Knowledge-Based Intelligent Information and Engineering Systems

10th International Conference, KES 2006
Bournemouth, UK, October 9-11, 2006
Proceedings, Part II
## Table of Contents – Part II

### Computational Intelligence for Signal and Image Processing

*Intensity Modulated Radiotherapy Target Volume Definition by Means of Wavelet Segmentation* .................................................. 1  
Tsair-Fwu Lee, Pei-Ju Chao, Fu-Min Fang, Eng-Yen Huang, Ying-Chen Chang

*Enhancing Global and Local Contrast for Image Using Discrete Stationary Wavelet Transform and Simulated Annealing Algorithm* ............ 11  
Changjiang Zhang, C.J. Duanmu, Xiaodong Wang

*An Efficient Unsupervised MRF Image Clustering Method* ............ 19  
Yimin Hou, Lei Guo, Xiangmin Lun

*A SVM-Based Blur Identification Algorithm for Image Restoration and Resolution Enhancement* .................................................. 28  
Jianping Qiao, Ju Liu

*Regularization for Super-Resolution Image Reconstruction* ............ 36  
Vivek Bannore

*Dynamic Similarity Kernel for Visual Recognition* ............ 47  
Wang Yan, Qingshan Liu, Hangqing Lu, Songde Ma

*Genetic Algorithms for Optimization of Boids Model* ............ 55  
Yen-Wei Chen, Kanami Kobayashi, Xinyin Huang, Zensho Nakao

*Segmentation of MR Images Using Independent Component Analysis* .... 63  
Yen-Wei Chen, Daigo Sugiki

### Soft Data Analysis

*Equi-sized, Homogeneous Partitioning* .................................. 70  
Frank Klawonn, Frank Höppne

*Nonparametric Fisher Kernel Using Fuzzy Clustering* ............ 78  
Ryo Inokuchi, Sadaaki Miyamoto
Finding Simple Fuzzy Classification Systems with High Interpretability Through Multiobjective Rule Selection .............................................. 86  
*Hisao Ishibuchi, Yusuke Nojima, Isao Kuwajima*

Clustering Mixed Data Using Spherical Representation ................................................. 94  
*Yoshiharu Sato*

Fuzzy Structural Classification Methods ..................................................... 102  
*Mika Sato-Ilic, Tomoyuki Kuwata*

Innovations in Soft Data Analysis ...................................................... 110  
*Mika Sato-Ilic, Lakhmi C. Jain*

**Immunity-Based Systems: Immunoinformatics**

Tolerance Dependent on Timing/Amount of Antigen-Dose in an Asymmetric Idiotype Network ...................................................... 115  
*Kouji Harada*

Towards an Immunity-Based Anomaly Detection System for Network Traffic ...................................................... 123  
*Takeshi Okamoto, Yoshiteru Ishida*

Migration Strategies of Immunity-Based Diagnostic Nodes for Wireless Sensor Network ...................................................... 131  
*Yuji Watanabe, Yoshiteru Ishida*

Asymmetric Wars Between Immune Agents and Virus Agents: Approaches of Generalists Versus Specialists ...................................................... 139  
*Yoshiteru Ishida*

Designing an Immunity-Based Sensor Network for Sensor-Based Diagnosis of Automobile Engines ...................................................... 146  
*Yoshiteru Ishida*

**Ambient Intelligence: Algorithms, Methods and Applications**

Dynamic Cooperative Information Display in Mobile Environments ...................................................... 154  
*Christophe Jacquet, Yacine Bellik, Yolaine Bourda*

Extracting Activities from Multimodal Observation ...................................................... 162  
*Olivier Brdiczka, Jérôme Maisonnasse, Patrick Reignier, James L. Crowley*
# Table of Contents – Part II

## Using Ambient Intelligence for Disaster Management
Juan Carlos Augusto, Jun Liu, Liming Chen

**171**

## Dynamic Scene Reconstruction for 3D Virtual Guidance
Alessandro Calbi, Lucio Marcenaro, Carlo S. Regazzoni

**179**

## Communicative Intelligence

**An Introduction to Fuzzy Propositional Calculus Using Proofs from Assumptions**
Iwan Tabakow

**187**

## Fuzzy-Neural Web Switch Supporting Differentiated Service
Leszek Borzemski, Krzysztof Zatwarnicki

**195**

## Image Watermarking Algorithm Based on the Code Division Multiple Access Technique
Fan Zhang, Guosheng Yang, Xianxing Liu, Xinhong Zhang

**204**

## Construction of Symbolic Representation from Human Motion Information
Yutaka Araki, Daisaku Arita, Rin-ichiro Taniguchi, Seiichi Uchida, Ryo Kurazume, Tsutomu Hasegawa

**212**

## Toward a Universal Platform for Integrating Embodied Conversational Agent Components
Hung-Hsuan Huang, Tsuyoshi Masuda, Aleksandra Cerekovic, Kateryna Tarasenko, Igor S. Pandzic, Yukiko Nakano, Toyoaki Nishida

**220**

## Flexible Method for a Distance Measure Between Communicative Agents’ Stored Perceptions
Agnieszka Pieczyńska

**227**

## Harmonisation of Soft Logical Inference Rules in Distributed Decision Systems
Juliusz L. Kulikowski

**235**

## Assessing the Uncertainty of Communication Patterns in Distributed Intrusion Detection System
Krzysztof Juszczyszyn, Grzegorz Kotaczek

**243**

## An Algorithm for Inconsistency Resolving in Recommendation Web-Based Systems
Michał Malski

**251**
Distributed Class Code and Data Propagation with Java

Dariusz Król, Grzegorz Stanisław Kukla

Conflicts of Ontologies – Classification and Consensus-Based Methods for Resolving

Ngoc Thanh Nguyen

Knowledge-Based Systems for e-Business

Estimation of FAQ Knowledge Bases by Introducing Measurements

Jun Harada, Masao Fuketa, El-Sayed Atlam, Toru Sumitomo, Wataru Hiraishi, Jun-ichi Aoe

Efficient Stream Delivery over Unstructured Overlay Network by Reverse-Query Propagation

Yoshikatsu Fujita, Yasufumi Saruwatari, Jun Yoshida, Kazuhiko Tsuda

A Method for Development of Adequate Requirement Specification in the Plant Control Software Domain

Masakazu Takahashi, Yoshinori Fukue, Satoru Takahashi, Takashi Kawasaki

Express Emoticons Choice Method for Smooth Communication of e-Business

Nobuo Suzuki, Kazuhiko Tsuda

A New Approach for Improving Field Association Term Dictionary Using Passage Retrieval

Kazuhiro Morita, El-Sayed Atlam, Elmarhomy Ghada, Masao Fuketa, Jun-ichi Aoe

Analysis of Stock Price Return Using Textual Data and Numerical Data Through Text Mining

Satoru Takahashi, Masakazu Takahashi, Hiroshi Takahashi, Kazuhiko Tsuda

A New Approach for Automatic Building Field Association Words Using Selective Passage Retrieval

El-Sayed Atlam, Elmarhomy Ghada, Kazuhiro Morita, Jun-ichi Aoe

Building New Field Association Term Candidates Automatically by Search Engine

Masao Fuketa, El-Sayed Atlam, Elmarhomy Ghada, Kazuhiro Morita, Jun-ichi Aoe
Neuro-fuzzy Techniques for Image Processing

Applications

Efficient Distortion Reduction of Mixed Noise Filters by Neuro-fuzzy Processing ............................... 331
   Mehmet Emin Yüksel, Alper Baştürk

Texture Segmentation with Local Fuzzy Patterns and Neuro-fuzzy Decision Support .................................. 340
   Laura Caponetti, Ciro Castiello, Anna Maria Fanelli, Przemyslaw Görecki

Lineal Image Compression Based on Lukasiewicz's Operators ............... 348
   Nashaat M. Hussein Hassan, Angel Barriga

Modelling Coarseness in Texture Images by Means of Fuzzy Sets ............ 355
   Jesús Chamorro-Martínez, Elena Galán-Perales, Daniel Sánchez,
   Jose M. Soto-Hidalgo

Fuzzy Motion Adaptive Algorithm for Video De-interlacing .................. 363
   Piedad Brox, Iluminada Baturone, Santiago Sánchez-Solano,
   Julio Gutiérrez-Ríos, Felipe Fernández-Hernández

Knowledge-Based Interface Systems (1)

Web Site Off-Line Structure Reconfiguration: A Web User Browsing Analysis ............................................. 371
   Sebastián A. Ríos, Juan D. Velásquez, Hiroshi Yasuda,
   Terumasa Aoki

New Network Management Scheme with Client's Communication Control .................................................. 379
   Kazuya Odagiri, Rihito Yaegashi, Masaharu Tadauchi,
   Naohiro Ishii

Prediction of Electric Power Generation of Solar Cell Using the Neural Network ........................................ 387
   Masashi Kawaguchi, Sachiyoshi Ichikawa, Masaaki Okuno,
   Takashi Jimbo, Naohiro Ishii

Text Classification: Combining Grouping, LSA and kNN vs Support Vector Machine ........................................ 393
   Naohiro Ishii, Takeshi Murai, Takahiro Yamada, Yongguang Bao,
   Susumu Suzuki
Particle Filter Based Tracking of Moving Object from Image Sequence ................................................................. 401
Yuji Iwahori, Toshihiro Takai, Haruki Kawanaka, Hidenori Itoh, Yoshinori Adachi

Nature Inspired Data Mining

Discrete and Continuous Aspects of Nature Inspired Methods .......... 409
Martin Macaš, Miroslav Burša, Lenka Lhotská

Social Capital in Online Social Networks .................................................... 417
Przemysław Kazienko, Katarzyna Musiał

Nature-Inspiration on Kernel Machines: Data Mining for Continuous and Discrete Variables ........................................... 425
Francisco J. Ruiz, Cecilio Angulo, Núria Agell

Testing CAB-IDS Through Mutations: On the Identification of Network Scans ................................................................. 433
Emilio Corchado, Álvaro Herrero, José Manuel Sáiz

Nature Inspiration for Support Vector Machines ................................. 442
Davide Anguita, Dario Sterpi

Intelligent Agents and Their Applications

The Equilibrium of Agent Mind: The Balance Between Agent Theories and Practice ................................................................. 450
Nikhil Ichalkaranje, Christos Sioutis, Jeff Tweedale, Pierre Urlings, Lakhmi Jain

Trust in LORA: Towards a Formal Definition of Trust in BDI Agents ................................................................. 458
Bevan Jarvis, Lakhmi Jain

Agent Cooperation and Collaboration .................................................... 464
Christos Sioutis, Jeffrey Tweedale

Teamwork and Simulation in Hybrid Cognitive Architecture .............. 472
Jinsong Leng, Colin Fyfe, Lakhmi Jain

Trust in Multi-Agent Systems ................................................................. 479
Jeffrey Tweedale, Philip Cutler
AI for Decision Making

Intelligent Agents and Their Applications ........................................... 486
  Jeffrey Tweedale, Nihkil Ichalkaranje

From Community Models to System Requirements: A Cooperative
Multi-agents Approach ................................................................. 492
  Jung-Jin Yang, KyengWhan Jee

Scheduling Jobs on Computational Grids Using Fuzzy Particle Swarm
Algorithm ....................................................................................... 500
  Ajith Abraham, Hongbo Liu, Weishi Zhang, Tae-Gyu Chang

Twinned Topographic Maps for Decision Making in the Cockpit .......... 508
  Steve Thatcher, Colin Fyfe

Agent-Enabled Decision Support for Information Retrieval
in Technical Fields .......................................................................... 515
  Gloria Phillips-Wren

Is There a Role for Artificial Intelligence in Future Electronic
Support Measures? ........................................................................... 523
  Phillip Fitch

Artificial Intelligence for Decision Making ....................................... 531
  Gloria Phillips-Wren, Lakhmi Jain

Path Planning and Obstacle Avoidance for Autonomous Mobile
Robots: A Review ............................................................................ 537
  Voemir Kunchev, Lakhmi Jain, Vladimir Ivancevic, Anthony Finn

Intelligent Data Processing in Process Systems
and Plants

Adaptive Nonlinearity Compensation of Heterodyne Laser
Interferometer .................................................................................. 545
  Minsuk Hong, Jaewook Jeon, Kiheon Park, Kwanho You

Study on Safety Operation Support System by Using the Risk
Management Information .............................................................. 553
  Yukiyasu Shimada, Takashi Hamaguchi, Kazuhiro Takeda,
  Teiji Kitajima, Atsushi Aoyama, Tetsuo Fuchino

Analysis of ANFIS Model for Polymerization Process .................. 561
  Hideyuki Matsumoto, Cheng Lin, Chiaki Kuroda
Semi-qualitative Encoding of Manifestations at Faults in Conductive Flow Systems .......................................................... 569
   Viorel Ariton

Design Problems of Decision Making Support System for Operation in Abnormal State of Chemical Plant ........................................ 579
   Kazuhiro Takeda, Takashi Hamaguchi, Yukiyasu Shimada, Yoshifumi Tsuge, Hisayoshi Matsuyama

A Training System for Maintenance Personnel Based on Analogical Reasoning ................................................................. 587
   Takashi Hamaguchi, Meng Hu, Kazuhiro Takeda, Yukiyasu Shimada, Yoshihiro Hashimoto, Toshiaki Itoh

On-Line Extraction of Qualitative Movements for Monitoring Process Plants ................................................................. 595
   Yoshiyuki Yamashita

Skill Acquisition and Ubiquitous Human Computer Interaction

An Expansion of Space Affordance by Sound Beams and Tactile Indicators ................................................................. 603
   Taizo Miyachi, Jens J. Balvig, Jun Moriyama

Automatic Discovery of Basic Motion Classification Rules .............. 611
   Satoshi Hori, Mizuho Sasaki, Hirokazu Taki

An Interpretation Method for Classification Trees in Bio-data Mining ... 620
   Shigeki Kozakura, Hisashi Ogawa, Hirokazu Miura, Noriyuki Matsuda, Hirokazu Taki, Satoshi Hori, Norihiro Abe

Adequate RSSI Determination Method by Making Use of SVM for Indoor Localization .................................................. 628
   Hirokazu Miura, Junichi Sakamoto, Noriyuki Matsuda, Hirokazu Taki, Noriyuki Abe, Satoshi Hori

IATA – Intelligent Agent Technology and Applications

Ontia iJADE: An Intelligent Ontology-Based Agent Framework for Semantic Web Service .................................................. 637
   Toby H.W. Lam, Raymond S.T. Lee
iJADE FreeWalker: An Ontology-Based Tourist Guiding System ........ 644
  Toby H.W. Lam, Raymond S.T. Lee

iJADE Content Management System (CMS) – An Intelligent
Multi-agent Based Content Management System with Chaotic
Copyright Protection Scheme ........................................... 652
  Raymond S.T. Lee, Eddie Chun Lun Chan, Raymond Yiu Wai Mak

Agent-Controlled Distributed Resource Sharing to Improve P2P File
Exchanges in User Networks .......................................... 659
  J.C. Burguillo-Rial, E. Costa-Montenegro,
  Francisco J. González-Castaño, J. Vales-Alonso

An Agent-Based System Supporting Collaborative Product Design ...... 670
  Jian Xun Wang, Ming Xi Tang

Computational Intelligence Approaches and Methods
for Security Engineering

Application Presence Fingerprinting for NAT-Aware Router ............ 678
  Jun Bi, Lei Zhao, Miao Zhang

Interaction for Intelligent Mobile Systems ................................ 686
  Gregory M.P. O’Hare, Stephen Keegan, Michael J. O’Grady

Design of a Intelligent SOAP Message Service Processor
for Enhancing Mobile Web Service ..................................... 694
  Gil-Cheol Park, Seoksoo Kim

Convergence Rate in Intelligent Self-organizing Feature Map Using
Dynamic Gaussian Function ........................................... 701
  Geuk Lee, Seoksoo Kim, Tai Hoon Kim, Min Wook Kil

Development of an Attack Packet Generator Applying an NP
to the Intelligent APS .................................................. 709
  Wankyung Kim, Wooyoung Soh

Class Based Intelligent Community System for Ubiquitous Education
and Medical Information System ........................................ 718
  Seoksoo Kim

Intelligent Anonymous Secure E-Voting Scheme ......................... 726
  Hee-Un Park, Dong-Myung Shin
Actively Modifying Control Flow of Program for Efficient Anomaly Detection .......................................................... 737
Kohei Tatara, Toshihiro Tabata, Kouichi Sakurai

Intelligent Method for Building Security Countermeasures ................. 745
Tai-hoon Kim, Sun-myoung Hwang

Intelligent Frameworks for Encoding XML Elements Using Mining Algorithm .......................................................... 751
Haeng-Kon Kim

Graphical Knowledge Template of CBD Meta-model ....................... 760
Haeng-Kon Kim

Hybrid Information Technology Using Computational Intelligence

Two-Phase Identification Algorithm Based on Fuzzy Set and Voting for Intelligent Multi-sensor Data Fusion .......................... 769
Sukhoon Kang

udH-PMAC Model Suitable for Ubi-Home Gateway in Ubiquitous Intelligent Environment ............................................... 777
Jong Hyuk Park, Sangjin Lee, Byoung-Soo Koh, Jae-Hyuk Jang

A One-Time Password Authentication Scheme for Secure Remote Access in Intelligent Home Networks ...................... 785
Ilson You

An Intelligent and Efficient Traitor Tracing for Ubiquitous Environments .......................................................... 793
Deok-Gyu Lee, Seo Il Kang, Im-Yeong Lee

e-Business Agent Oriented Component Based Development for Business Intelligence ............................................... 803
Ho-Jun Shin, Bo-Yeon Shim

New Design of PMU for Real-Time Security Monitoring and Control of Wide Area Intelligent System .......................... 812
Hak-Man Kim, Jin-Hong Jeon, Myong-Chul Shin, Tae-Kyoo Oh

Security Intelligence: Web Contents Security System for Semantic Web .......................................................... 819
Nam-deok Cho, Eun-ser Lee, Hyun-gun Park
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Analysis of Location Estimation Algorithm Using an Intelligent Coordination Scheme in RTLS</td>
<td>829</td>
</tr>
<tr>
<td>Seung-Hee Jeong, Hyun-Jae Lee, Joon-Sung Lee, Chang-Heon Oh</td>
<td></td>
</tr>
<tr>
<td>Security Requirements for Ubiquitous Software Development Site</td>
<td>836</td>
</tr>
<tr>
<td>Tai-hoon Kim</td>
<td></td>
</tr>
<tr>
<td>Logic Based Intelligent Information Systems</td>
<td></td>
</tr>
<tr>
<td>Paraconsistent Artificial Neural Network: Applicability in Computer Analysis of Speech Productions</td>
<td>844</td>
</tr>
<tr>
<td>Jair Minoro Abe, João Carlos Almeida Prado, Kazumi Nakamatsu</td>
<td></td>
</tr>
<tr>
<td>Intelligent Paraconsistent Logic Controller and Autonomous Mobile Robot Emmy II</td>
<td>851</td>
</tr>
<tr>
<td>Jair Minora Abe, Cláudio Rodrigo Torres, Germano L. Torres, Kazumi Nakamatsu, Michiro Kondo</td>
<td></td>
</tr>
<tr>
<td>EVALPSN Based Intelligent Drivers’ Model</td>
<td>858</td>
</tr>
<tr>
<td>Kazumi Nakamatsu, Michiro Kondo, Jair M. Abe</td>
<td></td>
</tr>
<tr>
<td>The Study of the Robust Learning Algorithm for Neural Networks</td>
<td>866</td>
</tr>
<tr>
<td>Shigenobu Yamawaki</td>
<td></td>
</tr>
<tr>
<td>Logic Determined by Boolean Algebras with Conjugate</td>
<td>871</td>
</tr>
<tr>
<td>Michiro Kondo, Kazumi Nakamatsu, Jair Minoro Abe</td>
<td></td>
</tr>
<tr>
<td>An Intelligent Technique Based on Petri Nets for Diagnosability Enhancement of Discrete Event Systems</td>
<td>879</td>
</tr>
<tr>
<td>YuanLin Wen, MuDer Jeng, LiDer Jeng, Fan Pei-Shu</td>
<td></td>
</tr>
<tr>
<td>Knowledge-Based Mult-criteria Decision Support</td>
<td></td>
</tr>
<tr>
<td>Fuzzy Logic Based Mobility Management for 4G Heterogeneous Networks</td>
<td>888</td>
</tr>
<tr>
<td>Jin-Long Wang, Chen-Wen Chen</td>
<td></td>
</tr>
<tr>
<td>On-Line Association Rules Mining with Dynamic Support</td>
<td>896</td>
</tr>
<tr>
<td>Hsuan-Shih Lee</td>
<td></td>
</tr>
</tbody>
</table>
A Fuzzy Multiple Criteria Decision Making Model for Airline Competitiveness Evaluation .......................................................... 902
   Hsuan-Shih Lee, Ming-Tao Chou

Goal Programming Methods for Constructing Additive Consistency
Fuzzy Preference Relations ........................................................... 910
   Hsuan-Shih Lee, Wei-Kuo Tseng

A Multiple Criteria Decision Making Model Based on Fuzzy
Multiple Objective DEA .............................................................. 917
   Hsuan-Shih Lee, Chen-Huei Yeh

A Fuzzy Multiple Objective DEA for the Human Development
Index .......................................................................................... 922
   Hsuan-Shih Lee, Kuang Lin, Hsin-Hsiung Fang

Neural Information Processing for Data Mining

Visualization Architecture Based on SOM for Two-Class Sequential
Data .......................................................................................... 929
   Ken-ichi Fukui, Kazumi Saito, Masahiro Kimura,
   Masayuki Numao

Approximate Solutions for the Influence Maximization Problem
in a Social Network .................................................................. 937
   Masahiro Kimura, Kazumi Saito

Improving Convergence Performance of PageRank Computation
Based on Step-Length Calculation Approach ............................... 945
   Kazumi Saito, Ryohei Nakano

Prediction of the O-glycosylation Sites in Protein by Layered Neural
Networks and Support Vector Machines ...................................... 953
   Ikuko Nishikawa, Hirotaka Sakamoto, Ikue Nouno,
   Takeshi Iritani, Kazutoshi Sakakibara, Masahiro Ito

A Bayesian Approach to Emotion Detection in Dialogist’s Voice
for Human Robot Interaction ..................................................... 961
   Shohei Kato, Yoshiki Sugino, Hidenori Ito

Finding Nominally Conditioned Multivariate Polynomials Using
a Four-Layer Perceptron Having Shared Weights ....................... 969
   Yusuke Tanahashi, Kazumi Saito, Daisuke Kitakoshi,
   Ryohei Nakano
Sharing of Learning Knowledge in an Information Age

Development of Know-How Information Sharing System in Care Planning Processes – Mapping New Care Plan into Two-Dimensional Document Space .................................................. 977
   Kaoru Eto, Tatsunori Matsui, Yasuo Kabasawa

Educational Evaluation of Intelligent and Creative Ability with Computer Games: A Case Study for e-Learning ......................... 985
   Yukuo Isomoto

The Supporting System for Distant Learning Students of Shinshu University ................................................................. 994
   Hisayoshi Kunimune, Mika Ushiro, Masaaki Niimura,
   Yasushi Fuwa

Reflection by Knowledge Publishing .................................................. 1002
   Akihiro Kashihara, Yasuhiro Kamoshita

Self-learning System Using Lecture Information and Biological Data ...... 1010
   Yurie Iribe, Shuji Shinohara, Kyoichi Matsuura,
   Kouichi Katsurada, Tsuneo Nitta

Hybrid Approach of Augmented Classroom Environment with Digital Pens and Personal Handhelds ................................. 1019
   Motoki Miura, Susumu Kunifuji

An Interactive Multimedia Instruction System: IMPRESSION for Multipoint Synchronous Online Classroom Environment ........ 1027
   Yuki Higuchi, Takashi Mitsuishi, Kentaro Go

A System Framework for Bookmark Sharing Considering Differences in Retrieval Purposes ........................................... 1035
   Shoichi Nakamura, Maiko Ito, Hirokazu Shirai, Emi Igarashi,
   Setsuo Yokoyama, and Youzou Miyadera

Development of a Planisphere Type Astronomy Education Web System Based on a Constellation Database Using Ajax .................. 1045
   Katsuhiro Mouri, Mamoru Endo, Kumiko Iwazaki,
   Manabu Noda, Takami Yasuda, Shigeki Yokoi

Group Collaboration Support in Learning Mathematics .................. 1053
   Tomoko Kojiri, Yosuke Murase, Toyohide Watanabe
Annotation Interpretation of Collaborative Learning History for Self-learning ................................................................. 1062
   Masahide Kakehi, Tomoko Kojiri, Toyohide Watanabe

A System Assisting Acquisition of Japanese Expressions Through Read-Write-Hear-Speaking and Comparing Between Use Cases of Relevant Expressions ............................................. 1071
   Kohji Itoh, Hiroshi Nakamura, Shunsuke Unno, Jun'ichi Kakegawa

**Intelligent Information Management in a Knowledge-Based Society**

A Web-Based System for Gathering and Sharing Experience and Knowledge Information in Local Crime Prevention .................. 1079
   Masato Goto, Akira Hattori, Takami Yasuda, Shigeki Yokoi

The Scheme Design for Active Information System ................................................. 1087
   Ping Zong, Jun Qin

R-Tree Based Optimization Algorithm for Dynamic Transport Problem .......................................................................... 1095
   Naoto Mukai, Toyohide Watanabe, Jun Feng

Knowledge-Based System for Die Configuration Design in Cold Forging ........................................................................ 1103
   Osamu Takata, Tsubasa Mitani, Yuji Mure, Masanobu Umeda, Isao Nagasawa

An Automatic Indexing Approach for Private Photo Searching Based on E-mail Archive ................................................... 1111
   Taketoshi Ushiama, Toyohide Watanabe

Analysis for Usage of Routing Panels in Evacuation .............................................. 1119
   Toyohide Watanabe, Naoki Harashina

**Knowledge/Software Engineering Aspects of Intelligent Systems Applications**

Facial Expression Classification: Specifying Requirements for an Automated System ...................................................... 1128
   Ioanna-Ourania Stathopoulou, George A. Tsihrintzis

On the Software Engineering Aspects of Educational Intelligence .............. 1136
   Thanasis Hadzilacos, Dimitris Kalles
Feature Model Based on Description Logics ........................................ 1144
   Shaofeng Fan, Naixiao Zhang

PNS: Personalized Multi-source News Delivery .............................. 1152
   Georgios Paliouras, Alexandros Mouzakidis, Christos Ntoutsis,
   Angelos Alexopoulos, Christos Skourlas

Knowledge-Based Interface Systems (2)
Relational Association Mining Based on Structural Analysis
   of Saturation Clauses ........................................................... 1162
   Nobuhiro Inuzuka, Jun-ichi Motoyama, Tomofumi Nakano

Examination of Effects of Character Size on Accuracy of Writer
Recognition by New Local Arc Method ....................................... 1170
   Masahiro Ozaki, Yoshinori Adachi, Naohiro Ishii

Study of Features of Problem Group and Prediction
   of Understanding Level .................................................... 1176
   Yoshinori Adachi, Masahiro Ozaki, Yuji Iwahori

Intelligent Databases in the Virtual Information
Community
Graph-Based Data Model for the Content Representation
   of Multimedia Data ............................................................ 1182
   Teruhisa Hochin

NCO-Tree: A Spatio-temporal Access Method for Segment-Based
   Tracking of Moving Objects .................................................. 1191
   Yuelong Zhu, Xiang Ren, Jun Feng

The Reasoning and Analysis of Spatial Direction Relation Based
   on Voronoi Diagram ........................................................... 1199
   Yongqing Yang, Jun Feng, Zhijian Wang

Some Experiments of Face Annotation Based on Latent Semantic
   Indexing in FIARS .................................................................. 1208
   Hideaki Ito, Hiroyasu Koshimizu

Extended Virtual Type for a Multiple-Type Object with Repeating
   Types ............................................................................... 1216
   Hideki Sato, Masayoshi Aritsugi
Spatial Relation for Geometrical / Topological Map Retrieval
Toru Shimizu, Masakazu Ikezaki, Toyohide Watanabe, Taketoshi Ushiama

Geographical Information Structure for Managing a Set of Objects as an Event
Masakazu Ikezaki, Toyohide Watanabe, Taketoshi Ushiama

Hybrid Intelligent Systems in Medicine and Health Care

Using Multi-agent Systems to Manage Community Care
Martin D. Beer, Richard Hill

Predictive Adaptive Control of the Bispectral Index of the EEG (BIS)
– Using the Intravenous Anaesthetic Drug Propofol
Catarina S. Nunes, Teresa F. Mendonça, Hugo Magalhães, João M. Lemos, Pedro Amorim

Using Aggregation Operators to Personalize Agent-Based Medical Services
David Isern, Àïda Valls, Antonio Moreno

Shifting Patterns Discovery in Microarrays with Evolutionary Algorithms
Beatriz Pontes, Raúl Giraldez, Jesús S. Aguilar-Ruiz

Gene Ranking from Microarray Data for Cancer Classification—A Machine Learning Approach
Roberto Ruiz, Beatriz Pontes, Raúl Giraldez, Jesús S. Aguilar-Ruiz

H³: A Hybrid Handheld Healthcare Framework
Seung-won Hwang

Hybrid Intelligent Medical Tutor for Atheromatosis
Katerina Kabassi, Maria Virvou, George Tsihrintzis

Evolutionary Tuning of Combined Multiple Models
Gregor Stiglic, Peter Kokol
A Similarity Search Algorithm to Predict Protein Structures ................................. 1305
   Jiyuan An, Yi-Ping Phoebe Chen

Fuzzy-Evolutionary Synergism in an Intelligent Medical Diagnosis System .................................................. 1313
   Constantinos Koutsojannis, Ioannis Hatzilygeroudis

Author Index .................................................................................................................. 1323