

Daniel S. Yeung
Zhi-Qiang Liu
Xi-Zhao Wang
Hong Yan (Eds.)

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Advances in Machine Learning and Cybernetics

4th International Conference, ICMLC 2005
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Revised Selected Papers



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Volume Editors

Daniel S. Yeung
Hong Kong Polytechnic University
Department of Computing
Hong Kong, China
E-mail: csdaniel@comp.polyu.edu.hk

Zhi-Qiang Liu
City University of Hong Kong
Department of Creative Media
Hong Kong, China
E-mail: zq.liu@cityu.edu.hk

Xi-Zhao Wang
Hebei University
Department of Mathematics and Computer Science
Baoding, China
E-mail: xizhaowang@ieee.org

Hong Yan
City University of Hong Kong
Department of Computer Science
Hong Kong, China
E-mail: h.yan@cityu.edu.hk

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Preface

Machine learning and cybernetics play an important role in many modern electronic, computer and communications systems. Automated processing of information by these systems requires intelligent analysis of various types of data and optimal decision making. In recent years, we have witnessed a rapid expansion of research and development activities in machine learning and cybernetics. To provide opportunities for researchers in these areas to share their ideas and foster collaborations, the International Conference on Machines and Cybernetics (ICMLC) has been held annually since 2002. The conference series has achieved a great success in attracting a large number of paper submissions and participants and enabling fruitful exchanges among academic and industrial researchers and postgraduate students.

In 2005, the conference (ICMLC 2005) received 2461 full paper submissions and the Program Committee selected 1050 of them for presentation. It is especially encouraging that the conference is attracting more and more international attention. This year, there are contributions from 21 countries and 211 universities worldwide. Out of the 1050 papers presented at the conference, we selected 114 papers to be published in this volume of *Lecture Notes in Computer Science*.

The papers in this volume are divided into nine broad areas:

- Agents and distributed artificial intelligence
- Control
- Data mining and knowledge discovery
- Fuzzy information processing
- Learning and reasoning, machine learning applications
- Neural networks and statistical learning methods
- Pattern recognition
- Vision and image processing

In addition to new theoretical research results, such as on stability analysis of nonlinear control systems and innovative learning algorithms, the papers report a wide range of useful applications to biomedical engineering, commerce, database management, electronics, network security, transportation, etc.

We are grateful for the sponsorship of the conference from the IEEE Systems, Man and Cybernetics Society, Hong Kong Polytechnic University, Hebei University, South China University of Technology, Chongqing University, Sun Yat-sen University, the Harbin Institute of Technology and the International University in Germany. We would like to thank members of the ICMLC 2005 Advisory, Organizing and Program Committees for their hard work. We appreciate the help from Mrs. Inge Rogers, who arranged proofreading of the papers in this volume, and staff and students in our research groups, who provided a lot of assistance for the conference organization.

December 2005

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Table of Contents

Agents and Distributed AI

Backward-Chaining Flexible Planning <i>Li Xu, Wen-Xiang Gu, Xin-Mei Zhang</i>	1
RRF: A Double-Layer Reputation Mechanism with Rating Reputation Considered <i>Hang Guo, Ji Gao, Ping Xu</i>	11
A Vickrey-Type Multi-attribute Auction Model <i>Xiang Chen, Shan-li Hu</i>	21
Strategy Coordination Approach for Safe Learning About Novel Filtering Strategies in Multi Agent Framework <i>Sahin Albayrak, Dragan Milosevic</i>	30
Modeling and Design of Agent Grid Based Open Decision Support System <i>Jiayu Chi, Ling Sun, Xueguang Chen, Jinlong Zhang</i>	43
Negotiating Agent: Concept, Architecture and Communication Model <i>Mukun Cao, Yuqiang Feng, Yan Li, Chunyan Wang</i>	53

Intelligent Control (I)

Particle Filter Method for a Centralized Multisensor System <i>Wei Xiong, You He, Jing-wei Zhang</i>	64
Design and Analysis of a Novel Load-Balancing Model Based on Mobile Agent <i>Junfeng Tian, Yuling Liu, Xiaohui Yang, Ruizhong Du</i>	70
Fuzzy Output Tracking Control and Its Application to Guidance Control for Lunar Gravity-Turn <i>Pingyuan Cui, Junwei Sun, Fengqiu Liu</i>	81
Motion Planning for Climbing Robot Based on Hybrid Navigation <i>Yong Jiang, Hongguang Wang, Lijin Fang, Mingyang Zhao</i>	91

Hierarchical Fuzzy Behavior-Based Control Method for Autonomous Mobile Robot Navigation
Shou-tao Li, Yuan-chun Li 101

Intelligent Control (II)

An LMI Approach to Robust Fault Detection Filter Design for Uncertain State-Delayed Systems
Hongru Wang, Changhong Wang, Huijun Gao 112

Input-to-State Stability Analysis of a Class of Interconnected Nonlinear Systems
Jia Wang, Xiaobei Wu, Zhiliang Xu 122

Construction and Simulation of the Movable Propeller Turbine Neural Network Model
Jiang Chang, Yan Peng 133

Research on the Control and Application of Chaos in an Electrical System
Zhao-ming Lei, Zuo-jun Liu, He-xu Sun, Hong-jun Chang 142

Data Mining and Knowledge Discovery (I)

Research and Application of Data Mining in Power Plant Process Control and Optimization
Jian-qiang Li, Cheng-lin Niu, Ji-zhen Liu, Luan-ying Zhang 149

Extended Negative Association Rules and the Corresponding Mining Algorithm
Min Gan, Mingyi Zhang, Shenwen Wang 159

An Ant Clustering Method for a Dynamic Database
Ling Chen, Li Tu, Yixin Chen 169

An Efficient Algorithm for Incremental Mining of Sequential Patterns
Jia-Dong Ren, Xiao-Lei Zhou 179

A Clustering Algorithm Based on Density Kernel Extension
Wei-Di Dai, Pi-Lian He, Yue-Xian Hou, Xiao-Dong Kang 189

Associative Classification with Prediction Confidence
Tien Dung Do, Siu Cheung Hui, Alvis C.M. Fong 199

Data Mining and Knowledge Discovery (II)

Exploring Query Matrix for Support Pattern Based Classification Learning <i>Yiqiu Han, Wai Lam</i>	209
From Clusters to Rules: A Hybrid Framework for Generalized Symbolic Rule Induction <i>Qingshuang Jiang, Syed Sibte Raza Abidi</i>	219
Trail-and-Error Approach for Determining the Number of Clusters <i>Haojun Sun, Mei Sun</i>	229
Unifying Genetic Algorithm and Clustering Method for Recognizing Activated fMRI Time Series <i>Lin Shi, Pheng Ann Heng, Tien-Tsin Wong</i>	239
Repeating Pattern Discovery from Audio Stream <i>Zhen-Long Du, Xiao-Li Li</i>	249
A Study on Information Extraction from PDF Files <i>Fang Yuan, Bo Liu, Ge Yu</i>	258

Data Mining and Knowledge Discovery (III)

The Study of a Knowledge-Based Constraints Network System (KCNS) for Concurrent Engineering <i>Wei-ming Wang, Jie Hu, Fei Zhou, Da-yong Li, Xiang-jun Fu, Ying-hong Peng</i>	268
Rule Induction for Complete Information Systems in Knowledge Acquisition and Classification <i>Hong-Zhen Zheng, Dian-Hui Chu, De-Chen Zhan</i>	278
A Method to Eliminate Incompatible Knowledge and Equivalence Knowledge <i>Ping Guo, Li Fan, Lian Ye</i>	285
Constructing Ontologies for Sharing Knowledge in Digital Archives <i>Yu-Liang Chi</i>	295
A Similarity-Aware Multiagent-Based Web Content Management Scheme <i>Jitian Xiao, Jun Wang</i>	305

Information Assistant: An Initiative Topic Search Engine
*Xi-Dao Luan, Yu-Xiang Xie, Ling-Da Wu, Chi-Long Mao,
Song-Yang Lao* 315

Improving Retrieval Performance with the Combination of Thesauri
and Automatic Relevance Feedback
Mao-Zu Guo, Jian-Fu Li 322

Fuzzy Information Processing (I)

Choquet Integrals with Respect to Fuzzy Measure on Fuzzy σ -Algebra
Yan Huang, Congxin Wu 329

Robust H_∞ Control with Pole Placement Constraints for T-S Fuzzy
Systems
Liang He, Guang-Ren Duan 338

A Kind of Fuzzy Genetic Algorithm Based on Rule and Its Performance
Research
Fachao Li, Shuxin Luo, Lianqing Su 347

The Absolute Additivity and Fuzzy Additivity of Sugeno Integral
Congxin Wu, Liang Zhao 358

The Axiomatization for 0-Level Universal Logic
Yingcang Ma, Huacan He 367

Fuzzy Portfolio Selection Problems Based on Credibility Theory
Yanju Chen, Yan-Kui Liu, Junfen Chen 377

Fuzzy Information Processing (II)

Fuzzy Multiple Reference Models Adaptive Control Scheme Study
Zhicheng Ji, Rongjia Zhu, Yanxia Shen 387

Selection of Optimal Technological Innovation Projects Combining
Value Engineering with Fuzzy Synthetic Evaluation
Yuan-sheng Huang, Jun-hua Zhou, Jian-xun Qi 397

The Hierarchical Fuzzy Evaluation System and Its Application
Xiaoping Qiu, Yang Xu, Ming Jian, Haiming Li 407

A Solution to a System of Linear Equations with Fuzzy Numbers
Xingfang Zhang, Guangwu Meng 417

Evolutionary Synthesis of Micromachines Using Supervisory Multiobjective Interactive Evolutionary Computation <i>Raffi Kamalian, Ying Zhang, Hideyuki Takagi, Alice M. Agogino</i>	428
--	-----

Application of Weighted Ideal Point Method to Environmental/Economic Load Dispatch <i>Guo-li Zhang, Geng-yin Li, Hong Xie, Jian-wei Ma</i>	438
--	-----

Learning and Reasoning (I)

Reasoning the Spatiotemporal Relations Between Time Evolving Indeterminate Regions <i>Lei Bao, Xiao-Lin Qin, Jun Zhang, Qi-Yuan Li</i>	448
--	-----

Using Special Structured Fuzzy Measure to Represent Interaction Among IF-THEN Rules <i>Xi-Zhao Wang, Jun Shen</i>	459
---	-----

Novel Nonlinear Signals Separation of Optimized Entropy Based on Adaptive Natural Gradient Learning <i>Ren Ren, Jin Xu, Shihua Zhu, Danan Ren, Yongqiang Luo</i>	467
--	-----

Training Conditional Random Fields with Unlabeled Data and Limited Number of Labeled Examples <i>Tak-Lam Wong, Wai Lam</i>	477
--	-----

An Effective and Efficient Two Stage Algorithm for Global Optimization <i>Yong-Jun Wang, Jiang-She Zhang, Yu-Fen Zhang</i>	487
---	-----

Learning and Reasoning (II)

Evolutionary Multi-objective Optimization Algorithm with Preference for Mechanical Design <i>Jianwei Wang, Jianming Zhang, Xiaopeng Wei</i>	497
---	-----

A New Adaptive Crossover Operator for the Preservation of Useful Schemata <i>Fan Li, Qi-He Liu, Fan Min, Guo-Wei Yang</i>	507
---	-----

Refinement of Fuzzy Production Rules by Using a Fuzzy-Neural Approach <i>Dong-mei Huang, Ming-hu Ha, Ya-min Li, Eric C.C. Tsang</i>	517
---	-----

A Particle Swarm Optimization-Based Approach to Tackling Simulation
Optimization of Stochastic, Large-Scale and Complex Systems
Ming Lu, Da-peng Wu, Jian-ping Zhang 528

Combination of Multiple Nearest Neighbor Classifiers Based on Feature
Subset Clustering Method
Li-Juan Wang, Qiang Hua, Xiao-Long Wang, Qing-Cai Chen 538

Learning and Reasoning (III)

A Statistical Confidence-Based Adaptive Nearest Neighbor Algorithm
for Pattern Classification
Jigang Wang, Predrag Neskovic, Leon N. Cooper 548

Automatic 3D Motion Synthesis with Time-Striding Hidden Markov
Model
Yi Wang, Zhi-qiang Liu, Li-zhu Zhou 558

Learning from an Incomplete Information System with
Continuous-Valued Attributes by a Rough Set Technique
Eric C.C. Tsang, Suyun Zhao, Daniel S. Yeung, John W.T. Lee 568

Reduction of Attributes in Ordinal Decision Systems
John W.T. Lee, Xizhao Wang, Jinfeng Wang 578

On the Local Reduction of Information System
Degang Chen, Eric C.C. Tsang 588

Machine Learning Applications (I)

Spectral Analysis of Protein Sequences
Tuan D. Pham 595

Volatility Patterns of Industrial Stock Price Indices in the Chinese
Stock Market
Lan-Jun Lao 605

Data Migration in RAID Based on Stripe Unit Heat
Yan Liu, Chang-Sheng Xie, Huai-yang Li, Zhen Zhao 614

Distribution Channel Coordination Through Penalty Schemes
Quansheng Lei, Jian Chen 624