Andreas Fink · Berthold Lausen Wilfried Seidel · Alfred Ultsch Editors

# Advances in Data Analysis, Data Handling and Business Intelligence

Proceedings of the 32nd Annual Conference of the Gesellschaft für Klassifikation e.V., Joint Conference with the British Classification Society (BCS) and the Dutch/Flemish Classification Society (VOC), Helmut-Schmidt-University, Hamburg, July 16–18, 2008



### Part I Invited

Semi-supervised Probabilistic Distance Clustering	
and the Uncertainty of Classification Cem Iyigun and Adi Ben-Israel	3
Strategies of Model Construction for the Analysis of Judgment Data Sabine Krolak-Schwerdt	21
Clustering of High-Dimensional Data via Finite Mixture Models Geoff J. McLachlan and Jangsun Baek	33
Clustering and Dimensionality Reduction to Discover Interesting Patterns in Binary Data Francesco Palumbo and Alfonso Iodice D'Enza	45
Kernel Methods for Detecting the Direction of Time Series Jonas Peters, Dominik Janzing, Arthur Gretton, and Bernhard Schölkopf	57
Statistical Processes Under Change: Enhancing Data Quality with Pretests Walter Radermacher and Sabine Sattelberger	67
Part II Clustering and Classification	
Evaluation Strategies for Learning Algorithms of Hierarchies Korinna Bade and Dominik Benz	83

Contents
----------

Fuzzy Subspace Clustering         93           Christian Borgelt         93
Motif-Based Classification of Time Series with Bayesian Networks and SVMs
A Novel Approach to Construct Discrete Support Vector Machine Classifiers
Predictive Classification Trees
Isolated Vertices in Random Intersection Graphs
Strengths and Weaknesses of Ant Colony Clustering
Variable Selection for Kernel Classifiers: A Feature-to-Input Space Approach
Finite Mixture and Genetic Algorithm Segmentation in Partial Least Squares Path Modeling: Identification of Multiple Segments in Complex Path Models
Cluster Ensemble Based on Co-occurrence Data
Localized Logistic Regression for Categorical Influential Factors
Clustering Association Rules with Fuzzy Concepts
Clustering with Repulsive Prototypes
Part III Mixture Analysis
Weakly Homoscedastic Constraints for Mixtures of <i>t</i> -Distributions

<b>Bayesian Methods for Graph Clustering</b>
Determining the Number of Components in Mixture Models for Hierarchical Data
Testing Mixed Distributions when the Mixing Distribution Is Known
Classification with a Mixture Model Having an Increasing Number of Components
Nonparametric Fine Tuning of Mixtures: Application to Non-Life Insurance Claims Distribution Estimation
Part IV Linguistics and Text Analysis
Classification of Text Processing Components: The Tesla Role System
Nonparametric Distribution Analysis for Text Mining
Linear Coding of Non-linear Hierarchies: Revitalization of an Ancient Classification Method
Automatic Dictionary Expansion Using Non-parallel Corpora
Multilingual Knowledge-Based Concept Recognition in Textual Data
Part V Pattern Recognition and Machine Learning
A Diversified Investment Strategy Using Autonomous Agents
Classification with Kernel Mahalanobis Distance Classifiers

0		
Con	tents	ì
~~···		

Identifying Influential Cases in Kernel Fisher Discriminant Analysis by Using the Smallest Enclosing Hypersphere
Nelmarie Louw, Sarel Steel and Morne Lamont
Self-Organising Maps for Image Segmentation
Image Based Mail Piece Identification Using Unsupervised Learning
Part VI Statistical Musicology
Statistical Analysis of Human Body Movement and Group Interactions in Response to Music
Applying Statistical Models and Parametric Distance           Measures for Music Similarity Search           Hanna Lukashevich, Christian Dittmar, and Christoph Bastuck
Finding Music Fads by Clustering Online Radio Data with Emergent Self Organizing Maps
Analysis of Polyphonic Musical Time Series
Part VII Banking and Finance
Hedge Funds and Asset Allocation: Investor Confidence, Diversification Benefits, and a Change in Investment Style Composition
Mixture Hidden Markov Models in Finance Research
Multivariate Comparative Analysis of Stock Exchanges: The European Perspective
Empirical Examination of Fundamental Indexation in the German Market

The Analysis of Power for Some Chosen VaR Backtesting Procedures: Simulation Approach
Extreme Unconditional Dependence Vs. Multivariate GARCH Effect in the Analysis of Dependence Between High Losses on Polish and German Stock Indexes
Is Log Ratio a Good Value for Measuring Return in Stock Investments?
Part VIII Marketing, Management Science and Economics
Designing Products Using Quality Function Deployment and Conjoint Analysis: A Comparison in a Market for Elderly People
Analyzing the Stability of Price Response Functions: Measuring the Influence of Different Parameters in a Monte Carlo Comparison
Real Options in the Assessment of New Products
Exploring the Interaction Structure of Weblogs
Analyzing Preference Rankings when There Are Too Many Alternatives
Considerations on the Impact of Ill-Conditioned Configurations in the CML Approach
Dyadic Interactions in Service Encounter: Bayesian SEM Approach
Part IX Archaeology and Spatial Planning
Estimating the Number of Buildings in Germany

Mapping Findspots of Roman Military Brickstamps in <i>Mogontiacum</i> (Mainz) and Archaeometrical Analysis
Jens Dolata, Hans-Joachim Mucha, and Hans-Georg Bartel Analysis of Guarantor and Warrantee Relationships Among Government Officials in the Eighth Century in the Old Capital of Japan by Using Asymmetric Multidimensional Scaling
Akinori Okada and Towao Sakaehara Analysis of Massive Emigration from Poland: The Model-Based Clustering Approach
Part X Bio- and Health Sciences
Systematics of Short-Range Correlations in Eukaryotic Genomes
On Classification of Molecules and Species of Representation Rings
The Precise and Efficient Identification of Medical Order Forms Using Shape Trees
On the Prognostic Value of Gene Expression Signatures for Censored Data
Quality-Based Clustering of Functional Data: Applications to Time Course Microarray Data
A Comparison of Algorithms to Find Differentially Expressed Genes in Microarray Data
Part XI Exploratory Data Analysis, Modeling and Applications
Data Compression and Regression Based on Local Principal Curves

Jochen Einbeck, Ludger Evers, and Kirsty Hinchliff

Optimization of Centrifugal Impeller Using Evolutionary Strategies and Artificial Neural Networks
René Meier and Franz Joos
Efficient Media Exploitation Towards Collective Intelligence
Multi-class Extension of Verifiable Ensemble Models for Safety-Related Applications
Dynamic Disturbances in BTA Deep-Hole Drilling: Modelling Chatter and Spiralling as Regenerative Effects
Nonnegative Matrix Factorization for Binary Data to Extract Elementary Failure Maps from Wafer Test Images
Reinhard Schachtner, Gerhard Pöppel, and Elmar Lang
<b>Collective Intelligence Generation from User Contributed Content</b>
Computation of the Molenaar Sijtsma Statistic
Keyword Index
Author Index