

Xue Li
Shuliang Wang
Zhao Yang Dong (Eds.)

LNAI 3584

Advanced Data Mining and Applications

First International Conference, ADMA 2005
Wuhan, China, July 2005
Proceedings



Springer

TP 274-53
A193
2005
Xue Li Shuliang Wang
Zhao Yang Dong (Eds.)

Advanced Data Mining and Applications

First International Conference, ADMA 2005
Wuhan, China, July 22-24, 2005
Proceedings



E200501649



Springer

Series Editors

Jaime G. Carbonell, Carnegie Mellon University, Pittsburgh, PA, USA
Jörg Siekmann, University of Saarland, Saarbrücken, Germany

Volume Editors

Xue Li

University of Queensland
School of Information Technology and Electrical Engineering
Brisbane 4072, Queensland, Australia
E-mail: xueli@itee.uq.edu.au

Shuliang Wang

Wuhan University
International School of Software
Wuhan 430072, China
E-mail: slwang2005@whu.edu.cn

Zhao Yang Dong

University of Queensland
School of Information Technology and Electrical Engineering
St. Lucia, Queensland 4072, Australia
E-mail: zdong@itee.uq.edu.au

Library of Congress Control Number: 2005929058

CR Subject Classification (1998): I.2, H.2.8, H.3-4, K.4.4, J.3, I.4, J.1

ISSN 0302-9743
ISBN-10 3-540-27894-X Springer Berlin Heidelberg New York
ISBN-13 978-3-540-27894-8 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springeronline.com

© Springer-Verlag Berlin Heidelberg 2005
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11527503 06/3142 5 4 3 2 1 0

Lecture Notes in Artificial Intelligence

3584

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

Preface

With the ever-growing power to generate, transmit and collect huge amounts of data, information overload is now an imminent problem to mankind. The overwhelming demand for information processing is not just about a better understanding of data, but also a better usage of data in a timely fashion. Data mining, or knowledge discovery from databases, is proposed to gain insight into aspects of data and to help people make informed, sensible, and better decisions. At present, growing attention has been paid to the study, development and application of data mining. As a result there is an urgent need for sophisticated techniques and tools that can handle new fields of data mining, e.g., spatial data mining, biomedical data mining, and mining on high-speed and time-variant data streams. The knowledge of data mining should also be expanded to new applications.

The 1st International Conference on Advanced Data Mining and Applications (ADMA 2005) aimed to bring together the experts on data mining throughout the world. It provided a leading international forum for the dissemination of original research results in advanced data mining techniques, applications, algorithms, software and systems, and different applied disciplines. The conference attracted 539 online submissions and 63 mailing submissions from 25 different countries and areas. All full papers were peer reviewed by at least three members of the Program Committee composed of international experts in data mining fields. A total number of 100 papers were accepted for the conference. Amongst them 25 papers were selected as regular papers and 75 papers were selected as short papers, yielding a combined acceptance rate of 17%.

The ADMA 2005 program highlights were four keynote speeches from outstanding researchers in advanced data mining and application areas: David Olson, Deyi Li, Chenqi Zhang, and Osmar Zaïane. The conference also invited researchers from two Australian universities to report on their latest research findings.

May 2005

Xue Li,
Shuliang Wang,
Zhaoyang Dong

Conference Committee

ADMA 2005 was organized by the International School of Software, Wuhan University, China and the School of Information Technology and Electrical Engineering, the University of Queensland, Australia; sponsored by the State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing, Wuhan University, China and the WISE (Web Information Systems Engineering, <http://www.i-wise.org/>) Society; and technically co-sponsored by the IEEE Queensland Section.

Organizing Committee

Honorary Chair	Lotfi A. Zadeh (Berkeley University of California, USA)
Conference Co-chairs	Jingnan Liu (Wuhan University, China)
	Deren Li (Wuhan University, China)
	Xiaofang Zhou (University of Queensland, Australia)
Program Co-chairs	Xue Li (University of Queensland, Australia)
	Shuliang Wang (Secretary-General, Wuhan University, China)
	Zhaoyang Dong (University of Queensland, Australia)
Organizing Chairs	Yixin Zeng and Min Chen (Wuhan University, China)
Publicity Chair	Yanchun Zhang (Victoria University, Australia)

Local Advisory Committee

Liu Jingnan, Chen Shaofang	Wuhan University, China
Li Wenxing, Huang Jin	Wuhan University, China
Zhou Chuangbing	Wuhan University, China
Liu Haixin	Technology Bureau of Hubei Province, China

Local Organizing Committee

Liu Fang, Yang Jing, Zhou Xiaoming, Lin Bin, Zhu Guobing, Zheng Jing, Sun Ling, Li Li	Wuhan University, China
--	-------------------------

Program Committee Members

- Jesus Aguilar, Spain
Viorel Ariton, Romania
Michael Bain, Australia
Jose Luis Balcazar, Spain
Elena Baralis, Italy
Petr Berka, Czech Republic
Michael R. Berthold, Germany
Fernando Berzal, Spain
Fuling Bian, China
Francesco Bonchi, Italy
Jean-Francois Boulicaut, France
Rui Camacho, Portugal
Guoqing Chen, China
Min Chen, China
Krzysztof Cios, USA
Bruno Cremilleux, France
Luc Dehaspe, Belgium
Kaichang Di, USA
Floriana Esposito, Italy
Marcus Gallagher, Australia
Joao Gama, Portugal
Dragan Gamberger, Croatia
Jean-Gabriel Ganascia, France
Junbin Gao, Australia
Christophe Giraud-Carrier, USA
Bart Goethals, Belgium
Michael Frank Goodchild, USA
Vladimir Gorodetsky, Russia
Jiawei Han, USA
Keqing He, China
Yi Hong, Australia
Andreas Hotho, Germany
Zhanyi Hu, China
Alípio Jorge, Portugal
Mehmed Kantardzic, USA
Eamonn Keogh, USA
Adam Krzyzak, Canada
Andrew Kusiak, USA
Longin Jan Latecki, USA
Andre Ponce Leao, Brazil
Deyi Li, China
Qiaoyun Li, USA
Qing Li, Hong Kong, China
Hui Lin, Hong Kong, China
Xuemin Lin, Australia
Wanquan Liu, Australia
Yungang Liu, China
Giuseppe Manco, Italy
Rosa Meo, Italy
Dunja Mladenic, Slovenia
Iveta Mrazova, Czech Republic
Olfa Nasraoui, USA
Daniel Neagu, UK
Claire Nedellec, France
Mircea Neogita, New Zealand
Arlindo Oliveira, Portugal
David L. Olson, USA
Yonghong Peng, UK
Johann Petrak, Austria
Pearl Pu, Switzerland
Raghu Ramakrishnan, USA
Jan Rauch, Czech Republic
Zbigniew W. Ras, USA
Cesar Rego, USA
Christophe Rigotti, France
Joseph Roure, Spain
Juho Rousu, UK
Celine Rouveirol, France
Daniel Sanchez, Spain
Yucel Saygin, Turkey
Marc Sebban, France
Giovanni Semeraro, Italy
Seyed A. Shahrestani, Australia
Wenzhong Shi, Hong Kong, China
Andrzej Skowron, Poland
Robert H. Sloan, USA
Carlos Soares, Portugal
Olga Stepankova, Czech Republic
Ah-Hwee Tan, Singapore
Kay Chen Tan, Singapore
Kok Kiong Tan, Singapore
Arthur Tay, Singapore
Luis Torgo, Portugal
Shusaku Tsumoto, Japan
Brijesh Verma, Australia
Ricardo Vilalta, USA

Paul Vitanyi, The Netherlands
Dianhui Wang, Australia
Ke Wang, Canada
Wei Wang, USA
Xinzhou Wang, China
Xizhao Wang, China
Marco Wiering, The Netherlands
Janet Wiles, Australia
Hau-San Wong, Hong Kong, China
Dash Wu, Canada
Dongming Xu, Australia

Zijiang Yang, Canada
Jeffrey Xu Yu, Hong Kong, China
Philip S. Yu, USA
Osmar R. Zaijane, Canada
Gerson Zaverucha, Brazil
Sarah Zelikovitz, USA
Benjamin Zhan, USA
Shichao Zhang, Australia
Chenghu Zhou, China
Djamel A. Zighed, France
Blaz Zupan, Slovenia

External Reviewers

Mohsin Ali, Australia
Dingyi Chen, Australia
Xia Chen, China
Marian Craciun, Romania
Tomaz Curk, Slovenia
Yi Ding, Australia
Gongde Guo, UK
Zi Huang, Australia
Zheng Liu, Australia
Gregor Leban, Slovenia
Juggapong Natwichai, Australia

Daniel Neagu, UK
Son Nghu, Australia
Anisah Nizar, Australia
Christoph Schmitz, Germany
Dawei Song, Australia
Gerd Stumme, Germany
Xingzhi Sun, Australia
Yidong Yuan, Australia
Shuai Zhang, UK
Junhua Zhao, Australia

Lecture Notes in Artificial Intelligence (LNAI)

- Vol. 3626: B. Ganter, G. Stumme, R. Wille (Eds.), *Formal Concept Analysis*. X, 349 pages. 2005.
- Vol. 3596: F. Dau, M.-L. Mugnier, G. Stumme (Eds.), *Conceptual Structures: Common Semantics for Sharing Knowledge*. XI, 467 pages. 2005.
- Vol. 3587: P. Perner, A. Imiya (Eds.), *Machine Learning and Data Mining in Pattern Recognition*. XVII, 695 pages. 2005.
- Vol. 3584: X. Li, S. Wang, Z.Y. Dong (Eds.), *Advanced Data Mining and Applications*. XIX, 835 pages. 2005.
- Vol. 3575: S. Wermter, G. Palm, M. Elshaw (Eds.), *Biomimetic Neural Learning for Intelligent Robots*. IX, 383 pages. 2005.
- Vol. 3571: L. Godo (Ed.), *Symbolic and Quantitative Approaches to Reasoning with Uncertainty*. XVI, 1028 pages. 2005.
- Vol. 3559: P. Auer, R. Meir (Eds.), *Learning Theory*. XI, 692 pages. 2005.
- Vol. 3558: V. Torra, Y. Narukawa, S. Miyamoto (Eds.), *Modeling Decisions for Artificial Intelligence*. XII, 470 pages. 2005.
- Vol. 3554: A. Dey, B. Kokinov, D. Leake, R. Turner (Eds.), *Modeling and Using Context*. XIV, 572 pages. 2005.
- Vol. 3538: L. Ardissono, P. Brna, A. Mitrovic (Eds.), *User Modeling 2005*. XVI, 533 pages. 2005.
- Vol. 3533: M. Ali, F. Esposito (Eds.), *Innovations in Applied Artificial Intelligence*. XX, 858 pages. 2005.
- Vol. 3528: P.S. Szczepaniak, J. Kacprzyk, A. Niewiadomski (Eds.), *Advances in Web Intelligence*. XVII, 513 pages. 2005.
- Vol. 3518: T.B. Ho, D. Cheung, H. Liu (Eds.), *Advances in Knowledge Discovery and Data Mining*. XXI, 864 pages. 2005.
- Vol. 3508: P. Bresciani, P. Giorgini, B. Henderson-Sellers, G. Low, M. Winikoff (Eds.), *Agent-Oriented Information Systems II*. X, 227 pages. 2005.
- Vol. 3505: V. Gorodetsky, J. Liu, V. A. Skormin (Eds.), *Autonomous Intelligent Systems: Agents and Data Mining*. XIII, 303 pages. 2005.
- Vol. 3501: B. Kégl, G. Lapalme (Eds.), *Advances in Artificial Intelligence*. XV, 458 pages. 2005.
- Vol. 3492: P. Blache, E. Stabler, J. Busquets, R. Moot (Eds.), *Logical Aspects of Computational Linguistics*. X, 363 pages. 2005.
- Vol. 3488: M.-S. Hacid, N.V. Murray, Z.W. Raś, S. Tsumoto (Eds.), *Foundations of Intelligent Systems*. XIII, 700 pages. 2005.
- Vol. 3476: J. Leite, A. Omicini, P. Torroni, P. Yolum (Eds.), *Declarative Agent Languages and Technologies II*. XII, 289 pages. 2005.
- Vol. 3464: S.A. Brueckner, G.D.M. Serugendo, A. Karageorgos, R. Nagpal (Eds.), *Engineering Self-Organising Systems*. XIII, 299 pages. 2005.
- Vol. 3452: F. Baader, A. Voronkov (Eds.), *Logic for Programming, Artificial Intelligence, and Reasoning*. XI, 562 pages. 2005.
- Vol. 3451: M.-P. Gleizes, A. Omicini, F. Zambonelli (Eds.), *Engineering Societies in the Agents World*. XIII, 349 pages. 2005.
- Vol. 3446: T. Ishida, L. Gasser, H. Nakashima (Eds.), *Massively Multi-Agent Systems I*. XI, 349 pages. 2005.
- Vol. 3445: G. Chollet, A. Esposito, M. Faundez-Zanuy, M. Marinaro (Eds.), *Nonlinear Speech Modeling and Applications*. XIII, 433 pages. 2005.
- Vol. 3438: H. Christiansen, P.R. Skadhauge, J. Villadsen (Eds.), *Constraint Solving and Language Processing*. VIII, 205 pages. 2005.
- Vol. 3430: S. Tsumoto, T. Yamaguchi, M. Numao, H. Motoda (Eds.), *Active Mining*. XII, 349 pages. 2005.
- Vol. 3419: B. Faltings, A. Petcu, F. Fages, F. Rossi (Eds.), *Constraint Satisfaction and Constraint Logic Programming*. X, 217 pages. 2005.
- Vol. 3416: M. Böhlen, J. Gamper, W. Polasek, M.A. Wimmer (Eds.), *E-Government: Towards Electronic Democracy*. XIII, 311 pages. 2005.
- Vol. 3415: P. Davidsson, B. Logan, K. Takadama (Eds.), *Multi-Agent and Multi-Agent-Based Simulation*. X, 265 pages. 2005.
- Vol. 3403: B. Ganter, R. Godin (Eds.), *Formal Concept Analysis*. XI, 419 pages. 2005.
- Vol. 3398: D.-K. Baik (Ed.), *Systems Modeling and Simulation: Theory and Applications*. XIV, 733 pages. 2005.
- Vol. 3397: T.G. Kim (Ed.), *Artificial Intelligence and Simulation*. XV, 711 pages. 2005.
- Vol. 3396: R.M. van Eijk, M.-P. Hugot, F. Dignum (Eds.), *Agent Communication*. X, 261 pages. 2005.
- Vol. 3394: D. Kudenko, D. Kazakov, E. Alonso (Eds.), *Adaptive Agents and Multi-Agent Systems II*. VIII, 313 pages. 2005.
- Vol. 3392: D. Seipel, M. Hanus, U. Geske, O. Bartenstein (Eds.), *Applications of Declarative Programming and Knowledge Management*. X, 309 pages. 2005.
- Vol. 3374: D. Weyns, H.V.D. Parunak, F. Michel (Eds.), *Environments for Multi-Agent Systems*. X, 279 pages. 2005.
- Vol. 3371: M.W. Barley, N. Kasabov (Eds.), *Intelligent Agents and Multi-Agent Systems*. X, 329 pages. 2005.
- Vol. 3369: V.R. Benjamins, P. Casanovas, J. Breuker, A. Gangemi (Eds.), *Law and the Semantic Web*. XII, 249 pages. 2005.

- Vol. 3366: I. Rahwan, P. Moraitis, C. Reed (Eds.), *Argumentation in Multi-Agent Systems*. XII, 263 pages. 2005.
- Vol. 3359: G. Grieser, Y. Tanaka (Eds.), *Intuitive Human Interfaces for Organizing and Accessing Intellectual Assets*. XIV, 257 pages. 2005.
- Vol. 3346: R.H. Bordini, M. Dastani, J. Dix, A.E.F. Seghrouchni (Eds.), *Programming Multi-Agent Systems*. XIV, 249 pages. 2005.
- Vol. 3345: Y. Cai (Ed.), *Ambient Intelligence for Scientific Discovery*. XII, 311 pages. 2005.
- Vol. 3343: C. Freksa, M. Knauff, B. Krieg-Brückner, B. Nebel, T. Barkowsky (Eds.), *Spatial Cognition IV*. XIII, 519 pages. 2005.
- Vol. 3339: G.I. Webb, X. Yu (Eds.), *AI 2004: Advances in Artificial Intelligence*. XXII, 1272 pages. 2004.
- Vol. 3336: D. Karagiannis, U. Reimer (Eds.), *Practical Aspects of Knowledge Management*. X, 523 pages. 2004.
- Vol. 3327: Y. Shi, W. Xu, Z. Chen (Eds.), *Data Mining and Knowledge Management*. XIII, 263 pages. 2005.
- Vol. 3315: C. Lemaître, C.A. Reyes, J.A. González (Eds.), *Advances in Artificial Intelligence – IBERAMIA 2004*. XX, 987 pages. 2004.
- Vol. 3303: J.A. López, E. Benfenati, W. Dubitzky (Eds.), *Knowledge Exploration in Life Science Informatics*. X, 249 pages. 2004.
- Vol. 3301: G. Kern-Isberner, W. Rödder, F. Kulmann (Eds.), *Conditionals, Information, and Inference*. XII, 219 pages. 2005.
- Vol. 3276: D. Nardi, M. Riedmiller, C. Sammut, J. Santos-Victor (Eds.), *RoboCup 2004: Robot Soccer World Cup VIII*. XVIII, 678 pages. 2005.
- Vol. 3275: P. Perner (Ed.), *Advances in Data Mining*. VIII, 173 pages. 2004.
- Vol. 3265: R.E. Frederking, K.B. Taylor (Eds.), *Machine Translation: From Real Users to Research*. XI, 392 pages. 2004.
- Vol. 3264: G. Paliouras, Y. Sakakibara (Eds.), *Grammatical Inference: Algorithms and Applications*. XI, 291 pages. 2004.
- Vol. 3259: J. Dix, J. Leite (Eds.), *Computational Logic in Multi-Agent Systems*. XII, 251 pages. 2004.
- Vol. 3257: E. Motta, N.R. Shadbolt, A. Stutt, N. Gibbins (Eds.), *Engineering Knowledge in the Age of the Semantic Web*. XVII, 517 pages. 2004.
- Vol. 3249: B. Buchberger, J.A. Campbell (Eds.), *Artificial Intelligence and Symbolic Computation*. X, 285 pages. 2004.
- Vol. 3248: K.-Y. Su, J. Tsujii, J.-H. Lee, O.Y. Kwong (Eds.), *Natural Language Processing – IJCNLP 2004*. XVIII, 817 pages. 2005.
- Vol. 3245: E. Suzuki, S. Arikawa (Eds.), *Discovery Science*. XIV, 430 pages. 2004.
- Vol. 3244: S. Ben-David, J. Case, A. Maruoka (Eds.), *Algorithmic Learning Theory*. XIV, 505 pages. 2004.
- Vol. 3238: S. Biundo, T. Frühwirth, G. Palm (Eds.), *KI 2004: Advances in Artificial Intelligence*. XI, 467 pages. 2004.
- Vol. 3230: J.L. Vicedo, P. Martínez-Barco, R. Muñoz, M. Saiz Noeda (Eds.), *Advances in Natural Language Processing*. XII, 488 pages. 2004.
- Vol. 3229: J.J. Alferes, J. Leite (Eds.), *Logics in Artificial Intelligence*. XIV, 744 pages. 2004.
- Vol. 3228: M.G. Hinchey, J.L. Rash, W.F. Truszkowski, C.A. Rouff (Eds.), *Formal Approaches to Agent-Based Systems*. VIII, 290 pages. 2004.
- Vol. 3215: M.G. Negoita, R.J. Howlett, L.C. Jain (Eds.), *Knowledge-Based Intelligent Information and Engineering Systems, Part III*. LVII, 906 pages. 2004.
- Vol. 3214: M.G. Negoita, R.J. Howlett, L.C. Jain (Eds.), *Knowledge-Based Intelligent Information and Engineering Systems, Part II*. LVIII, 1302 pages. 2004.
- Vol. 3213: M.G. Negoita, R.J. Howlett, L.C. Jain (Eds.), *Knowledge-Based Intelligent Information and Engineering Systems, Part I*. LVIII, 1280 pages. 2004.
- Vol. 3209: B. Berendt, A. Hotho, D. Mladenic, M. van Someren, M. Spiliopoulou, G. Stumme (Eds.), *Web Mining: From Web to Semantic Web*. IX, 201 pages. 2004.
- Vol. 3206: P. Sojka, I. Kopecek, K. Pala (Eds.), *Text, Speech and Dialogue*. XIII, 667 pages. 2004.
- Vol. 3202: J.-F. Boulicaut, F. Esposito, F. Giannotti, D. Pedreschi (Eds.), *Knowledge Discovery in Databases: PKDD 2004*. XIX, 560 pages. 2004.
- Vol. 3201: J.-F. Boulicaut, F. Esposito, F. Giannotti, D. Pedreschi (Eds.), *Machine Learning: ECML 2004*. XVIII, 580 pages. 2004.
- Vol. 3194: R. Camacho, R. King, A. Srinivasan (Eds.), *Inductive Logic Programming*. XI, 361 pages. 2004.
- Vol. 3192: C. Bussler, D. Fensel (Eds.), *Artificial Intelligence: Methodology, Systems, and Applications*. XIII, 522 pages. 2004.
- Vol. 3191: M. Klusch, S. Ossowski, V. Kashyap, R. Unland (Eds.), *Cooperative Information Agents VIII*. XI, 303 pages. 2004.
- Vol. 3187: G. Lindemann, J. Denzinger, I.J. Timm, R. Unland (Eds.), *Multiagent System Technologies*. XIII, 341 pages. 2004.
- Vol. 3176: O. Bousquet, U. von Luxburg, G. Rätsch (Eds.), *Advanced Lectures on Machine Learning*. IX, 241 pages. 2004.
- Vol. 3171: A.L.C. Bazzan, S. Labidi (Eds.), *Advances in Artificial Intelligence – SBIA 2004*. XVII, 548 pages. 2004.
- Vol. 3159: U. Visser, *Intelligent Information Integration for the Semantic Web*. XIV, 150 pages. 2004.
- Vol. 3157: C. Zhang, H. W. Guesgen, W.K. Yeap (Eds.), *PRICAI 2004: Trends in Artificial Intelligence*. XX, 1023 pages. 2004.
- Vol. 3155: P. Funk, P.A. González Calero (Eds.), *Advances in Case-Based Reasoning*. XIII, 822 pages. 2004.
- Vol. 3139: F. Iida, R. Pfeifer, L. Steels, Y. Kuniyoshi (Eds.), *Embodied Artificial Intelligence*. IX, 331 pages. 2004.
- Vol. 3131: V. Torra, Y. Narukawa (Eds.), *Modeling Decisions for Artificial Intelligence*. XI, 327 pages. 2004.
- Vol. 3127: K.E. Wolff, H.D. Pfeiffer, H.S. Delugach (Eds.), *Conceptual Structures at Work*. XI, 403 pages. 2004.

¥821.28元

Table of Contents

Keynote Papers

Decision Making with Uncertainty and Data Mining <i>David L. Olson, Desheng Wu</i>	1
Complex Networks and Networked Data Mining <i>Deyi Li, Guisheng Chen, Baohua Cao</i>	10
In-Depth Data Mining and Its Application in Stock Market <i>Chengqi Zhang, Shichao Zhang</i>	13
Relevance of Counting in Data Mining Tasks <i>Osmar R. Zaïane</i>	14

Invited Papers

Term Graph Model for Text Classification <i>Wei Wang, Diep Bich Do, Xuemin Lin</i>	19
A Latent Usage Approach for Clustering Web Transaction and Building User Profile <i>Yanchun Zhang, Guandong Xu, Xiaofang Zhou</i>	31

Association Rules

Mining Quantitative Association Rules on Overlapped Intervals <i>Qiang Tong, Baoping Yan, Yuanchun Zhou</i>	43
An Approach to Mining Local Causal Relationships from Databases <i>Yang Bo He, Zhi Geng, Xun Liang</i>	51
Mining Least Relational Patterns from Multi Relational Tables <i>Siti Hairulnita Selamat, Mustafa Mat Deris, Rabiei Mamat, Zuriana Abu Bakar</i>	59
Finding All Frequent Patterns Starting from the Closure <i>Mohammad El-Hajj, Osmar R. Zaïane</i>	67
Multiagent Association Rules Mining in Cooperative Learning Systems <i>Reda Alhaji, Mehmet Kaya</i>	75

VisAR: A New Technique for Visualizing Mined Association Rules
Kesaraporn Techapichetvanich, Amitava Datta 88

An Efficient Algorithm for Mining Both Closed and Maximal Frequent
Free Subtrees Using Canonical Forms
Ping Guo, Yang Zhou, Jun Zhuang, Ting Chen, Yan-Rong Kang 96

Classification

E-CIDIM: Ensemble of CIDIM Classifiers
*Gonzalo Ramos-Jiménez, José del Campo-Ávila,
Rafael Morales-Bueno* 108

Partially Supervised Classification – Based on Weighted Unlabeled
Samples Support Vector Machine
Zhigang Liu, Wenzhong Shi, Deren Li, Qianqing Qin 118

Mining Correlated Rules for Associative Classification
Jian Chen, Jian Yin, Jin Huang 130

A Comprehensively Sized Decision Tree Generation Method for
Interactive Data Mining of Very Large Databases
Hyontai Sug 141

Using Latent Class Models for Neighbors Selection in Collaborative
Filtering
Xiaohua Sun, Fansheng Kong, Xiaobing Yang, Song Ye 149

A Polynomial Smooth Support Vector Machine for Classification
YuBo Yuan, TingZhu Huang 157

Reducts in Incomplete Decision Tables
Renpu Li, Dao Huang 165

Learning *k*-Nearest Neighbor Naive Bayes for Ranking
Liangxiao Jiang, Harry Zhang, Jiang Su 175

One Dependence Augmented Naive Bayes
Liangxiao Jiang, Harry Zhang, Zhihua Cai, Jiang Su 186

Clustering

A Genetic *k*-Modes Algorithm for Clustering Categorical Data
Guojun Gan, Zijiang Yang, Jianhong Wu 195

A Fast Fuzzy Clustering Algorithm for Large-Scale Datasets <i>Lukui Shi, Pilian He</i>	203
Clustering with Noising Method <i>Yongguo Liu, Yan Liu, Kefei Chen</i>	209
Extracting the Representative Failure Executions via Clustering Analysis Based on Markov Profile Model <i>Chengying Mao, Yansheng Lu</i>	217
Improvement on the Approximation Bound for Fuzzy-Neural Networks Clustering Method with Gaussian Membership Function <i>Weimin Ma, Guoqing Chen</i>	225
Optimal Fuzzy Modeling Based on Minimum Cluster Volume <i>Can Yang, Jun Meng</i>	232
An Efficient Clustering Approach for Large Document Collections <i>Bo Han, Lishan Kang, Huazhu Song</i>	240
Clustering Categorical Data Using Coverage Density <i>Hua Yan, Lei Zhang, Yi Zhang</i>	248
Novel Algorithms	
A New Support Vector Machine for Data Mining <i>Haoran Zhang, Xiaodong Wang, Changjiang Zhang, Xiuling Xu</i>	256
The Infinite Polynomial Kernel for Support Vector Machine <i>Degang Chen, Qiang He, Xizhao Wang</i>	267
Routing Attribute Data Mining Based on Rough Set Theory <i>Yanbing Liu, Hong Tang, Menghao Wang, Shixin Sun</i>	276
A Novel Data Mining Method Based on Ant Colony Algorithm <i>Weijin Jiang, Yusheng Xu, Yuhui Xu</i>	284
Context-Sensitive Regression Analysis for Distributed Data <i>Yan Xing, Michael G. Madden, Jim Duggan, Gerard J. Lyons</i>	292
Customer Churn Prediction Using Improved One-Class Support Vector Machine <i>Yu Zhao, Bing Li, Xiu Li, Wenhuan Liu, Shouju Ren</i>	300

The Application of Adaptive Partitioned Random Search in Feature Selection Problem
Xiaoyan Liu, Huaiqing Wang, Dongming Xu 307

Heuristic Scheduling of Concurrent Data Mining Queries
Marek Wojciechowski, Maciej Zakrzewicz 315

Using Gap-Insensitive String Kernel to Detect Masquerading
Chuanhuan Yin, Shengfeng Tian, Shaomin Mu 323

A New Method for Linear Ill-Posed Problems: Iteration Method by Rectifying Eigenvalue
Yugang Tian, Peijun Shi, Xinzhou Wang, Kun Qin 331

Text Mining

A Non-VSM kNN Algorithm for Text Classification
Zhi-Hong Deng, Shi-Wei Tang 339

A Study on Text Clustering Algorithms Based on Frequent Term Sets
Xiangwei Liu, Pilian He 347

An Improvement of Text Association Classification Using Rules Weights
Xiao-Yun Chen, Yi Chen, Rong-Lu Li, Yun-Fa Hu 355

Word Segmentation and POS Tagging for Chinese Keyphrase Extraction
Xiaochun Huang, Jian Chen, Puliu Yan, Xin Luo 364

Learning User Profiles from Text in e-Commerce
Marco Degemmis, Pasquale Lops, Stefano Ferilli, Nicola Di Mauro, Teresa M.A. Basile, Giovanni Semeraro 370

Multimedia Mining

Data Mining Based on Objects in Video Flow with Dynamic Background
Cheng Zeng, Jiaheng Cao, Ying Fang, Pei Du 382

An Approach to Compressed Image Retrieval Based on JPEG2000 Framework
Jianguo Tang, Wenyin Zhang, Chao Li 391

Target Segmentation and Feature Extraction for Undersea Image Based on Function Transformation
Fuyuan Peng, Yan Tian, Xi Yu, Guohua Xu, Qian Xia 400

ART in Image Reconstruction with Narrow Fan-Beam Based on Data Mining <i>Zhong Qu, Junhao Wen, Dan Yang, Ling Xu, Yu Wu</i>	407
Digits Speech Recognition Based on Geometrical Learning <i>Wenming Cao, Xiaoxia Pan, Shoujue Wang, Jing Hu</i>	415
A Novel Information Hiding Technique for Remote Sensing Image <i>Xianmin Wang, Zequn Guan, Chenhan Wu</i>	423
Content-Based News Video Mining <i>Junqing Yu, Yunfeng He, Shijun Li</i>	431
Automatic Image Registration via Clustering and Convex Hull Vertices Matching <i>Xiangyu Yu, Hong Sun</i>	439
Fingerprint Image Segmentation Based on Gaussian-Hermite Moments <i>Lin Wang, Hongmin Suo, Mo Dai</i>	446
Sequential Data Mining and Time Series Mining	
HVSM: A New Sequential Pattern Mining Algorithm Using Bitmap Representation <i>Shijie Song, Huaping Hu, Shiyao Jin</i>	455
HGA-COFFEE: Aligning Multiple Sequences by Hybrid Genetic Algorithm <i>Li-fang Liu, Hong-wei Huo, Bao-shu Wang</i>	464
Independent Component Analysis for Clustering Multivariate Time Series Data <i>Edmond H.C. Wu, Philip L.H. Yu</i>	474
Applying Fuzzy Neural Network to Intrusion Detection Based on Sequences of System Calls <i>Guiling Zhang, Jizhou Sun</i>	483
Web Mining	
Design and Implementation of Web Mining System Based on Multi-agent <i>Wenbin Hu, Bo Meng</i>	491

A Novel Framework for Web Page Classification Using Two-Stage Neural Network <i>Yunfeng Li, Yukun Cao, Qingsheng Zhu, Zhengyu Zhu</i>	499
Fuzzy Evaluation of Hotel Websites <i>Rob Law</i>	507
Querying Web Images by Topic and Example Specification Methods <i>Ching-Cheng Lee, Rashmi Prabhakara</i>	515
The Research on Fuzzy Data Mining Applied on Browser Records <i>Qingzhang Chen, Jianghong Han, Yungang Lai, Wenxiu He, Keji Mao</i>	527
Discovering Conceptual Page Hierarchy of a Web Site from User Traversal History <i>Xia Chen, Mingqiang Li, Wei Zhao, Ding-Yi Chen</i>	536
Biomedical Mining	
Bayesian Neural Networks for Prediction of Protein Secondary Structure <i>Jianlin Shao, Dong Xu, Lanzhou Wang, Yifei Wang</i>	544
PromPredictor: A Hybrid Machine Learning System for Recognition and Location of Transcription Start Sites in Human Genome <i>Tao Li, Chuanbo Chen</i>	552
Robust Ensemble Learning for Cancer Diagnosis Based on Microarray Data Classification <i>Yonghong Peng</i>	564
A Comprehensive Benchmark of the Artificial Immune Recognition System (AIRS) <i>Lingjun Meng, Peter van der Putten, Haiyang Wang</i>	575
An Analysis of Missing Data Treatment Methods and Their Application to Health Care Dataset <i>Peng Liu, Elia El-Darzi, Lei Lei, Christos Vasilakis, Panagiotis Chountas, Wei Huang</i>	583
Parallel Genetic Algorithm and Parallel Simulated Annealing Algorithm for the Closest String Problem <i>Xuan Liu, Hongmei He, Ondrej Sýkora</i>	591

Mining Interesting Association Rules in Medical Images <i>Haiwei Pan, Jianzhong Li, Zhang Wei</i>	598
Hybrid Feature Ranking for Proteins Classification <i>Ricco Rakotomalala, Faouzi Mhamdi, Mourad Elloumi</i>	610
Predicting Subcellular Localization of Proteins Using Support Vector Machine with N-Terminal Amino Composition <i>Yan-fu Li, Juan Liu</i>	618
Advanced Applications	
The Dynamic Character Curve Adjusting Model of Electric Load Based on Data Mining Theory <i>Xiaoxing Zhang, Haijun Ren, Yuming Liu, Qiyun Cheng, Caixin Sun</i>	626
Using Boosting Learning Method for Intrusion Detection <i>Wu Yang, Xiao-Chun Yun, Yong-Tian Yang</i>	634
RoleOf Relationship and Its Meta Model for Design Pattern Instantiation <i>Chengwan He, Fei He, Keqing He, Jin Liu, Wenjie Tu</i>	642
Automatic Inspection of Industrial Sheetmetal Parts with Single Non-metric CCD Camera <i>Yongjun Zhang</i>	654
An Advanced Implementation of a Distributed Control Scheme Based on LonWorks System over IP Networks <i>Il-Joo Shim, Kyung-Bae Chang, Ki-Hyung Yu, Dong-Woo Cho, Kyoo-Dong Song, Gwi-Tae Park</i>	662
Structural Damage Detection by Integrating Independent Component Analysis and Support Vector Machine <i>Huazhu Song, Luo Zhong, Bo Han</i>	670
An LZ78 Based String Kernel <i>Ming Li, Ronan Sleep</i>	678
Classifying Class and Finding Community in UML Metamodel Network <i>Bin Liu, Deyi Li, Jin Liu, Fei He</i>	690