

Contents

Part I (Semi-) Plenary Presentations

Hierarchical Clustering with Performance Guarantees	3
Sanjoy Dasgupta	
Alignment Free String Distances for Phylogeny	15
Frédéric Guyon and Alain Guénoche	
Data Quality Dependent Decision Making in Pattern Classification	25
Josef Kittler and Norman Poh	
Clustering Proteins and Reconstructing Evolutionary Events	37
Boris Mirkin	
Microarray Dimension Reduction Based on Maximizing Mantel Correlation Coefficients Using a Genetic Algorithm Search Strategy	49
Elena Deych, Robert Culverhouse, and William D. Shannon	

Part II Classification and Data Analysis

Classification	
Multiparameter Hierarchical Clustering Methods	63
Gunnar Carlsson and Facundo Mémoli	
Unsupervised Sparsification of Similarity Graphs	71
Tim Gollub and Benno Stein	
Simultaneous Clustering and Dimensionality Reduction Using Variational Bayesian Mixture Model	81
Kazuho Watanabe, Shotaro Akaho, Shinichiro Omachi, and Masato Okada	

A Partitioning Method for the Clustering of Categorical Variables	91
Marie Chavent, Vanessa Kuentz, and Jérôme Saracco	
Treed Gaussian Process Models for Classification	101
Tamara Broderick and Robert B. Gramacy	
Ridgeline Plot and Clusterwise Stability as Tools for Merging Gaussian Mixture Components.....	109
Christian Hennig	
Clustering with Confidence: A Low-Dimensional Binning Approach	117
Rebecca Nugent and Werner Stuetzle	
Local Classification of Discrete Variables by Latent Class Models	127
Michael Bücker, Gero Szepannek, and Claus Weihs	
A Comparative Study on Discrete Discriminant Analysis through a Hierarchical Coupling Approach	137
Ana Sousa Ferreira	
A Comparative Study of Several Parametric and Semiparametric Approaches for Time Series Classification	147
Sonia Pérttega Díaz and José A. Vilar	
Finite Dimensional Representation of Functional Data with Applications.....	157
Alberto Muñoz and Javier González	
Clustering Spatio-Functional Data: A Model Based Approach.....	167
Elvira Romano, Antonio Balzanella, and Rosanna Verde	
Use of Mixture Models in Multiple Hypothesis Testing with Applications in Bioinformatics.....	177
Geoffrey J. McLachlan and Leesa Wockner	
Finding Groups in Ordinal Data: An Examination of Some Clustering Procedures	185
Marek Walesiak and Andrzej Dudek	
An Application of One-mode Three-way Overlapping Cluster Analysis	193
Satoru Yokoyama, Atsuhō Nakayama, and Akinori Okada	

Evaluation of Clustering Results: The Trade-off Bias-Variability	201
Margarida G.M.S. Cardoso, Katti Faceli, and André C.P.L.F. de Carvalho	
Cluster Structured Multivariate Probability Distribution with Uniform Marginals	209
Andrzej Sokolowski and Sabina Denkowska	
Analysis of Diversity-Accuracy Relations in Cluster Ensemble	217
Dorota Rozmus	
Linear Discriminant Analysis with more Variables than Observations: A not so Naive Approach	227
A. Pedro Duarte Silva	
Fast Hierarchical Clustering from the Baire Distance	235
Pedro Contreras and Fionn Murtagh	
Data Analysis	
The Trend Vector Model: Identification and Estimation in SAS	245
Mark de Rooij and Hsiu-Ting Yu	
Discrete Beta-Type Models	253
Antonio Punzo	
The R Package DAKS: Basic Functions and Complex Algorithms in Knowledge Space Theory	263
Anatol Sargin and Ali Ünlü	
Methods for the Analysis of Skew-Symmetry in Asymmetric Multidimensional Scaling	271
Giuseppe Bove	
Canonical Correspondence Analysis in Social Science Research	279
Michael Greenacre	
Exploring Data Through Archetypes	287
Maria Rosaria D'Esposito, Giancarlo Ragozini, and Domenico Vistocco	
Exploring Sensitive Topics: Sensitivity, Jeopardy, and Cheating	299
Claudia Becker	

Sampling the Join of Streams307
Raphaël Féraud, Fabrice Clérot, and Pascal Gouzien

The R Package fechner for Fechnerian Scaling315
Thomas Kiefer, Ali Ünlü, and Ehtibar N. Dzhafarov

Asymptotic Behaviour in Symbolic Markov Chains323
Monique Noirhomme-Fraiture

**An Interactive Graphical System for Visualizing Data
Quality–Tableplot Graphics**331
Waqas Ahmed Malik, Antony Unwin, and Alexander Gribov

**Symbolic Multidimensional Scaling Versus Noisy Variables
and Outliers**341
Marcin Pełka

**Principal Components Analysis for Trapezoidal Fuzzy
Numbers**351
Alexia Pacheco and Oldemar Rodríguez

**Factor Selection in Observational Studies – An Application
of Nonlinear Factor Selection to Propensity Scores**361
Stephan Dlugosz

**Nonlinear Mapping Using a Hybrid
of PARAMAP and Isomap Approaches**371
Ulas Akkucuk and J. Douglas Carroll

**Dimensionality Reduction Techniques for Streaming Time
Series: A New Symbolic Approach**381
Antonio Balzanella, Antonio Irpino, and Rosanna Verde

**A Batesian Semiparametric Generalized Linear Model
with Random Effects Using Dirichlet Process Priors**391
Kei Miyazaki and Kazuo Shigemasu

**Exact Confidence Intervals for Odds Ratios with Algebraic
Statistics**399
Anne Krampe and Sonja Kuhnt

The CHIC Analysis Software v1.0409
Angelos Markos, George Menexes, and Iannis Papadimitriou

Part III Applications

Archaeology and Spatial Planning

Clustering the Roman Heaven: Uncovering the Religious Structures in the Roman Province Germania Superior419
Tudor Ionescu and Leif Scheuermann

Geochemical and Statistical Investigation of Roman Stamped Tiles of the *Legio XXI Rapax*427
Hans-Georg Bartel, Hans-Joachim Mucha, and Jens Dolata

Land Cover Classification by Multisource Remote Sensing: Comparing Classifiers for Spatial Data.....435
Alexander Brenning

Are there Cluster of Communities with the Same Dynamic Behaviour?.....445
Martin Behnisch and Alfred Ultsch

Land Cover Detection with Unsupervised Clustering and Hierarchical Partitioning455
Laura Poggio and Pierre Soille

Using Advanced Regression Models for Determining Optimal Soil Heterogeneity Indicators463
Georg Ruß, Rudolf Kruse, Martin Schneider, and Peter Wagner

Bio-Sciences

Local Analysis of SNP Data473
Tina Müller, Julia Schiffner, Holger Schwender, Gero Szepannek, Claus Weihs, and Katja Ickstadt

Airborne Particulate Matter and Adverse Health Events: Robust Estimation of Timescale Effects481
Massimo Bilancia and Francesco Campobasso

Identification of Specific Genomic Regions Responsible for the Invasivity of *Neisseria Meningitidis*491
Dunarel Badescu, Abdoulaye Baniré Diallo, and Vladimir Makarenkov

Classification of ABC Transporters Using Community Detection	501
Claire Gaugain, Roland Barriot, Gwennaele Fichant, and Yves Quentin	
Estimation of the Number of Sustained Viral Responders by Interferon Therapy Using Random Numbers with a Logistic Model	509
Shinobu Tatsunami, Takahiko Ueno, Rie Kuwabara, Junichi Mimaya, Akira Shirahata, and Masashi Taki	
Virtual High Throughput Screening Using Machine Learning Methods	517
Cherif Mballo and Vladimir Makarenkov	
Electronic Data and Web	
Network Analysis of Works on Clustering and Classification from Web of Science	525
Nataša Kejžar, Simona Korenjak Černe, and Vladimir Batagelj	
Recommending in Social Tagging Systems Based on Kernelized Multiway Analysis	537
Alexandros Nanopoulos and Artus Krohn-Grimberghe	
Dynamic Population Segmentation in Online Market Monitoring	545
Norbert Walchhofer, Karl A. Froeschl, Milan Hronsky, and Kurt Hornik	
Gaining ‘Consumer Insights’ from Influential Actors in Weblog Networks	553
Martin Klaus and Ralf Wagner	
Visualising a Text with a Tree Cloud	561
Philippe Gambette and Jean Véronis	
A Tree Kernel Based on Classification and Citation Data to Analyse Patent Documents	571
Markus Arndt and Ulrich Arndt	
A New SNA Centrality Measure Quantifying the Distance to the Nearest Center	579
Angela Bohn, Stefan Theußl, Ingo Feinerer, Kurt Hornik, Patrick Mair, and Norbert Walchhofer	

Mining Innovative Ideas to Support New Product Research and Development	587
Dirk Thorleuchter, Dirk Van den Poel, and Anita Prinzie	
Finance and Banking	
The Basis of Credit Scoring: On the Definition of Credit Default Events	595
Alexandra Schwarz and Gerhard Arminger	
Forecasting Candlesticks Time Series with Locally Weighted Learning Methods	603
Javier Arroyo	
An Analysis of Alternative Methods for Measuring Long-Run Performance: An Application to Share Repurchase Announcements	613
Wolfgang Bessler, Julian Holler, and Martin Seim	
Knowledge Discovery in Stock Market Data	621
Alfred Ultsch and Hermann Locarek-Junge	
The Asia Financial Crises and Exchange Rates: Had there been Volatility Shifts for Asian Currencies?	629
Takashi Oga and Wolfgang Polasek	
The Pricing of Risky Securities in a Fuzzy Least Square Regression Model	639
Francesco Campobasso, Annarita Fanizzi, and Massimo Bilancia	
Linguistics	
Classification of the Indo-European Languages Using a Phylogenetic Network Approach	647
Alix Boc, Anna Maria Di Sciullo, and Vladimir Makarenkov	
Parsing as Classification	657
Lidia Khmylko and Wolfgang Menzel	
Comparing the Stability of Clustering Results of Dialect Data Based on Several Distance Matrices	665
Edgar Haimperl and Hans-Joachim Mucha	

Marketing

Marketing and Regional Sales: Evaluation of Expenditure Strategies by Spatial Sales Response Functions	673
Daniel Baier and Wolfgang Polasek	

A Demand Learning Data Based Approach to Optimize Revenues of a Retail Chain	683
Wolfgang Gaul and Abdolhadi Darzian Azizi	

Missing Values and the Consistency Problem Concerning AHP Data	693
Wolfgang Gaul and Dominic Gastes	

Monte Carlo Methods in the Assessment of New Products: A Comparison of Different Approaches	701
Said Esber and Daniel Baier	

Preference Analysis and Product Design in Markets for Elderly People: A Comparison of Methods and Approaches	709
Samah Abu-Assab, Daniel Baier, and Mirko Kühne	

Usefulness of A Priori Information about Customers for Market Research: An Analysis for Personalisation Aspects in Retailing	717
Michael Brusch and Eva Stüber	

Importance of Consumer Preferences on the Diffusion of Complex Products and Systems	725
Sabine Schmidt and Magdalena Missler-Behr	

Household Possession of Consumer Durables on Background of some Poverty Lines.....	735
Józef Dziechciarz, Marta Dziechciarz, and Klaudia Przybysz	

Effect of Consumer Perceptions of Web Site Brand Personality and Web Site Brand Association on Web Site Brand Image	743
Sandra Loureiro and Silvina Santana	

Music Science

Perceptually Based Phoneme Recognition in Popular Music	751
Gero Szepannek, Matthias Gruhne, Bernd Bischl, Sebastian Krey, Tamas Harczos, Frank Klefenz, Christian Dittmar, and Claus Weihs	

SVM Based Instrument and Timbre Classification759
Sebastian Krey and Uwe Ligges

**Three-way Scaling and Clustering Approach to Musical
Structural Analysis767**
Mitsuhiro Tsuji, Toshio Shimokawa, and Akinori Okada

**Improving GMM Classifiers by Preliminary One-class SVM
Outlier Detection: Application to Automatic Music Mood
Estimation.....775**
Hanna Lukashevich and Christian Dittmar

Quality Assurance and Engineering

**Multiobjective Optimization for Decision Support
in Automated 2.5D System-in-Package Electronics Design.....783**
Martin Berger, Michael Schröder, and Karl-Heinz Küfer

Multi-Objective Quality Assessment for EA Parameter Tuning793
Heike Trautmann, Boris Naujoks, and Mike Preuss

A Novel Multi-Objective Target Value Optimization Approach801
S. Wenzel, S. Straatmann, L. Kwiatkowski, P. Schmelzer,
and J. Kunert

**Desirability-Based Multi-Criteria Optimisation of HVOF
Spray Experiments.....811**
Gerd Kopp, Ingor Baumann, Evelina Vogli, Wolfgang Tillmann,
and Claus Weihs

Index819