering Professional Committee of China Agricultural Engineering Society, an executive director of Heilongjiang Society for Industrial and Applied Mathematics, a member of Japan Agricultural Machinery Society.

4. **Minghao Chen** is a professor of Institute of Probability, Statistics, Operations Research and Control Theory in Harbin Institute of Technology, a member of Japan Society of Mathematical Sciences, a managing director of Mathematics of Heilongjiang Province.

5. **Yongqiang Fu** is a professor and associate dean of Department of Mathematics in Harbin Institute of Technology, the secretary general of Mathematical Society of Heilongjiang Province, a deputy director of Mathematical Society of Harbin.

6. **Zhong Guan** is a life-time professor of Department of Mathematical Sciences in Indiana University South Bend, a member of American Statistical Association, a member of American Mathematical Society, the secretary general of Probability and Statistics Society of Heilongjiang Province before, a member of the Board of Directors of the Heilongjiang Province Branch of the Applied Statistics Society of China before.

7. **Chong Sun Hong** is a professor of Department of Statistics in Sungkyunkwan University, a member of the American Statistical Association, a member of the Mu Sigma Rho Statistical Honor Society, a director of Public Relations of the Korean Statistical Society, the president of the Statistics in Sports, the Korean Statistical Society, a director of Public Relations of the Korean Data Information Science Society, a member of the Classification Society, the Korean Statistical Society, a member of the Survey and Statistical Society, the Korean Statistical Society, a member of the Statistical Computing Society, the Korean Statistical Society.

8. **Minghui Jiang** is a professor and the dean of Department of Applied Economy in Harbin Institute of Technology, a director of Social and Economic Systems Engineering Professional Committee, Systems Engineering Society of China, a director of Chinese Association of Productivity Science.

9. **Lei Li** is a researcher of Academy of Mathematics and Systems Science in Chinese Academy of Science, supported by 100 Talents Program of The Chinese Academy of Sciences in 2010. He got Evelyn Fix Memorial Medal, UC Berkeley in 1998.

10. **Longsuo Li** is a professor of Institute of Probability, Statistics, Operations Research and Control Theory in Harbin Institute of Technology, the secretary general of Heilongjiang Institute of industrial and Applied Mathematics.

11. **Qi Liang** is a professor and the dean of Department of Business Administration of School of Management in Sun Yat-sen University, the dean of Research Center of Industry and Regional Development, a deputy director of The Regional Science Association of China, a managing director of China Society of World Economics, a managing director of Chinese Association for Regional Economics.

12. **Shengqiang Liu** is a professor of Foundation and Cross Science Research Institute in Harbin Institute of Technology, an editorial board member of *Abstract and Applied Analysis*, *ISRN Mathematical Analysis* and *International Scholarly Research Notices* for Mathematical Analysis, a managing director of China Mathematics Society of Mathematics, a reviewer of *Zentralblatt Math* and *Mathematical Reviews*.

13. **Jun Meng** is a professor and the dean of School of Science in Northeast Agricultural University, a deputy director of Agricultural Systems Engineering Professional Committee, Chinese Society of Agricultural Engineering, a vice chairman of Quantity economy and technology economy society of Heilongjiang Province, a managing director of Mathematical Society of Heilongjiang Province, a managing director of Field Statistical Research Association Heilongjiang Province.

14. **Qiwen Ran** is a professor of Foundation and Cross Science Research Institute in Harbin Institute of Technology. His main scientific research awards are Third Prize of Technological Advances in Aerospace Industry Corporation, Second Prize of Technological Advances in State Commission of Science and Technology for National Defense Industry, Second prize of State Technological Invention Award.

15. **Jihong Shen** is a professor and the dean of School of Science in Harbin Engineering University, a deputy director of Mathematical Society of Heilongjiang Province, a deputy director of Heilongjiang Society for Industrial and Applied Mathematics.

16. **Jian Shi** is a researcher of Academy of Mathematics and Systems Science in Chinese Academy of Science, a managing director of Chinese Association for Applied Statistics, a managing director and

deputy secretary general of Chinese Society of Probability and Statistics.

17. **Tie Su** is an associate professor of Department of Finance in University of Miami, SME for CFA exam review in the American College of Financial Services, Wenlan Scholar in Zhongnan University of Economics and Law (Wuhan, China), Visiting Professor in Shanghai National Accounting Institute, a member of TCFA Program Committee, EFA Derivative Track Chair, EFA V.P. of Local Arrangements, a member of FMA Program Committee, EFA Derivative Track Chair, a member of SFA Program Committee.

18. **Jian Tao** is a professor and the dean of School of Mathematics and Statistics in Northeast Normal University, a reviewer of Mathematical Reviews, a director of The Chinese Mathematical Society Probability Statistical Society, a director of Uniform Design Branch of Math in China, a vice chairman of Society for Industrial and Applied Mathematics of Jilin Province, a vice chairman of Site Statistics Institute of Jilin Province, an editorial board Member of *Applied Psychological Measurement*.

19. **Yong Wang** is a professor of Institute of Probability, Statistics, Operations Research and Control Theory in Harbin Institute of Technology, receiving the Government Special Allowance of

Heilongjiang Province, the chief of Mathematics Society of Heilongjiang Province.

20. **Yuwen Wang** is a professor of the School of Mathematical Science in Harbin Normal University, a managing director of Mathematics Society of Heilongjiang Province, the chief of Committee for Popularization Work.

21. **Yuxue Wang** is a professor and the dean of the School of Mathematics and Statistics in Northeast Petroleum University. His main science research awards are Third Prize of Technological Advance in Heilongjiang Province and First Prize of Technological Advance Education Department of Heilongjiang Province.

22. **Boying Wu** is a professor and the dean of Department of Mathematics in Harbin Institute of Technology, a director of China System Simulation Algorithm Professional Committee, the director general of Heilongjiang Institute of Computational Mathematics, a deputy director of Mathematics of Heilongjiang Province, a managing director of Heilongjiang Industrial and Applied Mathematics.

23. **Zhibin Yan** is a professor of Institute of Scientific and Industrial Technology in Harbin Institute of Technology. He took part in analyzing and designing a system of tracking and aiming control in the test item of satellite ground laser communication in China for the first time.

24. **Chunrui Zhang** is a professor and the dean of School of Science in Northeast Forestry University, a managing director of Mathematics Society of Heilongjiang Province, a managing director of Heilongjiang Society for Industrial and Applied Mathematics.

25. **Shijie Zhang** is a professor of Institute of Satellite Technology of School of Astronautics in Harbin Institute of Technology, supported by the First Young Talents Recruitment Plan in Harbin Institute of Technology.

26. **Xian Zhang** is a professor of School of Mathematics Science in Heilongjiang University, a managing director of Mathematical Society of Heilongjiang Province.

27. **Zhiwei Zhang** is a Mathematical Statistician of U.S. Food and Drug Administration, an associate editor and reviewer of several top journals. He has published papers at *Journal of the American Statistical Association*, *Biometrics*, *Annals of Applied Statistics* and *Biostatistics*.

28. **Hui Zhao** is a professor and vice dean of Department of Applied Mathematics in Harbin University of Science and Technology, a managing director of Heilongjiang Society for Industrial and Applied Mathematics.

29. **Xueyan Zhao** is a professor of Econometrics and Business Statistics Department in Monash University, a member of Econometrics Society,

a member of Australian Economists Society, a member of Australian Agricultural and Resource Economics Society, a member of Australian Health Economics Society, a member of International Health Economics Society.

Conference Program

(Room 213/214, Activity Centre, HIT)（活动中心 213/214）

July 1st	**Opening Ceremony**
8:00-8:30	Leader Speech
	Yongqiang Fu(Harbin Institute of Technology)
	Chair: Boping Tian(Harbin Institute of Technology)
8:30-9:00	**Group Photo**
9:00-9:45	**Keynote Speech 1**
	Speaker: Zhidong Bai(Northeast Normal University, National University of Singapore)
	Chair: Jiti Gao(Monash University)
9:45-10:00	**Coffee and tea**
10:00-11:30	**Section 1(Speech 1-3)**
	Chair: Zhong Guan(Indiana University South Bend)
10:00-10:30	Speaker: Chong Sun Hong(Sungkyunkwan University)
10:30-11:00	Speaker: Jian Shi(Chinese Academy of Sciences)
11:00-11:30	Speaker: Chen Wang(National University of Singapore)
11:30-14:00	**Lunch(Xiyuan Hotel, 西苑宾馆)**
14:00-15:30	**Section 2(Speech 4-6)**
	Chair: Jian Shi(Chinese Academy of Sciences)
14:00-14:30	Speaker: Xueyan Zhao (Monash University)

14:30-15:00	Speaker: Lei Li(Chinese Academy of Sciences)
15:00-15:30	Speaker: Hansik Song(DongA University)
15:30-15:45	**Coffee and tea**
15:45-17:15	**Section 3(Speech 7-9)**
	Chair: Chong Sun Hong(Sungkyunkwan University)
15:45-16:15	Speaker: Kyeong Eun Lee (Kyungpook National University)
16:15-16:45	Speaker: Ying Zhou(Heilongjiang University)
16:45-17:15	Speaker: Mahmoud Abdelaziz Mohamed Eissa(Harbin Institute of Technology)
	Dinner(Xiyuan Hotel, 西苑宾馆)
July 2nd	**Keynote Speech 2**
8:30-9:15	Speaker: Jiti Gao(Monash University)
	Chair: Zhiwei Zhang(U.S. Food and Drug Administration)
9:15-11:30	**Section4(Speech 10-13)**
	Chair: Zhibin Yan(Harbin Institute of Technology)
9:15-9:45	Speaker: Zhong Guan(Indiana University South Bend)
9:45-10:00	**Coffee and tea**
10:00-10:30	Speaker: Zhiwei Zhang(U.S. Food and Drug Administration)
10:30-11:00	Speaker: Wei Liu(Harbin Institute of Technology)

11:00-11:30	Speaker: Shuxia Zhang(Harbin Institute of Technology)
11:30-14:00	**Lunch(Xiyuan Hotel, 西苑宾馆)**
14:00-16:00	**Section 5(Speech 14-16)**
	Chair: Qi Liang(Sun Yat-sen University)
14:00-14:30	Speaker: Yongtai Ren(Northeast Agricultural University)
14:30-15:00	Speaker: Jiangfeng Wang(Harbin Institute of Technology)
15:00-15:30	Speaker: Xia Zhang(China Minsheng Banking Corp., Ltd.)
15:30-15:45	**Coffee and tea**
15:45-17:45	**Section 6(Speech 17-19)**
	Chair: Boping Tian(Harbin Institute of Technology)
15:45-16:15	Speaker: Yun Meng(China Life)
16:15-16:45	Speaker: Ping Wang(Jianghai Securities Co.,Ltd.)
16:45-17:15	Speaker: Fengyan Ma(Wind Information Co., Ltd.)
	Dinner(Le Grand Large Hotel Harbin Haiyan, 哈尔滨海燕大酒店)

Abstracts

Keynote Speech 1

Large Dimensional Statistical Analysis

Zhidong Bai,

Northeast Normal University, National University of Singapore

Abstract: With the modern developments and wide applications of Computer technologies, it makes available to collect, store and analyze huge data of large dimensions. While it brings great help in modern sciences and technologies, people found that when dimension of data is large, the applications of classical multivariate analysis would result in huge even intolerable statistical errors. Thus, it is urgent to develop new theory to fit the needs of large dimensional statistical analysis. In this talk, I will introduce three directions of new developments of large dimensional statistical analyses: (i) Naive high dimensional hypothesis tests, (ii) Corrections to likelihood ratio test using random matrix theory, and (iii) new limiting theorems of classical statistics and large dimensional settings.

Keynote Speech 2

Nonlinear Models in Economics and Finance

Jiti Gao, Monash University

Abstract: Through using ten examples, this presentation focuses on various non-linear and semi-linear models: Income and consumption model; Time series trending model; Nonlinear panel data models in health economics and development economics; Consumer demand model; Demand-utility model; Production model; and Nonlinear capital asset pricing model.

Nonlinear Cointegrating Time Series Models

Jiti Gao, Monash University

Abstract: While existing literature clearly defines linear cointegration, the issue of how to define whether a model is nonlinearlt cointegrated remains unaddressed satisfactorily. This presentation introduces a class of nonlinear and cointegrating

models before estimation and specification testing problems will be discussed. Applications using economic and financial data will be considered extensively.

Speech 1

VUS and HUM test statistics with nonparametric statistics

Chong Sun Hong, Sungkyunkwan University

Abstract: It is well known that the area under the ROC curve is represented with both Mann-Whitney and Wilcoxon rank sum statistics. Consider the ROC surface for three dimensions and ROC manifold for more than or equal to four dimensions. In this presentation, it is found that the volume under the ROC surface (VUS) and the hypervolume under the ROC manifold (HUM) could be derived as functions of conditional Mann-Whitney statistics and conditional Wilcoxon rank sum statistics as well. Moreover, we propose that the null hypothesis that all distribution functions are identical could be tested by using the VUS and HUM statistics based on the asymptotic large sample theory of Wilcoxon rank sum statistic. In other words, the VUS and HUM statistics can be used to test the null hypothesis that all distribution functions are identical. It is shown from some illustrative examples with three and four random samples that two approaches give the same VUS and HUM. Also, the equivalence of several distribution functions is tested with the VUS and HUM in terms of conditional Wilcoxon rank sum statistics.

Speech 2

Statistical inference for regression models with interval censored covariates

Jian Shi, Chinese Academy of Sciences

Abstract: Censoring is an important sampling scheme or pattern of incomplete data in survival and event history analysis. Interval censoring occurs when some event of interest is only known to onset within a certain interval, but without exactly observation and commonly arises in medical or health study and also exists in

demography and other fields. In this paper, we use an imputation method to study linear regression model with an interval censored covariate based on a generalized "Class K" approach. Using a modified least square method, we get our proposed estimators, which is consistent and asymptotic normal. We also consider multiple regression models which may include several covariates. Simulation result is reported and we finally apply the proposed method to AIDS data analysis.

Speech 3

Order Determination of Large Dimensional Dynamic Factor Model

Chen Wang, National University of Singapore

Abstract: Consider the following dynamic factor model: $R_t = \sum_{i=0}^{q} \Lambda_i F_{t-i} + e_t$, $t = 1,...,T$. where Λ_i is an $N \times K$ loading matrix (of full rank), $\{F_t\}$ are i.i.d. $k-$ factors, and e_t are independent white noises. This model plays a very important role in financial statistics. Now, assuming that $N/T \to c > 0$, we want to estimate the orders k and q respectively. Define a random matrix

$$\Phi_N(\tau) = \frac{1}{2T} \sum_{j=1}^{t} (R_j R_{j+\tau}^* + R_{j+\tau} R_j^*)$$

where $\tau > 0$ is an integer. When there are no factors, the matrix $\Phi_N(\tau)$ reduces to

$$M_N(\tau) = \sum_{k=1}^{T} (\gamma_k \gamma_{k+\tau}^* + \gamma_{k+\tau} \gamma_k^*)$$

When $\tau = 0$, $M_N(\tau)$ reduces to the usual sample covariance matrix whose ESD tends to the well-known M-P law and thus $\Phi_N(0)$ reduces to the standard spike model and hence the number $k(q + 1)$ can be estimated by the number of spiked eigenvalues of $\Phi_N(0)$. To obtain separate estimates of k and q, we have to employ the spectral analysis of $M_N(\tau)$. In our work, we derive the LSD of $M_N(\tau)$ and then establish the strong limits of extreme eigenvalues of $M_N(\tau)$ for some $\tau \geq 0$. Finally, we will establish the spiked model analysis for $\Phi_N(\tau)$.

Speech 4

Partial Identification of Treatment Effect in Binary Outcome Models:

An Application to Health Insurance and Health Service Utilisation

Xueyan Zhao, Monash University

Abstract: Recent developments in the literature of partial identification have significant implications for the econometric estimation of important policy effects. In empirical economics, it is often of interest to estimate the effect of a binary policy treatment variable on a binary outcome variable where both may be driven by common observable and unobservable factors. A common approach is to assume a parametric model, such as a bivariate probit, together with the use of instrumental variables to achieve point identification. Partial identification analysis of such problems allows for less restrictive assumptions for the underlying data generating process (DGP) in empirical applications, and the estimated bounds offer more robust measures for policy impacts. This paper applies the partial analysis approach to a health economics application. We estimate the bounds for average treatment effect (ATE) of private health insurance status on dental service utilisation, using data from the Australian National Health Survey. Four sets of bounds from the literature under varying DGP assumptions and their 95% confidence regions are estimated. The resulted ATE confidence bounds are much wider than the confidence intervals using a conventional bivariate probit. We found that two of the bounds have reasonably narrow widths to be informative. We also estimate bounds for different sub-populations with varying widths. Performances of global parametric, local parametric, and smoothed and raw non-parametric estimators for bounds are also studied using generated data.

Speech 5

BASE-Statistical Inference of transcription factors' effective

regulation: notion and examples

Lei Li, Chinese Academy of Sciences

Abstract: Transcription and its regulation lie at the heart of molecular biology. High throughput technology allows us to measure the abundances of whole genome

transcripts. A typical problem in functional genomics is the identification of transcription factors (TFs) accounted for the profile of expression differences between two samples. We propose a statistical method, referred to as BASE (binding association with sorted expression), to infer transcription factors' effective regulation from expression profiles with the help of TFs' binding affinity data. It searches the maximum association between binding affinity profile of a TF and expression profile along the direction of sorted differentiation. The binding strengths could be obtained in vitro such as ChIP-chip, ChIP-seq data or in silico such as the computation using the cis-motif database TRANSFAC and JASPAR . We illustrate the method by several biological discoveries we made.

Speech 6

Finding Relevancies in Data using GMDH

Hansik Song, DongA University

Abstract: GMDH (Group Method for Data Handling) is introduced by A.G. Ivakhnenko as a self-organizing method for systems modeling. GMDH can be used to predict a response variable by using a many independent variables. At the prediction, if some variables are included in the GMDH prediction function, then those variables can be regarded as relevant variables. As an example to compare GMDH and linear regression model, world climate time series observation data were applied to GMDH modeling and regression modeling. Both modelings found similar relevant variables such as CO_2, CFC, aerosol, etc. The comparison was done with extrapolation with time series data and interpolation with randomized series data. The GMDH experiments were done by VBA programs and regression models by R programs.

Speech 7

Bayesian Models for DNA Microarray Data Analysis

Kyeong Eun Lee, Kyungpook National University

Abstract: Three Bayesian models for DNA microarray data analysis are introduced. 1) Selection of significant genes via expression patterns is important in a microarray problem. Owing to small sample size and large number of variables (genes), the selection process can be unstable. We propose a hierarchical Bayesian model for gene

(variable) selection. We employ latent variables in a regression setting and use a Bayesian mixture prior to perform the variable selection. 2) Microarray data can also be applied to survival models. We address the issue of how to reduce the dimension in building model by selecting significant genes as well as assessing the estimated survival curves. We propose Bayesian variable selection methods in Cox's proportional hazard model. And we extend it to proportional hazard mixed effect model.   3) We propose a mixture of Dirichlet process models using discrete wavelet transform for a curve clustering. In order to characterize these time-course gene expressions, we consider them as trajectory functions of time and gene-specific parameters and obtain their wavelet coefficients by a discrete wavelet transform. We then build cluster curves using a mixture of Dirichlet process priors.

Speech 8

A Nonparametric Method to Test for Associations between RVs and Multiple Traits

Ying Zhou, Heilongjiang University

Abstract: More and more rare genetic variants have been detected among human genome, and it was believed that besides common variants, some rare variants also explain part of phenotypic variance for human diseases. Due to the importance of rare variants, many statistical methods have been proposed to test for associations between rare variants and human traits. However, in existing studies, most methods only test for associations between multiple loci and one trait, therefore the joint information of multiple traits has not been considered simultaneously and sufficiently. In this paper, we present a study of testing for associations between rare variants and multiple traits, where trait value can be binary, ordinal, quantitative, and/or any mixture of them. Based on the method of generalized Kendall's τ, a nonparametric method, called NM-RV is proposed. Our simulation work suggests that the proposed method is more powerful and robust than existing methods in testing for associations between rare variants and multiple traits, especially for multivariate ordinal traits.

Speech 9

Convergence and Stability of Split Step Theta Methods for Stochastic Pantograph Differential Equations

Mahmoud Abdelaziz Mohamed Eissa,

Harbin Institute of Technology

Abstract: This paper is concerned with convergence and stability of split step theta (SSθ) methods. We consider the SSθ methods for stochastic pantograph differential equations (SPDEs). The strong convergence of the numerical solutions under a local Lipschitz condition and a coupled condition on the drift and diffusion coefficients is proved. Under mild assumptions, the SSθ methods is proved to be mean square stable (MS-Stable) for nonlinear and linear SPDEs. Finally, some numerical examples are presented to demonstrate the MS-Stability of the numerical methods.

Speech 10

Bernstein Polynomial Model for grouped continuous data

Zhong Guan, Indiana University South Bend

Abstract: Grouped data are commonly used in applications. The Bernstein polynomial model is proposed in this paper for estimating a univariate density function based on grouped data. The coefficients are interpreted as mixture proportions of beta distributions and can estimated using an EM algorithm. The optimal degree of the Bernstein polynomial can be determined using a change-point estimation method. The proposed method is compared with some existing methods in a simulation study and is applied to a real dataset.

Speech 11

Blinding Assessment and the Placebo Effect: A Causal Inference Perspective

Zhiwei Zhang, U.S. Food and Drug Administration

Abstract: Evaluation of medical devices is frequently complicated by the presence of substantial placebo effects, especially on relatively subjective endpoints, and the

standard solution to this problem is a randomized, double-blinded, placebo-controlled clinical trial. However, effective blinding does not guarantee that all patients have the same belief or mentality about which treatment they have received (or treatmentality, for brevity), making it difficult to interpret the usual intent-to-treat effect as a causal effect. We discuss the causal relationships among treatment, treatmentality and the clinical outcome of interest, and propose a causal model for joint evaluation of placebo and treatment-specific effects. The model highlights the importance of measuring and incorporating patient treatmentality and suggests that each treatment group should be considered a separate observational study with a patient's treatmentality playing the role of an uncontrolled exposure. This perspective allows us to adapt existing methods for dealing with confounding to joint estimation of placebo and treatment-specific effects using measured treatmentality data, commonly known as blinding assessment data. We first apply this approach to the most common type of blinding assessment data, which is categorical, and illustrate the methods using an example from asthma. We then propose that blinding assessment data can be collected as a continuous variable, specifically when a patient's treatmentality is measured as a subjective probability, and describe analytic methods for that case.

Speech 12

Likelihood-based methods for evaluating Principal

Surrogate Endpoints in Augmented Vaccine Trials

Wei Liu, Harbin Institute of Technology

Abstract: There is growing interest in assessing immune biomarkers, which are quick to measure and potentially predictive of long-term efficacy, as surrogate endpoints in randomized, placebo-controlled vaccine trials. This can be done under a principal stratification approach. Because a placebo recipient's potential immune response to vaccine is unobserved in a standard vaccine trial, augmented vaccine trials have been proposed to produce the information needed to evaluate principal surrogacy. This report reviews existing methods based on an estimated likelihood and a pseudoscore and proposes two new methods based on a semiparametric likelihood and a pseudolikelihood, for analyzing augmented vaccine trials.

Speech 13

Semiparametric test for multiple change-points based on empirical

likelihood

Shuxia Zhang, Harbin Institute of Technology

Abstract: In the dynamic financial market, the change of financial asset prices are always described as a certain random events which result in abrupt changes. The

random time when the event occurs is called a change point. As the event happens, in order to mitigate property damage the government should increase the macro-control ability. As a result, we need to find a valid statistical model for change point problem to solve it effectively. This paper proposes a semiparametric model for detecting the change points. According to the research of empirical studies and hypothesis testing we acquire the maximum likelihood estimators of change points. We use the loglikelihood ratio to test the multiple change points. We obtain some asymptotic results. Furthermore, the consistency of the estimator of change point is presented. The estimated change point is more efficient than the nonparametric one through simulation experiments. Real data application illustrates the usage of the model.

Speech 14

Education of Statistics

Yongtai Ren, Northeast Agricultural University

Abstract: Department of Information and Computing Science's research and education areas are mathematics problem and its theory in agriculture, application of Probability theory and Multivariate statistical analysis in ecology.

Speech 15

Asymptotic Properties of Quasi-Maximum Likelihood Estimators for Spatial Models with Two Different Weight Matrices

Jiangfeng Wang, Harbin Institute of Technology,

Abstract: In this paper, we concentrate on the spatial models with two different weight matrices and investigate the consistency of maximum likelihood estimator (MLE) and qusi-maximum likelihood estimator (QMLE) for the spatial models. Furthermore, we explore asymptotic distributions of the MLE and QMLE.

Speech 16

互联网金融对银行业的冲击汇报

Xia Zhang, China Minsheng Banking Corp., Ltd.

Abstract: 1.互联网金额现状；

2.银行应对措施。

Personal Introduction: 张霞，现工作于中国民生银行哈尔滨分行交易平台金融部总经理（曾任银行营业部会计、综合员、业务主管、业务主任、支行副行长、支行行长）。现所经营的业务领域：1、具有大宗商品的现货挂牌、现货交易、现货市场。从事以非标准仓单或以电子仓单为交易标的物，统一物流交收、统一结算付款等服务的交易中心或电子交易平台。2、为核心企业提供供应链、产业链金融服务，提供线上交易、线下实物交收，实现资金流封闭、物流监控、融资结算、资金监管等服务。3、以结算业务、金融互联网、电子商务、第三方支付、资金托管、线上线下产业链融资等业务为主，突破了地域限制、行业限制，利用空间换时间效率，拓展平台项下产业集群收集行业数据信息，运用大数据、云平台推测行业走势，为信贷资产质量通过数据信息。

Speech 17

应用统计对寿险行业的作用及影响

Yun Meng, PICC LIFE

Abstract: 1.应用统计对寿险行业的主要作用；

2.应用统计对寿险行业的未来影响。

Personal Introduction: 孟筠，从事人寿保险工作 17 年，曾就职于中国最大的寿险公司中国人寿，从事负债评估、产品开发等工作，目前就职于中国人保寿险（中国人保寿险是中国人民保险集团旗下的重要成员，主要经营人寿保险、健康保险、意外伤害保险等保险业务及上述业务的再保险业务。2014 年规模保费 813 亿元，位居国内寿险公司前 5 名），任职产品开发部总经理，负责产品设计、产品定价、大业务支持、数据分析等相关工作。

Speech 18

金融量化投资中的数学

Ping Wang, Jianghai Securities Co.,Ltd.

Abstract: 量化投资是借助现代金融学、计算机和数学方法，把人的投资理念和研究成果量化为客观的数学模型，利用计算机技术完成数据处理、分析建模、决策下单，执行整个流程的系统化、程序化的投资方式。数学在量化投资中起到核

心的关键作用，主要是用于风险管理和定价，包括模型的建立和求解。随着国内衍生品，尤其是期权的业务开展，数学将在量化投资中获得更为广泛和深入的应用。

Personal Introduction: 王平，上海证券交易所期权业务借调专家，哈尔滨工业大学计算机专业博士。曾就职于恒生聚源，任研究中心经理，负责量化平台业务。2010 年加入平安证券，负责 ETF、股指期货套利等创新业务，2011 年参与组建了平安证券量化投资事业部，任执行副总经理。现任江海证券量化投资部总经理，在股票、股指期货、期权、ETF 等的套利和交易方面有非常深入的研究和实践经验。

Speech 19

Wind 数据库产学研平台应用

Fengyan Ma, Wind Information Co., Ltd.

Abstract:　1.Wind 数据库包含的内容

2.Wind 数据库在金融界的使用领域

3.Wind 数据库给教研平台带来的优势作用

Personal Introduction: 麻凤艳，上海万得信息技术股份有限公司高校分公司东北区区域经理，负责东北区（哈尔滨、沈阳、长春、大连）高校数据终端推广工作。

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