

# **21st International Conference on Computational Statistics**

## **(COMPSTAT 2014)**

**Hosting the 5th IASC World Conference**

**Geneva, Switzerland  
19-22 August 2014**

**Editors:**

**Manfred Gilli  
Alicia Nieto-Reyes**

**Gil Gonzalez-Rodriguez**

**ISBN: 978-1-63439-585-4**

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2014) by the International Statistical Institute  
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact the International Statistical Institute  
at the address below.

International Statistical Institute  
P.O. Box 24070  
2490 AB The Hague  
The Netherlands

Phone: 31-70-3375737  
Fax: 31-70-3860025

[isi@cbs.nl](mailto:isi@cbs.nl)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# Contents

Jan Kalina, Zdeněk Valenta and Jurjen Duintjer Tebbens <b>Computation of Regularized Linear Discriminant Analysis</b>	1
Paul Fischer and Astrid Hilbert <b>Fast Detection of Structural Breaks</b>	9
Anthony C. Atkinson, Marco Riani, Andrea Cerioli and Domenico Perrotta <b>Random Start Forward Searches for Detecting Mixtures of Regression Models</b>	17
M. Helena Gonçalves and M. Salomé Cabral <b>Incomplete longitudinal binary responses in marginal model</b>	25
Grzegorz Konczak <b>On the modification of the non-parametric test for comparing locations of two populations</b>	35
Joan del Castillo, Maria Padilla and Isabel Serra <b>Comparison of techniques for extreme values using financial data</b>	45
Paulo C. Rodrigues, Andreia Monteiro and Vanda Lourenço <b>New insights into the usefulness of robust singular value decomposition in statistical genetics</b>	53
Borja Lafuente-Rego and Jose Antonio Vilar <b>Time series clustering based on quantile autocovariances</b>	61

Frederick Kin Hing Phoa	
<b>A Graphical User Interface Platform of the Stepwise Response Refinement Screener for Screening Experiments</b>	<b>69</b>
Helmut Vorkauf	
<b>Unravel: A Method and a Program to Analyze Contingency Tables, Unveiling Confounders.</b>	<b>81</b>
Juan Eloy Ruiz-Castro	
<b>Preventive maintenance in a complex warm standby system. A transient analysis</b>	<b>89</b>
Pranesh Kumar and Faramarz Kashanchi	
<b>Linear Regression Models Using <math>L_1</math>, <math>L_2</math> and <math>L_\infty</math>-Norms</b>	<b>97</b>
Simon Wilson et al.	
<b>Using Storm for scaleable sequential statistical inference</b>	<b>103</b>
M. Salomé Cabral and M. Helena Gonçalves	
<b>A simulation study to assess statistical approaches for longitudinal count data</b>	<b>111</b>
Matthieu Marbac, Christophe Biernacki and Vincent Vandewalle	
<b>Mixture model of Gaussian copulas to cluster mixed-type data</b>	<b>119</b>
Miguel Casquilho and Elisabete Carolino	
<b>Sampling inspection by (Gaussian) variables via estimation of the lot fraction defective: a computational approach</b>	<b>127</b>
José Antonio Roldan-Nofuentes	
<b>Estimation of the weighted kappa coefficient subject to case-control design</b>	<b>135</b>
Leyla Azarang and Jacobo de Uña-Álvarez	
<b>The jackknife estimate of variance for transition probabilities in the non-Markov illness-death model</b>	<b>143</b>

Ana M. Aguilera and M. Carmen Aguilera-Morillo <b>Linear discriminant analysis based on penalized functional PLS</b>	151
D. Ferrari, M. Giuzio and S. Paterlini <b>A generalized Description Length approach for Sparse and Robust Index Tracking</b>	157
Paolo Ghisletta, Stephen Aichele, Patrick Rabbitt <b>Longitudinal data mining to predict survival in a large sample of adults</b>	167
Fastrich, Paterlini and Winker <b>Penalized Least Squares for Optimal Sparse Portfolio Selection</b>	177
Alessandra Amendola and Giuseppe Storti <b>Combining information at different frequencies in multivariate volatility prediction</b>	187
Kohei Adachi and Nickolay T. Trendafilov <b>Penalty-free sparse PCA</b>	197
Ali Charkhi, Gerda Claeskens and Bruce E. Hansen <b>Weight choice by minimizing MSE for general likelihood averaging</b>	205
Jean-Baptiste Durand and Yann Guédon <b>Quantifying and localizing state uncertainty in hidden Markov models using conditional entropy profiles</b>	213
S.K. Ng and G.J. McLachlan <b>Mixture of regression models with latent variables and sparse coefficient parameters</b>	223
Souleymen Sahnoun and Pierre Comon <b>Tensor polyadic decomposition for antenna array processing</b>	233

Caren Hasler and Alina Matei <b>Adjustment for nonignorable nonresponse using latent homogeneous response groups</b>	<b>241</b>
Nobuhiro Taneichi, Yuri Sekiya and Jun Toyama <b>Bartlett adjustment of deviance statistic for three types of binary response models</b>	<b>249</b>
Yuichi Mori, Masahiro Kuroda, Masaya Iizuka and Michio Sakakihara <b>Performance of acceleration of ALS algorithm in nonlinear PCA</b>	<b>257</b>
Niklas Ahlgren and Paul Catani <b>Finite-Sample Multivariate Tests for ARCH in Vector Autoregressive Models</b>	<b>265</b>
Miguel Casquilho and Fátima Rosa <b>Behaviour of the quality index in acceptance sampling by variables: computation and Monte Carlo simulation</b>	<b>273</b>
Sara Fontanella, Nickolay T. Trendafilov and Kohei Adachi <b>Sparse exploratory factor analysis</b>	<b>281</b>
M. Ivette Gomes and Frederico Caeiro <b>Efficiency of partially reduced-bias mean-of-order-<math>p</math> versus minimum-variance reduced-bias extreme value index estimation</b>	<b>289</b>
J.R. Wishart <b>Data-driven wavelet resolution choice in multichannel box-car deconvolution with long memory</b>	<b>299</b>
Hirohito Sakurai and Masaaki Taguri <b>Comparison of block bootstrap testing methods of mean difference for paired longitudinal data</b>	<b>309</b>
M. Arisido <b>Functional data modeling to measure exposure to ozone</b>	<b>319</b>

Raquel Caballero-Águila, Aurora Hermoso-Carazo and Josefa Linares-Pérez <b>Estimation based on covariances from multiple one-step randomly delayed measurements with noise correlation</b>	<b>327</b>
C. Mante	
<b>Density and Distribution Function estimation through iterates of fractional Bernstein Operators</b>	<b>335</b>
Craig Anderson, Duncan Lee, Nema Dean	
<b>Bayesian cluster detection via adjacency modelling</b>	<b>343</b>
Jan Amos Visek	
<b>Robust test of restricted model</b>	<b>351</b>
Isabelle Charlier, Davy Paindaveine and Jérôme Saracco	
<b>Conditional quantile estimation using optimal quantization: a numerical study</b>	<b>361</b>
Robert M. Kunst	
<b>A combined nonparametric test for seasonal unit roots</b>	<b>369</b>
Hannah Frick, Carolin Strobl and Achim Zeileis	
<b>To Split or to Mix? Tree vs. Mixture Models for Detecting Subgroups</b>	<b>379</b>
Massimo Cannas and Bruno Arpino	
<b>Propensity score matching with clustered data: an application to birth register data</b>	<b>387</b>
Fernanda Figueiredo, M. Ivette Gomes and Adelaide Figueiredo	
<b>Monitoring the shape parameter of a Weibull distribution</b>	<b>395</b>
Mingfei Qiu, Vic Patrangenaru and Leif Ellingson	
<b>How far is the Corpus Callosum of an Average Individual from Albert Einstein's?</b>	<b>403</b>

Kosuke Okusa and Toshinari Kamakura <b>Statistical Registration of Frontal View Gait Silhouette with Application to Gait Analysis</b>	411
Pavel Mozgunov <b>Application of Kalman Filter with alpha-stable distribution</b>	419
Bernard Fichet <b>Combining sub(up)-approximations of different type to improve a solution</b>	427
Elvira Pelle <i>et al.</i> <b>Log-linear multidimensional Rasch model for capture-recapture</b>	435
Adelaide Figueiredo and Fernanda Figueiredo <b>Monitoring the process variability using STATIS</b>	443
Stefano M. Iacus and Lorenzo Mercuri <b>Estimation of Lévy CARMA models in the <i>yuima</i> package: application on the financial time series</b>	451
Christian Derquenne <b>Modelling multivariate time series by structural equations modelling and segmentation approach</b>	459
Martin Schindler, Jan Picek and Jan Kysely <b>Study on the choice of regression quantile threshold in a POT model</b>	467
Ryo Takahashi <b>Reduced K-means with sparse loadings</b>	475
Antonio Irpino, Antonio Balzanella and Rosanna Verde <b>Spatial dependence monitoring over distributed data streams</b>	483

F. Marta L. Di Lascio, Simone Giannerini and Alessandra Reale <b>Imputation of complex dependent data by conditional copulas: analytic versus semiparametric approach</b>	491
Antonio Abbruzzo, Luigi Augugliaro, Angelo M. Mineo and Ernst C. Wit <b>Cyclic coordinate for penalized Gaussian graphical models with symmetry restrictions</b>	499
Sujung Kim, Kuniyoshi Hayashi and Koji Kurihara <b>The optimal number of lags in variogram estimation in spatial data analysis</b>	507
F. Giordano, S.N. Lahiri and M.L. Parrella <b>GRID for variable selection in high dimensional regression</b>	515
Sakyajit Bhattacharya and Vaibhav Rajan <b>Unsupervised Learning using Gaussian Mixture Copula Model</b>	523
Francesco Bartolucci, Giorgio E. Montanari and Silvia Pandolfi <b>A comparison of some estimation methods for latent Markov models with covariates</b>	531
Fernández-Pascual, R. Espejo, R and Ruiz-Medina, M.D. <b>Estimation of spatially correlated ocean temperature curves including depth dependent covariates</b>	539
Frederico Caeiro and M. Ivette Gomes <b>On the bootstrap methodology for the estimation of the tail sample fraction</b>	545
Marco Di Marzio <i>et al.</i> <b>Local likelihood estimation for multivariate directional data</b>	553
Pierre Fernique, Jean-Baptiste Durand and Yann Guédon <b>Estimation of Discrete Partially Directed Acyclic Graphical Models in Multitype Branching Processes</b>	561

Manuela Neves and Clara Cordeiro	
<b>Statistical modelling in time series extremes: an overview and new steps</b>	<b>569</b>
Luca Frigau, Claudio Conversano and Francesco Mola	
<b>A bivariate cost-sensitive classifier performance index</b>	<b>577</b>
Ronald Hochreiter and Christoph Waldhauser	
<b>Effects of Sampling Methods on Prediction Quality. The Case of Classifying Land Cover Using Decision Trees.</b>	<b>585</b>
Stasi <i>et al.</i>	
<b><math>\beta</math> models for random hypergraphs with a given degree sequence</b>	<b>593</b>
A.Wawrzynczak, P.Kopka, M.Jaroszynski and M.Borysiewicz	
<b>Efficiency of Sequential Monte Carlo and Genetic algorithm in Bayesian estimation of the atmospheric contamination source</b>	<b>601</b>
Muhammad-Anas Knefati and Farid Beninel	
<b>Transfer of semiparametric single index model in binary classification</b>	<b>609</b>
Pierre Michel and Badih Ghattas	
<b>Clustering ordinal data using binary decision trees</b>	<b>617</b>
Katrin Illner <i>et al.</i>	
<b>Bayesian blind source separation applied to the lymphocyte pathway</b>	<b>625</b>
Manuela Cattelan	
<b>Maximum simulated likelihood estimation of Thurstonian models</b>	<b>633</b>
Manuela Souto de Miranda, Conceição Amado and Margarida Silva	
<b>Robust profiling of Site Index</b>	<b>641</b>
Charalampos Chanialidis, Ludger Evers and Tereza Neocleous	
<b>Bayesian density regression for count data</b>	<b>649</b>

Contents	xvii
Zdeněk Fabián Score Function of Distribution and Heavy-tails	657
Ayca Yetere Kursun, Cem Iyigun and Inci Batmaz Consensus Clustering of Time Series Data	665
Yusuke Matsui and Masahiro Mizuta SDA for mixed-type data and its application to analysis of environmental radio activity level data	673
Pasquale Dolce, Vincenzo Esposito Vinzi and Carlo Lauro Predictive Component-based Multi-block Path Modeling	681
Sadika Rjiba, Mireille Gettler Summa and Saloua Benammou Joint analysis of closed and open-ended questions in a survey about the Tunisian revolution	685