

Lecture Notes in Artificial Intelligence 3213

Edited by J. G. Carbonell and J. Siekmann

Subseries of Lecture Notes in Computer Science

Mircea Gh. Negoita Robert J. Howlett
Lakhmi C. Jain (Eds.)

Knowledge-Based Intelligent Information and Engineering Systems

8th International Conference, KES 2004
Wellington, New Zealand, September 20-25, 2004
Proceedings, Part I

Series Editors

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

Volume Editors

Mircea Gh. Negoita
Wellington Institute of Technology (WelTec)
Centre for Computational Intelligence
Private Bag 39803, The Puni Mail Center
Buick Street, Petone, Wellington, New Zealand
E-mail: mircea.negoita@weltec.ac.nz

Robert J. Howlett
University of Brighton
Intelligent Systems and Signal Processing Laboratories/KTP Centre
Cockcroft Building, Lewes Road, Brighton, BN2 4GJ, UK
E-mail: r.j.howlett@bton.ac.uk

Lakhmi Jain
University of South Australia
School of Electrical and Information Engineering, KES Centre
Adelaide, Mawson Lakes Campus, South Australia SA 5095, Australia
E-mail: Lakhmi.Jain@unisa.edu.au

Library of Congress Control Number: 2004112584

CR Subject Classification (1998): I.2, H.4, H.3, J.1, H.5, K.6, K.4

ISSN 0302-9743

ISBN 3-540-23318-0 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 2004
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 11325468 06/3142 5 4 3 2 1 0

Preface

We were very pleased to once again extend to the delegates and, we are pleased to say, our friends the warmest of welcomes to the 8th International Conference on Knowledge-Based Intelligent Information and Engineering Systems at Wellington Institute of Technology in Wellington, New Zealand.

The KES conferences attract a wide range of interest. The broad focus of the conference series is the theory and applications of computational intelligence and emergent technologies. Once purely a research field, intelligent systems have advanced to the point where their abilities have been incorporated into many conventional application areas. The quest to encapsulate human knowledge and capabilities in domains such as reasoning, problem solving, sensory analysis, and other complex areas has been avidly pursued. This is because it has been demonstrated that these abilities have definite practical applications. The techniques long ago reached the point where they are being exploited to provide commercial advantages for companies and real beneficial effects on profits. KES 2004 provided a valuable mechanism for delegates to obtain a profound view of the latest intelligent systems research into a range of algorithms, tools and techniques. KES 2004 also gave delegates the chance to come into contact with those applying intelligent systems in diverse commercial areas. The combination of theory and practice represents a uniquely valuable opportunity for appreciating the full spectrum of intelligent-systems activity and the “state of the art”.

For the first time in the short history of KES, the conference came to New Zealand. KES 2004 aimed at providing not only a high-tech forum for presenting results on theory and applications of intelligent systems and techniques, but focused on some significant emerging intelligent technologies including evolvable hardware (*EHW*), evolutionary computation in computational intelligence, *DNA* computing, artificial immune systems (*AIS*), bioinformatics using intelligent and machine learning techniques, and intelligent Web mining.

The impressive audience of the KES conferences series was confirmed, and we broke some KES records, such as: about 500 attendants from 55 countries, and for the first time in the conference history, more than one third of the participant presenting high-quality papers were Ph.D. students from all over the world. This last detail is relevant for the major role played by the KES organization and conferences with respect to support and education for practitioners who are acting in the area of intelligent systems and emergent technologies.

Thanking all the individuals who contributed to a conference like this is always fraught with difficulty, as someone is always unintentionally omitted. The WelTec team, including Gary Hartley, the conference administrator, Michael Hyndman, the conference Web page designer, and the Local Organizing Committee, chaired by Dr. Linda Sissons, WelTec CEO, all worked hard to bring the conference to a high level of organization. We would like to arrange a special appreciation on behalf of the KES 2004 General Chair for the hard work done by David Pritchard from the WelTec Centre for Computational Intelligence. We would like to extend our praise and thanks to them.

An important distinction of the KES conferences over others is the Invited Session Program. Invited sessions give new and dedicated researchers an opportunity to present a “mini-conference” of their own. By this means they can bring to public view a topic at the leading edge of intelligent science and technology. This mechanism for feeding new blood into the research is immensely valuable, and strengthens KES conferences enormously. For this reason we must extend thanks to the Invited Session Chairs who contributed in this way.

We would like to thank the KES 2004 International Program Committee and the KES 2004 Reviewers Team who were essential in providing their reviews of the papers. We are immensely grateful for this service, without which the conference would not have been possible. We thank the high-profile keynote speakers and invited tutorial lecturers for providing interesting and informed talks to catalyze subsequent discussions.

In some ways, the most important contributors to KES 2004 were the authors, presenters and delegates without whom the conference could not have taken place. So we thank them for their contributions. Finally we thank the “unsung heroes” the army of administrators, caterers, hoteliers, and the people of Wellington, for welcoming us and providing for the conference.

We hope the attendees all found KES 2004 a worthwhile, informative and enjoyable experience. We hope to see them in Melbourne for KES 2005, which will be hosted by La Trobe University, Melbourne, Australia.

June 2004

Prof. Mircea Gh. Negoita
Dr. R.J. Howlett
Prof. Lakhmi C. Jain

KES 2004 Conference Organization

General Chair

Mircea Negoita
Centre for Computational Intelligence
School of Information Technology
Wellington Institute of Technology (WelTec), Wellington, New Zealand
Co-director of NZ-German School on Computational Intelligence at KES 2004

Conference Founder and Honorary Programme Committee Chair

Lakhmi C. Jain
Knowledge-Based Intelligent Information and Engineering Systems Centre
University of South Australia, Australia

KES Executive Chair

Bob Howlett
Intelligent Systems and Signal Processing Laboratories/KTP Centre
University of Brighton, UK

KES 2004 Invited Co-chair

Bernd Reusch
Department of Computer Science
University of Dortmund, Germany
Co-director of NZ-German School on Computational Intelligence at KES 2004

KES Journal General Editor

Bogdan Gabrys
University of Bournemouth, UK

Local Organizing Committee

Linda Sissons – Chair, WelTec CEO
Gary Hartley, Mircea Gh. Negoita, Murray Wills
Wellington Institute of Technology (WelTec), New Zealand

KES 2004 Web Page Designer

Michael Hyndman
Wellington Institute of Technology (WelTec), New Zealand

Technical Emergence Desktop Team

Doug StJust
Ali Rashid Mardani
Wellington Institute of Technology (WelTec), New Zealand

KES 2004 Liaison Officer

Lesley Lucie-Smith
Wellington Institute of Technology (WelTec), New Zealand

Proceedings Assembling Team

David Pritchard
Paulene Mary Crook
Ian Hunter
Terry Jeon
Des Kenny
Sara Rule
Nick Tullock
Wellington Institute of Technology (WelTec), New Zealand

International Program Committee

Hussein Abbass, University of New South Wales, Australia
Peter Andreae, Victoria University, Wellington, New Zealand
Viorel Ariton, “Danubius” University of Galatzi, Romania
Akira Asano, Hiroshima University, Higashi-Hiroshima, Japan
K. Vijayan Asari, Old Dominion University, Norfolk, Virginia, USA
Norio Baba, Osaka Kyoiku University, Japan
Robert Babuska, Delft University of Technology, Delft, The Netherlands
Andrzej Bargiela, Nottingham Trent University, UK
Marius Bazu, Institute of Microtechnology, Bucharest, Romania
Yevgeniy Bodyanskiy, Kharkiv National University of
Radioelectronics, Ukraine
Patrick Bosc, IRISA/ENSSAT, Lanion, France
Pascal Bouvry, Luxembourg University of Applied Sciences, Luxembourg
Phillip Burrell, South Bank University, London, UK
Yen-Wei Chen, University of the Ryukyus, Okinawa, Japan
Vladimir Cherkassky, University of Minnesota, USA
Krzysztof Cios, University of Colorado at Denver, USA
Carlos A. Coello, LANIA, Mexico
George Coghill, Auckland University, Auckland, New Zealand
David W. Corne, University of Exeter, UK
David Cornforth, Charles Sturt University, Albury, Australia
Ernesto Damiani, University of Milan, Italy
Da Deng, University of Otago, Dunedin, New Zealand
Da Ruan, Belgian Nuclear Research Centre (SCK · CEN), Belgium
Vladan Devedzic, University of Belgrade, Belgrade, Serbia
Didier Dubois, IRIT, Université Paul Sabatier, Toulouse, France
Duncan Earl, Oak Ridge National Laboratory, USA
Madjid Fathi, National Magnet Lab., Florida, USA
Marcus Frean, Victoria University, Wellington, New Zealand
Peter Funk, Mälardalen University, Västerås, Sweden
Bogdan Gabrys, University of Bournemouth, UK
Boris Galitsky, Birkbeck College, University of London, UK
Hugo de Garis, Utah State University, USA
Max H. Garzon, University of Memphis, USA
Tamas Gedeon, Murdoch University, Murdoch, Australia
Mitsuo Gen, Waseda University, Kytakyushu, Japan
Vladimir Gorodetski, St. Petersburg Institute of Informatics,
Russian Academy of Sciences, Russia
Manuel Grana, Facultad de Informatic, UPV/EHU, Spain
David Gwaltney, NASA George C. Marshall Space Flight Center, Huntsville, USA
Lars Kai Hansen, Technical University of Denmark, Lyngby, Denmark
Chris Harris, University of Southampton, UK

Lars Hildebrand, Dortmund University, Dortmund, Germany
 Tetsuya Highchi, National Institute of Advanced Industrial Science
 and Technology, Japan
 Yuzo Hirai, University of Tsukuba, Japan
 Dawn Holmes, University of California, Santa Barbara, USA
 Daniel Howard, University of Limerick, Ireland
 Tzung-Pei Hong, National University of Kaohsiung, Taiwan
 Keiichi Horio, Kyushu Institute of Technology, Japan
 Hitoshi Iba, University of Tokyo, Tokyo, Japan
 Florin Ionescu, University of Applied Sciences, Konstanz, Germany
 Hisao Ishibuchi, Osaka Prefecture University, Osaka, Japan
 Naohiro Ishii, Aichi Institute of Technology, Toyota City, Japan
 Mo M. Jamshidi, University of New Mexico, Albuquerque, USA
 Norbert Jesse, Dortmund University, Dortmund, Germany
 Seong-Joon Yoo, Sejong University, Seoul, Korea
 Janusz Kacprzyk, Polish Academy of Sciences, Poland
 Nikos Karacapilidis, University of Patras, Greece
 Vojislav Kecman, Auckland University, Auckland, New Zealand
 Rajiv Khosla, La Trobe, University, Melbourne, Australia
 Laszlo T. Koczy, Budapest University of Technology and Economics,
 Budapest and Szechenyi Istvan University, Gyor, Hungary
 Hiroyasu Koshimizu, Chukyo University, Toyota, Japan
 Susumu Kunifuji, Japan Advanced Institute of Science & Technology, Japan
 Andrew Kusiak, University of Iowa, Iowa City, USA
 W.K. Lai, MIMOS Bhd., Kuala Lumpur, Malaysia
 Pier Luca Lanzi, Polytechnic Institute, Milan, Italy
 Raymond Lee, Hong Kong Polytechnic University, Kowloon, Hong Kong
 Chee-Peng Lim, University of Science Malaysia, Penang, Malaysia
 Jason Lohn, NASA Ames Research Center, Mountain View, CA, USA
 Ignac Lovrek, University of Zagreb, Croatia
 Bruce MacDonald, Auckland University, Auckland, New Zealand
 Bob McKay, University of NSW, Australian Defence Force Academy, Australia
 Luis Magdalena-Layos, EUSFLAT & Universidad Politecnica de Madrid, Spain
 Dan C. Marinescu, University of Central Florida, Orlando, USA
 Jorma K. Mattila, Lappeenranta University of Technology, Finland
 Radko Mesiar, Slovak Technical University, Bratislava, Slovakia
 Claudio Moraga, University of Dortmund, Germany
 Hirofumi Nagashino, University of Tokushima, Tokushima, Japan
 Noriko Nagata, Kwansei Gakuin University, Japan
 Ryohei Nakatsu, Kwansei Gakuin University, Japan
 Koji Nakajima, Tohoku University, Sendai, Japan
 Akira Namatame, National Defense Academy, Yokosuka, Japan
 Victor Emil Neagoe, Technical University Bucharest, Romania
 Ciprian Daniel Neagu, University of Bradford, UK
 Charles Nguyen, Catholic University of America, Washington, DC, USA
 Ngoc Thanh Nguyen, Wroclaw University of Technology, Poland
 Toyoaki Nishida, University of Tokyo, Japan

Nikhil R. Pal, Indian Statistical Institute, Calcutta, India
Vasile Palade, Oxford University, UK
Costas Papis, University of Piraeus, Greece
Ian C. Parmee, University of the West of England, Bristol, UK
Carlos-Andrés Pena-Reyes, Swiss Federal Institute of Technology-EPFL,
Lausanne, Switzerland
Theodor Popescu, National Institute for Research and Development Informatics,
Bucharest, Romania
John A. Rose, University of Tokyo, Tokyo, Japan
Eugene Roventa, York University, Toronto, Canada
Rajkumar Roy, Cranfield University, UK
Takeshi Samatsu, Kyushu Tokai University, Japan
Elie Sanchez, Université de la Méditerranée, Marseille, France
Marc Schoenauer, INRIA Rocquencourt, Le Chesnay, France
Udo Seiffert, Leibniz Institute of Plant Genetics and Crop Plant Research,
Gatersleben, Germany
Barry Smyth, University College Dublin, Ireland
Flavio Soares Correa da Silva, Instituto de Matematica e Estatistica,
University of São Paulo, Brazil
Von-Wun Soo, National Tsing Hua University, Taiwan
Adrian Stoica, NASA Jet Propulsion Laboratory, Pasadena, USA
Noriaki Suetake, Yamaguchi University, Japan
Sarawut Sujitjorn, Suranaree University of Technology, Thailand
Mieko Tanaka-Yamawaki, Tottori University, Japan
Takushi Tanaka, Fukuoka Institute of Technology, Japan
Eiichiro Tazaki, Toin University of Yokohama, Japan
Jon Timmis, University of Kent at Canterbury, UK
Jim Torresen, University of Oslo, Norway
Kazuhiko Tsuda, University of Tsukuba, Japan
Andy M. Tyrrell, University of York, UK
Eiji Uchino, University of Yamaguchi, Japan
Angel Navia Vazquez, Universidad Carlos III de Madrid, Spain
Jose Luis Verdegay, University of Granada, Granada, Spain
Dianhui Wang, La Trobe University, Melbourne, Australia
Pei Wang, Temple University, Philadelphia, USA
Junzo Watada, Waseda University, Kitakyushu, Fukuoka, Japan
Keigo Watanabe, Saga University, Japan
Takeshi Yamakawa, Kyushu Institute of Technology, Graduate School of Life
Science and Systems Engineering, Japan
Xin Yao, University of Birmingham, UK
Kaori Yoshida, Kyushu Institute of Technology, Japan
Lotfi A. Zadeh, University of California at Berkeley, USA
Ricardo Zebulum, NASA Jet Propulsion Laboratory, Pasadena, USA

Invited Session Chairs Committee

Akinori Abe, ATR Intelligent Robotics & Communication Labs, Kyoto, Japan
Yoshinori Adachi, Chubu University, Japan
Alicia d'Anjou, Universidad del Pais Vasco, Spain
Norio Baba, Osaka Kyoiku University, Japan
Pascal Bouvry, Luxembourg University of Applied Sciences, Luxembourg
Malu Castellanos, Hewlett-Packard Laboratories, Palo Alto, CA, USA
Yen-Wei Chen, Ritsumeikan University, Japan
George G. Coghill, Auckland University, New Zealand
Ernesto Damiani, University of Milan, Italy
Vladan Devedzic, University of Belgrade, Serbia and Montenegro
Marijan Druzovec, University of Maribor, Slovenia
Richard Duro, Universidad de A Coruña, Spain
Minoru Fukumi, University of Tokushima, Japan
Boris Galitsky, Birkbeck College, University of London, UK
Max H. Garzon, University of Memphis, USA
Wanwu Guo, Edith Cowan University, Australia
Manuel Graña, Universidad Pais Vasco, Spain
Jerzy M. Grzymala-Busse, University of Kansas, USA
Robert F. Harrison, University of Sheffield, UK
Philip Hingston, Edith Cowan University, Australia
Tzung-Pei Hong, National University of Kaohsiung, Taiwan
Nikhil Ichalkaranje, University of South Australia, Adelaide, Australia
Takumi Ichimura, Hiroshima University, Japan
Nobuhiro Inuzuka, Nagoya Institute of Technology, Japan
Yoshiteru Ishida, Toyohashi University of Technology, Japan
Naohiro Ishii, Aichi Institute of Technology, Japan
Yuji Iwahori, Chubu University, Japan
Lakhmi C. Jain, University of South Australia, Adelaide, Australia
Taki Kanda, Bunri University of Hospitality, Japan
Radoslaw P. Katarzyniak, Wroclaw University of Technology, Poland
Le Kim, University of South Australia, Adelaide, Australia
Tai-hoon Kim, Korea Information Security Agency (KISA), Korea
Rajiv Khosla, La Trobe University, Melbourne, Australia
Peter Kokal, University of Maribor, Slovenia
Naoyuki Kubota, Tokyo Metropolitan University, Tokyo, Japan
Mineichi Kudo, Hokkaido University, Japan
Chiaki Kuroda, Tokyo Institute of Technology, Tokyo, Japan
Susumu Kunifuji, Japan Advanced Institute of Science and Technology, Japan
Weng Kim Lai, MIMOS Berhad, Technology Park, Malaysia
Dong Chun Lee, Howon University, Korea
Huey-Ming Lee, Chinese Culture University, Taiwan
Raymond Lee, Hong Kong Polytechnic University, Kowloon, Hong Kong

Chee-Peng Lim, University of Science, Malaysia
 Bruce MacDonald, Auckland University, New Zealand
 Jun Munemori, Wakayama University, Japan
 Tetsuya Murai, Hokkaido University, Japan
 Hirofumi Nagashino, University of Tokushima, Japan
 Koji Nakajima, Tohoku University, Sendai, Japan
 Kazumi Nakamatsu, University of Hyogo, Japan
 Hirotaka Nakayama, Konan University, Kobe, Japan
 Ryohei Nakano, Nagoya Institute of Technology, Japan
 Ngoc T. Nguyen, Wroclaw University of Technology, Poland
 Toyoaki Nishida, Graduate School of Informatics, Kyoto University, Japan
 Mariusz Nowostawski, University of Otago, Dunedin, New Zealand
 Yukio Ohsawa, University of Tsukuba and University of Tokyo, Japan
 Abhijit S. Pandya, Florida Atlantic University, USA
 Gloria E. Phillips-Wren, Loyola College in Maryland, Baltimore, USA
 Lech Polkowski, Polish-Japanese Institute of Information Technology, Koszykowa,
 Poland
 Theodor D. Popescu, National Institute for Research and Development
 in Informatics, Bucharest, Romania
 Marina Resta, University of Genoa, Italy
 David C. Rees, CSIRO ICT Centre, Epping, Australia
 John A. Rose, University of Tokyo, Japan
 Steffen Rothkugel, Luxembourg University of Applied Sciences, Luxembourg
 Kazumi Saito, Nagoya Institute of Technology, Nagoya, Japan
 Udo Seiffert, Leibniz Institute of Plant Genetics and Crop Plant Research,
 Germany
 David McG. Squire, Monash University, Australia
 Hirokazu Taki, Wakayama University, Japan
 Kazuhiko Tsuda, University of Tsukuba, Japan
 Claudio Turchetti, Università Politecnica delle Marche, Ancona, Italy
 Katsuji Usosaki, Osaka University, Japan
 Dianhui Wang, La Trobe University, Melbourne, Australia
 Pei Wang, Birkbeck College, University of London, UK
 Junzo Watada, Waseda University, Japan
 Tatjana Welzer, University of Maribor, Slovenia
 Yoshiyuki Yamashita, Tohoku University, Japan.
 Mieko Tanaka-Yamawaki, Tottori University, Japan
 Seong-Joon Yoo, Sejong University, Seoul, Korea
 Katsumi Yoshida, St. Marianna University, School of Medicine, Japan
 Yuji Yoshida, University of Kitakyushu, Kitakyushu, Japan
 Takashi Yoshino, Wakayama University, Japan
 Valentina Zharkova, Bradford University, UK

KES 2004 Reviewers

R. Abdulah, University of Science Malaysia, Malaysia
A. Abe, ATR Intelligent Robotics & Communication Labs., Kyoto, Japan
Y. Adachi, Chubu University, Aichi, Japan
P. Andreae, Victoria University, Wellington, New Zealand
A. Asano, Hiroshima University, Higashi-Hiroshima, Japan
K.V. Asari, Old Dominion University, Norfolk, Virginia, USA
N. Ashidi, KES 2004 Reviewers Team
D. Arita, Kyushu University, Fukuoka, Japan
N.A. Aziz, MIMOS, Malaysia
N. Baba, Osaka Kyoiku University, Japan
R. Babuska, Delft University of Technology, Delft, The Netherlands
O. Boissier, Écoles des Mines de Saint-Étienne, France
P. Bosc, IRISA/ENSSAT, France
P. Bouvry, Luxembourg University of Applied Sciences, Luxembourg
G. Bright, Massey University, Auckland, New Zealand
D.A. Carnegie, Waikato University, Hamilton, New Zealand
M. Castellaneous, Hewlett-Packard Laboratories, Palo Alto, CA, USA
C.-T. Chang, National Cheng Kung University, Taiwan
Y.-W. Chen, Ritsumeikan University, Japan
S.-C. Chi, Huafan University, Taiwan
B.-C. Chien, I-Shou University, Taiwan
G.G. Coghill, Auckland University, Auckland, New Zealand
D.W. Corne, University of Exeter, UK
D. Cornforth, Charles Sturt University, Albury, Australia
A. Czyzewski, Gdansk University of Technology, Gdansk, Poland
E. Damiani, University of Milan, Italy
R.J. Deaton, University of Arkansas, USA
Da Deng, University of Otago, Dunedin, New Zealand
V. Devedzic, University of Belgrade, Serbia and Montenegro
P.M. Drezet, University of Sheffield, UK
R. Dunlog, University of Canterbury, Christchurch, New Zealand
C. Elamvazuthi, MIMOS, Malaysia
T. Ejima, Aichi University of Education, Aichi, Japan
M. Fathi, National Magnet Lab., Florida, USA
M. Frean, Victoria University, Wellington, New Zealand
W. Friedrich, Industrial Research Limited, Auckland, New Zealand
T. Fujinami, JAIST, Japan
P. Funk, Mälardalen University, Västerås, Sweden
B. Gabrys, Bournemouth University, UK
M.H. Garzon, University of Memphis, USA
B. Galitsky, Birkbeck College, University of London, UK
T. Gedeon, Murdoch University, Murdoch, Australia

V. Gorodetski, St. Petersburg Institute of Informatics, Russia
M. Grana, Universidad Pais Vasco, Spain
J.W. Grzymala-Busse, University of Kansas, USA
N. Guelfi, Luxembourg University of Applied Sciences, Luxembourg
F. Guinand, Le Havre University, France
W. Guo, Edith Cowan University, Australia
M. Hagiya, University of Tokyo, Japan
L.K. Hansen, Technical University of Denmark, Lyngby, Denmark
A. Hara, Hiroshima City University, Japan
R.F. Harrison, University of Sheffield, UK
Y. Hayakawa, Tohoku University, Japan
L. Hildebrand, University of Dortmund, Germany
P. Hingston, Edith Cowan University, Australia
K. Hirayama, University of Kitakyushu, Kitakyushu, Japan
O.S. Hock, University of Malaya, Malaysia
T.-P. Hong, National University of Kaohsiung, Taiwan
K. Horio, Kyushu Institute of Technology, Fukuoka, Japan
D. Howard, University of Limerick, Ireland
T. Ichikawa, Shizuoka University, Japan
T. Ichimura, Hiroshima City University, Japan
N. Ichalkaranje, University of South Australia, Australia
F. Ishida, University of Electro-communications, Japan
Y. Ishida, Toyohashi University of Technology, Japan
N. Ishii, Aichi Institute of Technology, Japan
S. Ito, ATR, Japan
Y. Iwahori, Chubu University, Aichi, Japan
S. Iwamoto, Kyushu University, Fukuoka, Japan
M.E. Jefferies, Waikato University, Hamilton, New Zealand
N. Jesse, University of Dortmund, Germany
K. Juszczyszyn, Wroclaw University of Technology, Poland
D. Khadraoui, CRP Tudor, Luxembourg
K. Kakusho, Kyoto University, Kyoto, Japan
T. Kanda, Bunri University of Hospitality, Japan
T. Kanai, Meijin-gakuin University, Japan
N. Karakapilidis, University of Patras, Greece
R.P. Katarzyniak, Wroclaw University of Technology, Poland
N. Katayama, Tohoku University, Japan
P. Kazienko, Wroclaw University of Technology, Poland
V. Kecman, Auckland University, New Zealand
S.J. Kia, New Zealand
C.W. Kian, Ohio Northern University, USA
L. Kim, University of Canberra, Australia
C.P. Lian, DSTO, Australia
C.-P. Lim, University of Science Malaysia, Malaysia
D.N.C. Ling, Multimedia University, Malaysia
M. Kinjo, Tohoku University, Japan
Y. Kinouchi, University of Tokushima, Japan

A.T. Khader, University of Science Malaysia, Malaysia
R. Khosla, La Trobe University, Melbourne, Australia
T. Koda, Kyoto University, Japan
T. Komatsu, Future University Hakodate, Hakodate, Japan
T. Kondo, KES 2004 Reviewers Team
B. Kostec, Gdansk University of Technology, Gdansk, Poland
N. Kubota, Tokyo Metropolitan University, Tokyo, Japan
M. Kudo, University of Hokkaido, Japan
N. Kulathuramaiyer, University Malaysia Sarawak, Malaysia
S. Kumamoto, University of Kytakyushu, Japan
S. Kunifuji, Japan Advanced Institute of Science and Technology (JAIST), Japan
H.-C. Kuo, National Chiayi University, Taiwan
M. Kurano, Chiba University, Japan
C. Kuroda, Tokyo Institute of Technology, Japan
T. Kuroda, KES 2004 Reviewers Team
S. Kurohashi, University of Tokyo, Japan
Y. Kurosawa, Hiroshima City University, Japan
A. Kusiak, University of Iowa, Iowa City, USA
S. Kurohashi, University of Tokyo, Japan
Y. Kurosawa, Hiroshima City University, Japan
W.K. Lai, MIMOS Berhad, Technology Park, Malaysia
D.C. Lee, Howon University, Korea
H.-M. Lee, Chinese Culture University, Taiwan
R. Lee, Hong Kong Polytechnic University, Hong Kong
C.P. Lian, KES 2004 Reviewers Team
J.-H. Lin, I-Shou University, Taiwan
W.-Y. Lin, I-Shou University, Taiwan
D.N.C. Ling, KES 2004 Reviewers Team
C.-P. Lim, University of Science Malaysia, Penang, Malaysia
H. Li, Edith Cowan University, Australia
C. Liu, Shenyang Institute of Technology, Shenyang, China
I. Lovrek, University of Zagreb, Croatia
B. MacDonald, Auckland University, New Zealand
B. McKay, University of New South Wales, Australian Defence Force Academy, Australia
David McG. Squire, Monash University, Australia
Z. Ma, Northeast Normal University, China
L. Magdalena-Layos, EUSFLAT and Universidad Politecnica de Madrid, Spain
N.A. Matisa, University of Science, Malaysia, Malaysia
C. Messom, Massey University, Auckland, New Zealand
C. Moraga, University of Dortmund, Germany
N. Mort, University of Sheffield, UK
K. Mera, Hiroshima City University, Japan
M. Minoh, ACCMS, Kyoto University, Japan
M. Miura, JAIST, Japan
Y. Mizugaki, University of Electro-communications, Japan
T. Mizuno, Shizuoka University, Japan

Y. Moria, Nagoya Women's University, Japan
 J. Munemori, Wakayama University, Japan
 T. Murai, Hokkaido University, Japan
 J. Murata, Kyushu University, Fukuoka, Japan
 H. Nagashino, University of Tokushima, Japan
 J. Nakagami, Chiba University, Chiba, Japan
 K. Nakajima, Tohoku University, Japan
 K. Nakamatsu, University of Hyogo, Japan
 M. Nakamura, Hiroshima City University, Japan
 Y. Nakamura, ACCMS, Kyoto University, Japan
 R. Nakano, Nagoya Institute of Technology, Nagoya, Japan
 R. Nakatsu, Kwansei Gakuin University, Japan
 H. Nanba, Hiroshima City University, Japan
 C.-D. Neagu, University of Bradford, UK
 M.Gh. Negoita, Wellington Institute of Technology, New Zealand
 N.T. Nguyen, Wroclaw University of Technology, Poland
 T. Nishida, Kyoto University, Japan
 K. Nishimoto, JAIST, Japan
 T. Noguchi, JAIST, Japan
 M. Novostawski, University of Otago, Dunedin, New Zealand
 S. Oeda, Kisarazu College of Technology, Japan
 Y. Ohsawa, University of Tsukuba and University of Tokyo, Japan
 T. Okamoto, Kanagawa Institute of Technology, Atsugi, Japan
 O. Ono, Meiji University, Japan
 T. Onomi, Tohoku University, Japan
 M. Ozaki, Chubu University, Aichi, Japan
 V. Palade, Oxford University, UK
 A.S. Pandya, Florida Atlantic University, USA
 M. Paprzycki, Wroclaw University of Technology, Poland
 C.-A. Pena-Reyes, Swiss Federal Institute of Technology-EPFL, Lausanne, Switzerland
 J.F. Peters, University of Manitoba, Winnipeg, Canada
 G.E. Phillips-Wren, Loyola College in Maryland, USA
 L. Polkowski, Polish-Japanese Institute of Information Technology, Koszykowa, Poland
 Th.D. Popescu, National Institute for Research and Development in Informatics, Bucharest, Romania
 M. Purvis, University of Otago, Dunedin, New Zealand
 A.R. Ramli, University Putra Malaysia, Malaysia
 D.C. Rees, CSIRO ICT Centre, Epping, Australia
 J.A. Rose, The University of Tokyo, Tokyo, Japan
 S. Rothkugel, Luxembourg University of Applied Sciences, Luxembourg
 K. Saito, NTT Communication Science Labs., Japan
 M.-J.E. Salami, International Islamic University of Malaysia, Kuala Lumpur, Malaysia
 S. Salcedo-Sanz, University of Birmingham, UK
 M. Sano, University of Tokyo, Japan

XVIII Organization

S. Sato, Tohoku University, Japan
R. Sakamoto, JAIST, Japan
E. Sanchez, Université de la Méditerranée, Marseille, France
C. Schommer, Luxembourg University of Applied Sciences, Luxembourg
S. Scott, Asia Pacific Institute of Technology, Malaysia
N. Seeman, New York University, USA
U. Seifert, Leibniz Institute of Plant Genetics and Crop Plant Research, Germany
F. Seredynski, PJWSTK/IPIAN, Poland
T. Shimooka, Hokkaido University, Sapporo, Japan
F.S. Correa da Silva, Instituto de Matematica e Estatistica,
University of São Paulo, Brazil
V.-W. Soo, National Tsing Hua University, Taiwan
U. Sorger, Luxembourg University of Applied Sciences, Luxembourg
P. Sturm, University of Trier, Germany
N. Suetake, Yamaguchi University, Japan
K. Sugiyama, JAIST, Japan
M. Suka, St. Marianna University, Japan
S. Sujitjorn, Suranaree University of Technology, Thailand
Y. Sumi, Kyoto University, Kyoto, Japan
N. Surayana, Multimedia University, Malaysia
A. Suyama, University of Tokyo, Japan
M. Takano, University of Tokyo, Japan
H. Taki, Wakayama University, Japan
M. Takano, University of Tokyo, Japan
H. Taki, Wakayama University, Japan
Y.-H. Tao, National Pingtung University of Technology and Science, Taiwan
T. Tanaka, Fukuoka Institute of Technology, Fukuoka, Japan
R. Taniguchi, Kyushu University, Fukuoka, Japan
E.H. Tat, Multimedia University, Malaysia
J. Timmis, University of Kent at Canterbury, UK
J. Torresen, University of Oslo, Norway
K. Tsuda, University of Tsukuba, Tokyo, Japan
C. Turchetti, Università Politecnica delle Marche, Ancona, Italy
E. Uchino, University of Yamaguchi, Japan
H. Ueda, Hiroshima City University, Japan
K. Ueda, University of Tokyo, Japan
K. Umemoto, JAIST, Japan
K. Unsworth, Auckland University, New Zealand
K. Uosaki, Osaka University, Japan
J. Xiao, Edith Cowan University, Australia
N. Xiong, KES 2004 Reviewers Team
H. Yamaba, Miyazaki University, Japan
T. Yamakami, ACCESS, Japan
Y. Yamashita, Tohoku University, Japan
H. Yan, Duke University, USA
X. Yao, University of Birmingham, UK
M. Yasuda, Chiba University, Japan

S.-J. Yoo, Sejong University, Seoul, Korea
 J. Yoon, Institute of Science and Technology, Korea
 K. Yoshida, St. Marianna University, Japan
 Y. Yoshida, University of Kitakyushu, Japan
 T. Yoshino, Wakayama University, Japan
 K.-M. Yu, Chung-Hua University, Taiwan
 D.C.K. Yuen, Auckland University, New Zealand
 T. Yuizono, Shimane University, Japan
 D. Wang, La Trobe University, Melbourne, Australia
 P. Wang, Temple University, Philadelphia, USA
 S.-L. Wang, New York Institute of Technology, USA
 X. Wang, Hebei University, China
 J. Watada, Waseda University, Japan
 K. Watanabe, Saga University, Japan
 Y. Watanabe, Toyohashi University of Technology, Japan
 E. Weidert, Luxembourg University of Applied Sciences, Luxembourg
 T. Welzer, University of Maribor, Slovenia
 S. Wilk, Poznan University of Technology, Poland
 C.-H. Wu, Shu-Te University, Taiwan
 V. Zharkova, University of Bradford, UK
 A. Zomaya, University of Sydney, Australia
 C. Zhao, Edith Cowan University, Australia
 Z. Zheng, Chinese Academy of Sciences, Beijing, China

Sponsors



Engineers New Zealand

"IPENZ is proud to be associated with this knowledge event for engineers."



New Zealand's Economic and Trade Development Agency



Table of Contents, Part I

Keynote Lecturers

Web Intelligence, World Knowledge and Fuzzy Logic – The Concept of Web IQ (WIQ) <i>Lotfi A. Zadeh</i>	1
Industrial Applications of Evolvable Hardware <i>Tetsuya Higchi</i>	6
Equilibrium Modelling of Oligonucleotide Hybridization, Error, and Efficiency for DNA-Based Computational Systems <i>John A. Rose</i>	8
Chance Discovery with Emergence of Future Scenarios <i>Yukio Ohsawa</i>	11
Brain-Inspired SOR Network and Its Application to Trailer Track Back-up Control <i>Takanori Koga, Takeshi Yamakawa</i>	13
Dual Stream Artificial Neural Networks <i>Colin Fyfe</i>	16

Session Papers

DNA-Based Semantic Information Processing

Improving the Quality of Semantic Retrieval in DNA-Based Memories with Learning <i>Andrew Neel, Max Garzon, Phani Penumatsa</i>	18
Conceptual and Contextual DNA-Based Memory <i>Russell Deaton, Junghuei Chen</i>	25
Semantic Model for Artificial Intelligence Based on Molecular Computing <i>Yusei Tsuboi, Zuwairie Ibrahim, Osamu Ono</i>	32
The Fidelity of the Tag-Antitag System III. Robustness in the Excess Limit: The Stringent Temperature <i>John A. Rose</i>	40

Emergent Computational Intelligence Approaches – Artificial Immune Systems and DNA Computing

Robust PID Controller Tuning Using Multiobjective Optimization Based on Clonal Selection of Immune Algorithm <i>Dong Hwa Kim, Jae Hoon Cho</i>	50
Intelligent Tuning of PID Controller With Robust Disturbance Rejection Function Using Immune Algorithm <i>Dong Hwa Kim</i>	57
The Block Hidden Markov Model for Biological Sequence Analysis <i>Kyoung-Jae Won, Adam Prügel-Bennett, Anders Krogh</i>	64

Innovations in Intelligent Agents and Their Applications

Innovations in Intelligent Agents and Applications <i>Gloria E. Phillips-Wren, Nikhil Ichalkaranje</i>	71
An Intelligent Aircraft Landing Support System <i>Steve Thatcher, Lakhmi Jain, Colin Fyfe</i>	74
Teaming Humans and Agents in a Simulated World <i>Christos Sioutis, Jeffrey Tweedale, Pierre Urlings, Nikhil Ichalkaranje, Lakhmi Jain</i>	80
Contextual-Knowledge Management in Peer to Peer Computing <i>E.V. Krishnamurthy, V.K. Murthy</i>	87
Collaborating Agents in Distributed Networks and Emergence of Collective Knowledge <i>V.K. Murthy, E.V. Krishnamurthy</i>	95
Intelligent Decision Making in Information Retrieval <i>Gloria E. Phillips-Wren, Guiseppi A. Forgione</i>	103
Innovations in Intelligent Agents, Web and Their Applications <i>Gloria E. Phillips-Wren, Nikhil Ichalkaranje</i>	110
Novel Intelligent Agent-Based System for Study of Trade <i>Tomohiro Ikai, Mika Yoneyama, Yasuhiko Dote</i>	113
Testing of Multi-agent-based System in Ubiquitous Computing Environment <i>Ken'ichi Takahashi, Satoshi Amamiya, Tadashige Iwao, Guoqiang Zhong, Makoto Amamiya</i>	124
Helping Users Customize Their Pedagogical Agents: Issues, Approaches and Examples <i>Anders I. Mørch, Jan Eirik B. Nævdal</i>	131

Intelligent Web Site: Understanding the Visitor Behavior <i>Juan D. Velásquez, Pablo A. Estévez, Hiroshi Yasuda, Terumasa Aoki, Eduardo Vera</i>	140
---	-----

Data Mining and Knowledge Discovery

Mining Transformed Data Sets <i>Alex Burns, Andrew Kusiak, Terry Letsche</i>	148
Personalized Multilingual Web Content Mining <i>Rowena Chau, Chung-Hsing Yeh, Kate A. Smith</i>	155
Intelligent Multimedia Information Retrieval for Identifying and Rating Adult Images <i>Seong-Joon Yoo</i>	164
Using Domain Knowledge to Learn from Heterogeneous Distributed Databases <i>Sally McClean, Bryan Scotney, Mary Shapcott</i>	171
A Peer-to-Peer Approach to Parallel Association Rule Mining <i>Hiroshi Ishikawa, Yasuo Shioya, Takeshi Omi, Manabu Ohta, Karoru Katayama</i>	178
FIT: A Fast Algorithm for Discovering Frequent Itemsets in Large Databases <i>Jun Luo, Sanguthevar Rajasekaran</i>	189
Frequency-Incorporated Interdependency Rules Mining in Spatiotemporal Databases <i>Ickjai Lee</i>	196

Robotics: Intelligent Control and Sensing

Theoretical Considerations of Multiple Particle Filters for Simultaneous Localisation and Map-Building <i>David C.K. Yuen, Bruce A. MacDonald</i>	203
Continuous Walking Over Various Terrains – A Walking Control Algorithm for a 12- DOF Locomotion Interface <i>Jungwon Yoon, Jeha Ryu</i>	210
Vision Controlled Humanoid Robot Tool-Kit <i>Chris Messom</i>	218
Modular Mechatronic Robotic Plug-and-Play Controller <i>Jonathan R. Zyzalo, Glen Bright, Olaf Diegel, Johan Potgieter</i>	225
The Correspondence Problem in Topological Metric Mapping - Using Absolute Metric Maps to Close Cycles <i>Margaret E. Jefferies, Michael C. Cosgrove, Jesse T. Baker, Wai-Kiang Yeap</i>	232

Intelligent Tutoring Systems

Developing a “Virtual Student” Model to Test the Tutor and Optimizer Agents in an ITS

Mircea Gh. Negoita, David Pritchard.....240

Considering Different Learning Styles when Transferring Problem Solving Strategies from Expert to End Users

Narin Mayiwar, Anne Håkansson253

ULMM: A Uniform Logic Modeling Method in Intelligent Tutoring Systems

Jinxin Si, Cungen Cao, Yuefei Sui, Xiaoli Yue, Nengfu Xie.....263

Mining Positive and Negative Fuzzy Association Rules

Peng Yan, Guoqing Chen, Chris Cornelis, Martine De Cock, Etienne Kerre270

Intelligence and Technology in Educational Applications

An Adaptation Framework for Web Based Learning System

T.T. Goh, Kinshuk277

Ontologies for Creating Learning Object Content

Dragan Gašević, Jelena Jovanović, Vladan Devedžić.....284

PASS: An Expert System with Certainty Factors for Predicting Student Success

Ioannis Hatzilygeroudis, Anthi Karatrantou, C. Pierrakeas.....292

Student Modeling in Design Pattern ITS

Zoran Jeremić, Vladan Devedžić.....299

Supporting Self-Explanation in an Open-Ended Domain

Amali Weerasinghe, Antonija Mitrovic.....306

Creativity Support Systems

Evaluation of the IRORI: A Cyber-Space that Catalyzes Face-to-Face Informal Communication

Masao Usuki, Kozo Sugiyama, Kazushi Nishimoto, Takashi Matsubara.....314

Information Sharing System Based on Location in Consideration of Privacy for Knowledge Creation

Toshiyuki Hirata, Susumu Kunifuji.....322

A Method of Extracting Topic Threads Towards Facilitating Knowledge Creation in Chat Conversations

Kanayo Ogura, Masato Ishizaki, Kazushi Nishimoto.....330

Support Systems for a Person with Intellectual Handicap from the Viewpoint of Universal Design of Knowledge

Toshiaki Ikeda, Susumu Kunifuji.....337

Intelligent Media Technology for Communicative Intelligence – Knowledge Management and Communication Model

Intelligent Conversational Channel for Learning Social Knowledge Among Communities <i>S.M.F.D. Syed Mustapha</i>	343
An Algorithm for Avoiding Paradoxical Arguments Among the Multi-agent in the Discourse Communicator <i>S.M.F.D. Syed Mustapha</i>	350
Gallery: In Support of Human Memory <i>Hung-Hsuan Huang, Yasuyuki Sumi, Toyoaki Nishida</i>	357
Evaluation of the Communication Atmosphere <i>Tomasz M. Rutkowski, Koh Kakusho, Victor Kryssanov, Michihiko Minoh</i>	364
A Method for Estimating Whether a User is in Smooth Communication with an Interactive Agent in Human-Agent Interaction <i>Takanori Komatsu, Shoichiro Ohtsuka, Kazuhiro Ueda, Takashi Komeda, Natsuki Oka</i>	371
A Meaning Acquisition Model Which Induces and Utilizes Human's Adaptation <i>Atsushi Utsunomiya, Takanori Komatsu, Kazuhiro Ueda, Natsuki Oka</i>	378

Intelligent Media Technology for Communicative Intelligence – Interaction and Visual Content

Video Content Manipulation by Means of Content Annotation and Nonsymbolic Gestural Interfaces <i>Burin Anuchitkittikul, Masashi Okamoto, Sadao Kurohashi, Toyoaki Nishida, Yoichi Sato</i>	385
Structural Analysis of Instruction Utterances Using Linguistic and Visual Information <i>Tomohide Shibata, Masato Tachiki, Daisuke Kawahara, Masashi Okamoto, Sadao Kurohashi, Toyoaki Nishida</i>	393
Video Contents Acquisition and Editing for Conversation Scene <i>Takashi Nishizaki, Ryo Ogata, Yuichi Nakamura, Yuichi Ohta</i>	401
Video-Based Interactive Media for Gently Giving Instructions <i>Takuya Kosaka, Yuichi Nakamura, Yoshinari Kameda, Yuichi Ohta</i>	411
Real-Time Human Proxy: An Avatar-Based Interaction System <i>Daisaku Arita, Rin-ichiro Taniguchi</i>	419

Soft Computing Techniques in the Capital Markets

Reliability and Convergence on Kohonen Maps: An Empirical Study <i>Marcello Cattaneo Adorno, Marina Resta</i>	426
--	-----

A New Trial for Improving the Traditional Technical Analysis in the Stock Markets	
<i>Norio Baba, Tomoko Kawachi</i>	434
Prediction of Business Failure by Total Margin Support Vector Machines	
<i>Yeboon Yun, Min Yoon, Hirotaka Nakayama, Wataru Shiraki</i>	441
Tick-Wise Predictions of Foreign Exchange Rates	
<i>Mieko Tanaka-Yamawaki</i>	449
 Knowledge-Based Systems for e-Business	
A Rule-Based System for eCommerce Applications	
<i>Jens Dietrich</i>	455
Analyzing Dynamics of a Supply Chain Using Logic-Based Genetic Programming	
<i>Ken Taniguchi, Takao Terano</i>	464
From Gaming Simulation to Case Method – Empirical Study on Business Game Development and Evaluation	
<i>Kenji Nakano, Takao Terano</i>	472
A Study of a Constructing Automatic Updating System for Government Web Pages	
<i>Keiichi Mitani, Yoshikatsu Fujita, Kazuhiko Tsuda</i>	480
Efficient Program Verification Using Binary Trees and Program Slicing	
<i>Masakazu Takahashi, Noriyoshi Mizukoshi, Kazuhiko Tsuda</i>	487
An Efficient Learning System for Knowledge of Asset Management	
<i>Satoru Takahashi, Hiroshi Takahashi, Kazuhiko Tsuda</i>	494
Extracting Purchase Patterns in Convenience Store E-Commerce Market Using Customer Cube Analysis	
<i>Yoshinori Fukue, Kessoku Masayuki, Kazuhiko Tsuda</i>	501
A Study of Knowledge Extraction from Free Text Data in Customer Satisfaction Survey	
<i>Yukari Iseyama, Satoru Takahashi, Kazuhiko Tsuda</i>	509
Network Information Mining for Content Delivery Route Control in P2P Network	
<i>Yoshikatsu Fujita, Jun Yoshida, Kenichi Yoshida, Kazuhiko Tsuda</i>	516
A Method of Customer Intention Management for a My-Page System	
<i>Masayuki Kessoku, Masakazu Takahashi, Kazuhiko Tsuda</i>	523
New Hierarchy Technique Using Co-occurrence Word Information	
<i>El-Sayed Atlam, Elmarhomy Ghada, Masao Fuketa, Kazuhiro Morita, Jun-ichi Aoe</i>	530

A New Method of Detecting Time Expressions for E-mail Messages <i>Toru Sumitomo, Yuki Kadoya, El-Sayed Atlam, Kazuhiro Morita, Shinkaku Kashiji, Jun-ichi Aoe</i>	541
A New Classification Method of Determining the Speaker's Intention for Sentences in Conversation <i>Yuki Kadoya, El-Sayed Atlam, Kazuhiro Morita, Masao Fuketa, Toru Sumitomo, Jun-ichi Aoe</i>	549
A Fast Dynamic Method Using Memory Management <i>Shinkaku Kashiji, Toru Sumitomo, Kazuhiro Morita, Masaki Ono, Masao Fuketa, Jun-ichi Aoe</i>	558
A Method of Extracting and Evaluating Popularity and Unpopularity for Natural Language Expressions <i>Kazuhiro Morita, Yuki Kadoya, El-Sayed Atlam, Masao Fuketa, Shinkaku Kashiji, Jun-ichi Aoe</i>	567

Intelligent Hybrid Systems for Medical Diagnosis

Evaluating a Case-Based Reasoner for Clinical Decision Support <i>Anna Wills, Ian Watson</i>	575
Early Detection of Breast Cancer Using Mathematical Morphology <i>Özgür Özsen</i>	583
Diagnosis of Cervical Cancer Using Hybrid Multilayered Perceptron (HMLP) Network <i>Dzati Athiar Ramli, Ahmad Fauzan Kadmin, Mohd. Yousoff Mashor, Nor Ashidi, Mat Isa</i>	591
Mammographic Image and Breast Ultrasound Based Expert System for Breast Diseases <i>Umi Kalthum Ngah, Chan Choyi Ping, Shalihaturun Azlin Aziz</i>	599
A Study on Nonparametric Classifiers for a CAD System of Diffuse Lung Opacities in Thin-Section Computed Tomography Images <i>Yoshihiro Mitani, Yusuke Fujita, Naofumi Matsunaga, Yoshihiko Hamamoto</i>	608

Techniques of Computational Intelligence for Web Applications

Recognition of Grouping Areas in Trademarks Considering Proximity and Shape Similarity <i>Koji Abe, Debabrata Roy, John P. Eakins</i>	614
Multidimensional Visualization and Navigation in Search Results <i>Will Archer Arentz, Aleksander Øhrn</i>	620

A Hybrid Learning Approach for TV Program Personalization <i>Zhiwen Yu, Xingshe Zhou, Zhiyi Yang</i>	630
An Adaptive-Learning Distributed File System <i>Joseph D. Gradecki, Ilkeyun Ra</i>	637

Intelligent Information Processing for Remote Sensing

Review of Coding Techniques Applied to Remote Sensing <i>Joan Serra-Sagrista, Francesc Auli, Fernando Garcia, Jorge Gonzales, Pere Guitart</i>	647
Efficient and Effective Tropical Cyclone Eye Fix Using Genetic Algorithms <i>Chi Lap Yip, Ka Yan Wong</i>	654
Spectral Unmixing Through Gaussian Synapse ANNs in Hyperspectral Images <i>J.L. Crespo, R.J. Duro, F. López-Peña</i>	661
A Hyperspectral Based Multisensor System for Marine Oil Spill Detection, Analysis and Tracking <i>F. López-Peña, R.J. Duro</i>	669
Some Experiments on Ensembles of Neural Networks for Hyperspectral Image Classification <i>Carlos Hernández-Espinosa, Mercedes Fernández-Redondo, Joaquín Torres Sospedra</i>	677
A Modular Approach to Real-Time Sensorial Fusion Systems <i>F. Gil-Castiñeira, P.S. Rodríguez-Hernández, F.J. Gonzáles-Castaño, E. Costa-Montenegro, R. Asorey-Cacheda, J.M. Pousada Carballo</i>	685
Feature Extraction by Linear Spectral Unmixing <i>M. Graña, A. D'Anjou</i>	692

Intelligent and Knowledge-Based Solutions for Mobile and Ad-Hoc Networks

Decision Support System on the Grid <i>M. Ong, X. Ren, J. Allan, V. Kadirkamanathan, HA Thompson, PJ Fleming</i>	699
Representing Knowledge in Controlled Natural Language: A Case Study <i>Rolf Schwitter</i>	711
Supporting Smart Applications in Multihop Ad-Hoc Networks - The GecGo Middleware - <i>Peter Sturm, Hannes Frey, Daniel Gšrgen, Johannes Lehnert</i>	718
A Heuristic for Efficient Broadcasting in the Metropolitan Ad hoc Networks <i>Luc Hogie, Frederic Guinand, Pascal Bouvry</i>	727
ADS as Information Management Service in an M-Learning Environment <i>Matthias R. Brust, Daniel Gšrgen, Christian Hutter, Steffen Rothkugel</i>	734

Rough Sets - Theory and Applications

Noise Reduction in Audio Employing Spectral Unpredictability Measure and Neural Net <i>Andrzej Czyzewski, Marek Dziubinski</i>	743
Forming and Ranking Musical Rhythm Hypotheses <i>Bozena Kostek, Jaroslaw Wojcik</i>	750
A Comparison of Two Approaches to Data Mining from Imbalanced Data <i>Jerzy W. Grzymala-Busse, Jerzy Stefanowski, Szymon Wilk</i>	757
Measuring Acceptance of Intelligent System Models <i>James F. Peters, Sheela Ramanna</i>	764
Rough Set Based Image Texture Recognition Algorithm <i>Zheng Zheng, Hong Hu, Zhongzhi Shi</i>	772
Sets of Communicating Sequential Processes. A Topological Rough Set Framework <i>L. Polkowski, M. Serneniuk-Polkowska</i>	779

Soft Computing Techniques and Their Applications

Robust System Identification Using Neural Networks <i>Shigenobu Yamawaki, Lakhmi Jain</i>	786
A Consideration on the Learning Behaviors of the HSLA Under the Nonstationary Multiteacher Environment and Their Application to Simulation and Gaming <i>Norio Baba, Yoshio Mogami</i>	792
Genetic Lips Extraction Method with Flexible Search Domain Control <i>Takuya Akashi, Minoru Fukumi, Norio Akamatsu</i>	799
Medical Diagnosis System Using the Intelligent Fuzzy Systems <i>Yasue Mitsukura, Kensuke Mitsukura, Minoru Fukumi, Norio Akamatsu, Witold Pedrycz</i>	807
Music Compression System Using the GA <i>Hiroshi Kawasaki, Yasue Mitsukura, Kensuke Mitsukura, Minoru Fukumi, Norio Akamatsu</i>	827
Effects of Chaotic Exploration on Reinforcement Maze Learning <i>Koichiro Morihiro, Nobuyuki Matsui, Haruhiko Nishimura</i>	833
Face Search by Neural Network Based Skin Color Threshold Method <i>Takashi Imura, Minoru Fukumi, Norio Akamatsu, Kazuhiro Nakaura</i>	840
Face Edge Detection System by Using the GAs <i>Hideaki Sato, Katsuhiro Sakamoto, Yasue Mitsukura, Norio Akamatsu</i>	847
A Feature Extraction of EEG with Individual Characteristics <i>Shin-ichi Ito, Yasue Mitsukura, Norio Akamatsu</i>	853

Proposal of Neural Recognition with Gaussian Function and Discussion for Rejection Capabilities to Unknown Currencies <i>Baiqing Sun, Fumiaki Takeda</i>	859
Development of DSP Unit for Online Tuning and Application to Neural Pattern Recognition System <i>Hironobu Satoh, Fumiaki Takeda</i>	866
Face Identification Based on Ellipse Parameter Independent of Varying Facial Pose and Lighting Condition <i>Hironori Takimoto, Yasue Mitsukura, Norio Akamatsu</i>	874
Object Extraction System by Using the Evolutionary Computations <i>Seiki Yoshimori, Yasue Mitsukura, Minoru Fukumi, Norio Akamatsu</i>	881
Wrist EMG Pattern Recognition System by Neural Networks and Multiple Principal Component Analysis <i>Yuji Matsumura, Minoru Fukumi, Norio Akamatsu, Fumiaki Takeda</i>	891
Age Classification from Face Images Focusing on Edge Information <i>Miyoko Nakano, Fumiko Yasukata, Minoru Fukumi</i>	898
 Evolutionary Computation in the Soft Computing Framework	
Why Do Machine Learning Based Techniques Fail to Accelerate the Evolution of Neural Networks? <i>Hugo de Garis, Thayne Batty</i>	905
An Optimiser Agent that Empowers an ITS System to “on-the-fly” Modify Its Teaching Strategies <i>Mircea Gh. Negoita, David Pritchard</i>	914
A Constraint-Based Optimization Mechanism for Patient Satisfaction <i>Chi-I Hsu, Chaochang Chiu, Pei-Lun Hsu</i>	922
Optimizing Beam Pattern of Adaptively Linear Array Antenna by Phase Perturbations Using Genetic Algorithms <i>Chao-Hsing Hsu, Chun-Hua Chen</i>	929
The Optimal Airline Overbooking Strategy Under Uncertainties <i>Chaochang Chiu, Chanhshi Tsao</i>	937
Determination of Packet Priority by Genetic Algorithm in the Packet Switching Networks <i>Taner Tuncer, Ali Karci</i>	946
A New Encoding for the Degree Constrained Minimum Spanning Tree Problem <i>Sang-Moon Soak, David Corne, Byung-Ha Ahn</i>	952

Neurodynamics and Its Hardware Implementation

Towards Cortex Sized Artificial Nervous Systems <i>Christopher Johansson, Anders Lansner</i>	959
A Memory Model Based on Dynamical Behaviour of the Hippocampus <i>Hatsuo Hayashi, Motoharu Yoshida</i>	967
Analysis of Limit-Cycles on Neural Networks with Asymmetrical Cyclic Connections Using Approximately Activation Functions <i>Shinya Suenaga, Yoshihiro Hayakawa, Koji Nakajima</i>	974
Inverse Function Delayed Model for Optimization Problems <i>Yoshihiro Hayakawa, Tatsuki Denda, Koji Nakajima</i>	981
Switched-Capacitor Large-Scale Chaotic Neuro-Computer Prototype and Chaotic Search Dynamics <i>Yoshihiko Horio, Takahide Okuno, Koji Mori</i>	988
A Convolutional Neural Network VLSI Architecture Using Thresholding and Weight Decomposition <i>Osamu Nomura, Takashi Morie, Keisuke Korekado, Masakazu Matsugu, Atsushi Iwata</i>	995
Pulse Codings of a Spiking Neuron Having Quantized State <i>Hiroyuki Torikai, Hiroshi Hamanaka, Toshimichi Saito</i>	1002
Design of Single Electron Circuitry for a Stochastic Logic Neural Network <i>Hisanao Akima, Shigeo Sato, Koji Nakajima</i>	1010

Advances, in Design, Analysis and Applications of Neural/Neuro-Fuzzy Classifiers

An Improved Time Series Prediction Scheme Using Fuzzy Logic Inference <i>Bin Qiu, Xiaoxiang Guan</i>	1017
Fuzzy Classification of Secretory Signals in Proteins Encoded by the <i>Plasmodium falciparum</i> Genome <i>Erica Logan, Richard Hall, Nectarios Klonis, Susanna Herd, Leann Tilley</i>	1023
Web Users' Classification Using Fuzzy Neural Network <i>Fang Yuan, Huanrui Wu, Ge Yu</i>	1030
Enhancing Generalization Capability of SVM Classifiers with Feature Weight Adjustment <i>Xizhao Wang, Qiang He</i>	1037
GREN-Networks in WDI-Based Analysis of State Economies <i>Iveta Mrázová</i>	1044
Learning Pseudo Metric for Multimedia Data Classification and Retrieval <i>Dianhui Wang, Xiaohang Ma</i>	1051

Several Aspects in Ubiquitous Pattern Recognition Techniques

Projection Learning Based Kernel Machine Design Using Series of Monotone Increasing Reproducing Kernel Hilbert Spaces <i>Akira Tanaka, Ichigaku Takigawa, Hideyuki Imai, Mineichi Kudo, Masaaki Miyakoshi</i>	1058
Combination of Weak Evidences by D-S Theory for Person Recognition <i>Masafumi Yamada, Mineichi Kudo</i>	1065
Time-Frequency Decomposition in Gesture Recognition System Using Accelerometer <i>Hidetoshi Nonaka, Masahito Kurihara</i>	1072
A Method of Belief Base Revision for Extended Logic Programs Based on State Transition Diagrams <i>Yasuo Kudo, Tetsuya Murai</i>	1079
Monotonic and Nonmonotonic Reasoning in Zoom Reasoning Systems <i>Tetsuya Murai, M. Sanada, Yasuo Kudo, Y. Sato</i>	1085

Interaction and Intelligence

An Exoskeleton for Human Shoulder Rotation Motion Assist <i>Kazuo Kiguchi</i>	1092
Networked Intelligent Robots by Ontological Neural Networks <i>Eri Sato, Jun Kawakatsu, Toru Yamaguchi</i>	1100
Some Emergences of Mobiligence in the Pursuit Game <i>Seiichi Kawata, Kazuya Morohashi, Takeshi Tateyama</i>	1107
Use of Successful Policies to Relearn for Induced States of Failure in Reinforcement Learning <i>Tadahiko Murata, Hiroshi Matsumoto</i>	1114
A Perceptual System for a Vision-Based Mobile Robot Under Office Automation Floors <i>Naoyuki Kubota, Kazuhiko Taniguchi, Atsushi Ueda</i>	1121
Performance Evaluation of a Distributed Genetic Algorithm with Cellular Structures on Function Optimization Problems <i>Tadahiko Murata, Kenji Takada</i>	1128

New Development, Trends and Applications of Intelligent Multi-Agent Systems

On-Line Update of Situation Assessment Based on Asynchronous Data Streams <i>Vladimir Gorodetsky, Oleg Kasaev, Vladimir Samoilov</i>	1136
Mobility Management for Personal Agents in the All-mobile Network <i>Ignac Lovrek, Vjekoslav Sinkovic</i>	1143

A Multi-agent Perspective on Data Integration Architectural Design <i>Stéphane Faulkner, Manuel Kolp, Tai Nguyen, Adrien Coyette</i>	1150
Identification of Structural Characteristics in Product Spectra <i>Maik Maurer, Udo Lindemann</i>	1157
Policies, Rules and Their Engines: What do They Mean for SLAs? <i>Mark Perry, Michael Bauer</i>	1164
Forecasting on Complex Datasets with Association Rules <i>Marcello Bertoli, Andrew Stranieri</i>	1171
Using a Multi-agent Architecture to Manage Knowledge in the Software Maintenance Process <i>Oscar M. Rodríguez, Aurora Vizcaíno, Ana I. Martínez, Mario Piattini, Jesús Favela</i>	1181

Engineering Techniques and Developments of Intelligent Systems

Evolution Strategies Based Particle Filters for Nonlinear State Estimation <i>Katsuji Uosaki, Yuuya Kimura, Toshiharu Hatanaka</i>	1189
Coordination in Multiagent Reinforcement Learning Systems <i>M.A.S. Kamal, Junichi Murata</i>	1197
Measurement of Shaft Vibration Using Ultrasonic Sensor in Sump Pump Systems <i>Shogo Tanaka, Hajime Morishige</i>	1205
Behavior Learning of Autonomous Agents in Continuous State Using Function Approximation <i>Min-Kyu Shon, Junichi Murata</i>	1213
Some Experiences with Change Detection in Dynamical Systems <i>Theodor D. Popescu</i>	1220

Computational Intelligence for Fault Diagnosis

The KAMET II Approach for Knowledge-Based System Construction <i>Oswaldo Cairó, Julio César Alvarez</i>	1227
A Recursive Component Boundary Algorithm to Reduce Recovery Time for Microreboots <i>Chanwit Kaewkasi, Pitchaya Kaewkasi</i>	1235
Electric Power System Anomaly Detection Using Neural Networks <i>Marco Martinelli, Enrico Tronci, Giovanni Dipoppa, Claudio Balducelli</i>	1242
Capturing and Applying Lessons Learned During Engineering Equipment Installation <i>Ian Watson</i>	1249

Moving Towards a New Era of Intelligent Protection Through Digital
Relaying in Power Systems
 Kongpan Areerak, Thanatchai Kulworawanichpong, Sarawut Sujitjorn.....1255

Capacitor Switching Control Using a Decision Table for a 115-kV Power
Transmission System in Thailand
 Phinit Srithorn, Kasem Khojulklang, Thanatchai Kulworawanichpong.....1262

Author Index.....1269

Table of Contents, Part II

Methods of Computational Intelligence with Applications for Product Development and Human Resource Recruitment

Integration of Psychology, Artificial Intelligence and Soft Computing for Recruitment and Benchmarking of Salespersons <i>Rajiv Khosla, Tharanga Goonesekera</i>	1
FHP: Functional Heuristic Planning <i>Joseph Zalaket, Guy Camilleri</i>	9
Planning with Recursive Subgoals <i>Han Yu, Dan C. Marinescu, Annie S. Wu, Howard Jay Siegel</i>	17
Development of a Generic Computer Aided Deductive Algorithm for Process Parameter Design <i>K.P. Cheng, Daniel C.Y. Yip, K.H. Lau, Stuart Barnes</i>	28
Epistemic Logic and Planning <i>Shahin Maghsoudi, Ian Watson</i>	36
Tàtari: An Open Source Software Tool for the Development and Evaluation of Recommender System Algorithms <i>Halah Hassan, Ian Watson</i>	46
DCPP: Knowledge Representation for Planning Processes <i>Takushi Tanaka, Koki Tanaka</i>	53
An IS Framework to Support the Collaborative Design of Supply Chains <i>Nikos Karacapilidis, Emmanuel Adamides, Costas P. Pappis</i>	62

Knowledge-Based Interface Systems

A New Similarity Evaluation Function for Writer Recognition of Chinese Character <i>Yoshinori Adachi, Min Liu, Masahiro Ozaki</i>	71
Development of Teaching Materials Which Dynamically Change in Learning Process <i>Masahiro Ozaki, Koji Koyama, Saori Takeoka, Yoshinori Adachi</i>	77
Analog VLSI Layout Design of Motion Detection for Artificial Vision Model <i>Masashi Kawaguchi, Takashi Jimbo, Masayoshi Umeno, Naohiro Ishii</i>	83
Development of High-Precise and No-Contacting Capacitance Measuring System Using Dipmeter <i>Shoji Suzuki, Yoshinori Adachi</i>	89
Similarity of Documents Using Reconfiguration of Thesaurus <i>Tomoya Ogawa, Nobuhiro Inuzuka</i>	95

On Refractory Parameter of Chaotic Neurons in Incremental Learning <i>Toshinori Deguchi, Naohiro Ishii</i>	103
Automatic Virtualization of Real Object Based on Shape Knowledge in Mixed Reality <i>Kenji Funahashi, Kazunari Komura, Yuji Iwahori, Yukie Koyama</i>	110
Generation of Virtual Image from Multiple View Point Image Database <i>Haruki Kawanaka, Nobuaki Sado, Yuji Iwahori</i>	118
Correlation Computations for Movement Detection in Neural Networks <i>Naohiro Ishii, Masahiro Ozaki, Hiroshi Sasaki</i>	124

Intelligent Human Computer Interaction Systems

Information Acquisition Using Chat Environment for Question Answering <i>Calkin A.S. Montero, Kenji Araki</i>	131
Design and Implementation of Natural Language Interface for Impression-Based Music-Retrieval Systems <i>Tadahiko Kumamoto</i>	139
InTREND: An Interactive Tool for Reflective Data Exploration Through Natural Discourse <i>Mitsunori Matsushita, Kumiyo Nakaoji, Yasuhiro Yamamoto, Tsuneaki Kato</i>	148
Using <i>Mitate-shi</i> Related to the CONTAINER Schema for Detecting the Container-for-Contents Metonymy <i>Yoshiaki Kurosawa, Takumi Ichimura, Teruaki Aizawa</i>	156
Character Learning System Using Inter-stroke Information <i>Jungpil Shin, Atsushi Takeda</i>	165
Construction of Conscious Model Using Reinforcement Learning <i>Masafumi Kozuma, Hirokazu Taki, Noriyuki Matsuda, Hirokazu Miura, Satoshi Hori, Norihiro Abe</i>	175
Advice Recording Method for a Lesson with Computers <i>Katsuyuki Harada, Noriyuki Matsuda, Hirokazu Miura, Hirokazu Taki, Satoshi Hori, Norihiro Abe</i>	181
Acquiring After-Sales Knowledge from Human Motions <i>Satoshi Hori, Kota Hirose, Hirokazu Taki</i>	188
Emotion Analyzing Method Using Physiological State <i>Kazuya Mera, Takumi Ichimura</i>	195

Posters

A Lyapunov Function Based Direct Model Reference Adaptive Fuzzy Control <i>Youngwan Cho, Yangsun Lee, Kwangyup Lee, Euntai Kim</i>	202
---	-----

Semi-automatic Video Object Segmentation Method Based on User Assistance and Object Tracking <i>J. G. Choi, S. W. Lee, B. J. Yun, H. S. Kang, S. H. Hong, J. Y. Nam</i>	211
Design and Evaluation of a Scale Patching Technique for VOD Servers <i>Hyo-Young Lee, Sook-Jeong Ha, Sun-Jin Oh, Ihn-Han Bae</i>	219
Optimal Gabor Encoding Scheme for Face Recognition Using Genetic Algorithm <i>Inja Jeon, Kisang Kwon, Phill-Kyu Rhee</i>	227
T-shape Diamond Search Pattern for New Fast Block Matching Motion Estimation <i>Mi Gyoung Jung, Mi Young Kim</i>	237
Motion Estimation Using Cross Center-Biased Distribution and Spatio-Temporal Correlation of Motion Vector <i>Mi Young Kim, Mi Gyoung Jung</i>	244
A Fast Motion Estimation Using Prediction of Motion Estimation Error <i>Hyun-Soo Kang, Seong-Mo Park, Si-Woong Lee, Jae-Gark Choi, Byoung-Ju Yun</i>	253
Ontology Revision Using the Concept of Belief Revision <i>Seung Hwan Kang, Sim Kim Lau</i>	261
Novelty in the Generation of Initial Population for Genetic Algorithms <i>Ali Karci</i>	268
Framework for Personalized e-Mediator <i>Dong-Hwee Kim, Soon-Ja Kim</i>	276
Advances in Intelligent Data Processing Techniques and Applications	
Weightless Neural Networks for Typing Biometrics Authentication <i>Shereen Yong, Weng Kin Lai, George Goghill</i>	284
Intelligent Pressure-Based Typing Biometrics System <i>Azweeda Dahalan, M.J.E. Salami, W.K. Lai, Ahmad Faris Ismail</i>	294
Classifiers for Sonar Target Differentiation <i>C.K. Loo, W.S. Lim, M.V.C. Rao</i>	305
Design and Development of Intelligent Fingerprint-Based Security System <i>Suriza Ahmad Zabidi, Momoh-Jimoh E. Salami</i>	312
Weightless Neural Networks: A Comparison Between the Discriminator and the Deterministic Adaptive RAM Network <i>Paul Yee, George Coghill</i>	319
Extracting Biochemical Reaction Kinetics from Time Series Data <i>Edmund J. Crampin, Patrick E. McSharry, Santiago Schnell</i>	329

PCA and ICA Based Signal and Image Processing

Image Feature Representation by the Subspace of Nonlinear PCA <i>Yen-Wei Chen, Xiang-Yan Zeng</i>	337
Improving ICA Performance for Modeling Image Appearance with the Kernel Trick <i>Qingshan Liu, Jian Cheng, Hanqing Lu, Songde Ma</i>	344
Random Independent Subspace for Face Recognition <i>Jian Cheng, Qingshan Liu, Hanqing Lu, Yen-Wei Chen</i>	352
An RDWT Based Logo Watermark Embedding Scheme with Independent Component Analysis Detection <i>Thai Duy Hien, Zensho Nakao, Yen-Wei Chen</i>	359
Real-Time Independent Component Analysis Based on Gradient Learning with Simultaneous Perturbation Stochastic Approximation <i>Shuxue Ding, Jie Huang, Daming Wei, Sadao Omata</i>	366

Intelligent Data Processing in Process Systems and Plants

Extraction Operation Know-How from Historical Operation Data – Using Characterization Method of Time Series Data and Data Mining Method – <i>Kazuhiro Takeda, Yoshifumu Tsuge, Hisayoshi Matsuyama</i>	375
Handling Qualitative Aspects of Human Knowledge in Diagnosis <i>Viorel Arton</i>	382
Qualitative Analysis for Detection of Stiction in Control Valves <i>Yoshiyuki Yamashita</i>	391
Agent-Based Batch Process Control Systems <i>Masaru Sakamoto, Hajime Eguchi, Takashi Hamaguchi, Yutaka Ota, Yoshihiro Hashimoto, Toshiaki Itoh</i>	398
Acquisition of AGV Control Rules Using Profit Sharing Method and Evaluation of the Rules <i>Hisaaki Yamaba, Hitoshi Yoshioka, Shigeyuki Tomita</i>	405
Dynamic Acquisition of Models for Multiagent-Oriented Simulation of Micro Chemical Processes <i>Naoki Kimura, Hideyuki Matsumoto, Chiaki Kuroda</i>	412
Acquisition of Engineering Knowledge on Design of Industrial Cleaning System through IDEF0 Activity Model <i>Tetsuo Fuchino, Takao Wada, Masahiko Hirao</i>	418

Intelligent Systems for Spatial Information Processing and Imaging

Exchanging Generalized Maps Across the Internet <i>Min Zhou, Michela Bertolotto</i>	425
--	-----

Adaptive Spatial Data Processing System (ASDPS)	
<i>Wanwu Guo</i>	432
Modified ASDPS for Geochemical Data Processing	
<i>Chi Liu, Hui Yu</i>	440
Gravity Data Processing Using ASDPS	
<i>Kai Ding, Baishan Xu</i>	447
Remote Sensing Image Processing Using MCDF	
<i>Zhiqiang Ma, Wanwu Guo</i>	454
Coarse-Grained Parallel Algorithms for Spatial Data Partition and Join Processing	
<i>Jitian Xiao</i>	461

Image Processing and Intelligent Information Applications

Multi-agents for Decision Support	
<i>Manoj Achuthan, Bala Balachandran, Dharmendra Sharma</i>	469
Dynamic Scheduling Using Multiagent Architecture	
<i>Dharmendra Sharma, Dat Tran</i>	476
Using Consensus Ensembles to Identify Suspect Data	
<i>David Clark</i>	483
Fuzzy Analysis of X-Ray Images for Automated Disease Examination	
<i>Craig Watman, Kim Le</i>	491
New Background Speaker Models and Experiments on the ANDOSL Speech Corpus	
<i>Dat Tran, Dharmendra Sharma</i>	498

Immunity-Based Systems and Approaches

An Approach for Self-repair in Distributed System Using Immunity-Based Diagnostic Mobile Agents	
<i>Yuji Watanabe, Shigeyuki Sato, Yoshiteru Ishida</i>	504
Artificial Immune System for Personal Identification with Finger Vein Pattern	
<i>Toshiyuki Shimooka, Koichi Shimizu</i>	511
A Switching Memory Strategy in an Immune Network Model	
<i>Kouji Harada</i>	519
A Process Algebra Model of the Immune System	
<i>Raúl Monroy</i>	526
Mechanism for Generating Immunity-Based Agents that Detect Masqueraders	
<i>Takeshi Okamoto, Takayuki Watanabe, Yoshiteru Ishida</i>	534

Machine and Computer Vision, Neural Networks, Intelligent Web Mining and Applications

False Alarm Filter in Neural Networks for Multiclass Object Detection <i>Mengjie Zhang, Bunna Ny.....</i>	541
iJADE Scene Segmentator – A Real-Time Scene Segmentation System Using Watershed-Based Neuro-Oscillatory Network <i>Gary C.L. Li, Raymond S.T. Lee.....</i>	549
Visual Tracking by Using Kalman Gradient Vector Flow (KGVF) Snakes <i>Toby H.W. Lam, Raymond S.T. Lee.....</i>	557
Chart Patterns Recognition and Forecast Using Wavelet and Radial Basis Function Network <i>Jamec N.K. Liu, Raymond W.M. Kwong, Feng Bo.....</i>	564
Appearance-Based Face Recognition Using Aggregated 2D Gabor Features <i>King Hong Cheung, Jane You, James Liu, Tony W.H. Ao Ieong.....</i>	572
Ontology-Based Web Agents Using Concept Description Flow <i>Nengfu Xie, Cungen Cao, Bingxian Ma, Chunxia Zhang, Jinxin Si.....</i>	580
Web Page Recommendation Model for Web Personalization <i>Abdul Manan Ahmad, Mohd. Hanafi Ahmad Hijazi.....</i>	587
iJADE Face Recognizer - A Multi-agent Based Pose and Scale Invariant Human Face Recognition System <i>Tony W.H. Ao Ieong, Raymond S.T. Lee.....</i>	594

Neural Networks for Data Mining

Piecewise Multivariate Polynomials Using a Four-Layer Perceptron <i>Yusuke Tanahashi, Kazumi Saito, Ryohei Nakano.....</i>	602
Learning an Evaluation Function for Shogi from Data of Games <i>Satoshi Tanimoto, Ryohei Nakano.....</i>	609
Extended Parametric Mixture Model for Robust Multi-labeled Text Categorization <i>Yuji Kaneda, Naonori Ueda, Kazumi Saito.....</i>	616
Visualisation of Anomaly Using Mixture Model <i>Tomoharu Iwata, Kazumi Saito.....</i>	624
Obtaining Shape from Scanning Electron Microscope Using Hopfield Neural Network <i>Yuji Iwahori, Haruki Kawanaka, Shinji Fukui, Kenji Funahashi.....</i>	632

Neural Networks as Universal Approximators and Paradigms for Information Processing – Theoretical Developments and Applications

Speech Recognition for Emotions with Neural Network: A Design Approach <i>Shubhangi Giripunje, Anshish Panat</i>	640
Neuro-Genetic Approach for Bankruptcy Prediction Modeling <i>Kyung-shik Shin, Kyoung Jun Lee</i>	646
Design of a Robust and Adaptive Wavelet Neural Network for Control of Three Phase Boost Rectifiers <i>Farzan Rashidi, Mehran Rashidi</i>	653
The Comparison of Characteristics of 2-DOF PID Controllers and Intelligent Tuning of a Gas Turbine Generating Plant <i>Dong Hwa Kim</i>	661
Bankruptcy Prediction Modeling Using Multiple Neural Network Models <i>Kyung-shik Shin, Kyoung Jun Lee</i>	668
Interpreting the Output of Certain Neural Networks as Almost Unique Probability <i>Bernd-Jürgen Falkowski</i>	675
A Stochastic Model of Neural Computing <i>Paolo Crippa, Claudio Turchetti, Massimiliano Pirani</i>	683

Theoretical Developments and Applications of Fuzzy Techniques and Systems

Classification of Fuzzy Data in Database Management System <i>Deval Popat, Hema Sharda, David Taniar</i>	691
An Efficient Fuzzy Method for Handwritten Character Recognition <i>Romesh Ranawana, Vasile Palade, G.E.M.D.C. Bandara</i>	698
The GA_NN_FL Associated Model for Authentication Fingerprints <i>Le Hoai Bac, Le Hoang Thai</i>	708
Fuzzy Modeling of Zero Moment Point Trajectory for a Biped Walking Robot <i>Dongwon Kim, Nak-Hyun Kim, Sam-Jun Seo, Gwi-Tae Park</i>	716
Adaptive Resource Scheduling for Workflows Considering Competence and Preference <i>Keon Myung Lee</i>	723
Analysis of Chaotic Mapping in Recurrent Fuzzy Rule Bases <i>Alexander Sokolov, Michael Wagenknecht</i>	731

Highly Reliable Applications of Fuzzy Engineering

Damping Enhancement in Power Systems Using a Robust Fuzzy Sliding Mode Based PSS Controller <i>Farzan Rashidi, Mehran Rashidi</i>	738
--	-----

Design a Robust and Adaptive Reinforcement Learning Based SVC Controller for Damping Enhancement in Power Systems <i>Farzan Rashidi, Mehran Rashidi</i>	745
A Rule-Based Approach for Fuzzy Overhaul Scheduling <i>Hongqi Pan, Chung-Hsing Yeh</i>	753
Fuzzy Kolmogorov's Network <i>Vitaliy Kolodyazhniy, Yevgeni Bodyanskiy</i>	764
Fuzzy Selection Mechanism for Multimodel Prediction <i>Y. Bodyanskiy, S. Popov</i>	772
Efficient Approximate Reasoning with Positive and Negative Information <i>Chris Cornelis, Martine De Cock, Etienne Kerre</i>	779

Chance Discovery

Chance Discovery as Novel Empathy with TV Programs <i>Masashi Taguchi, Yukio Ohsawa</i>	786
Enhancing Chance Discovery: Dimensions, Strategies and Tools <i>Daniel Howard, Mark A. Eduards</i>	793
Consumer Behavior Analysis by Graph Mining Technique <i>Katsutoshi Yada, Hiroshi Motoda, Takashi Washio, Asuka Miyawaki</i>	800
A Chance Discovery Process to Understanding Spiral Behaviors of Consumers <i>Noriyuki Kushiro, Yukio Ohsawa</i>	807
Nursing Risk Prediction as Chance Discovery <i>Akinori Abe, Kiyoshi Kogure, Norihiro Hagita</i>	815
Exploring Collaboration Topics from Documented Foresights of Experts <i>Yumiko Nara, Yukio Ohsawa</i>	823
Condensation and Picture Annotations of Scenario Map for Consensus in Scenario Mining <i>Kenichi Horie, Takashi Yamaguchi, Tsuneki Sakakibara, Yukio Ohsawa</i>	831
Emergence of Product Value from On-line Communications <i>Koichi Takahashi, Yukio Ohsawa, Naohiro Matsumura</i>	839
Emerging Scenarios by Using DDM: A Case Study for Japanese Comic Marketing <i>Hiroshi Tamura, Yuichi Washida, Yukio Ohsawa</i>	847

Intelligent Cooperative Work

A Mobile Clickstream Time Zone Analysis: Implications for Real-Time Mobile Collaboration <i>Toshihiko Yamakami</i>	855
---	-----

Interpretation of Emotionally Expressive Characters in an Intercultural Communication	
<i>Tomodo Koda</i>	862
Development and Evaluation of an Intercultural Synchronous Collaboration System	
<i>Takashi Yoshino, Tomohiro Shigenobu, Shinji Maruno, Hiroshi Ozaki, Sumika Ohno, Jun Munemori</i>	869
A Proposal of Knowledge Creative Groupware for Seamless Knowledge	
<i>Takaya Yuizono, Jun Munemori, Akifumi Kayano, Takashi Yoshino, Tomohiro Shigenobu</i>	876
comDesk: A Cooperative Assistance Tool Based on P2P Techniques	
<i>Motoki Miura, Buntaoru Shizuki, Jiro Tanaka</i>	883
Development of an Emotional Chat System Using Sense of Touch and Face Mark	
<i>Hajime Yoshida, Takashi Yoshino, Jun Munemori</i>	891
Dual Communication System Using Wired and Wireless Correspondence in a Small Space	
<i>Kunihiro Yamada, Yoshihiko Hirata, Yukihiisa Naoe, Takashi Furumura, Yoshio Inoue, Toru Shimizu, Koji Yoshida, Masanori Kojima, Tadanori Mizuno</i>	898
The Beijing Explorer: Two-way Location Aware Guidance System	
<i>Jun Munemori, Daisuke Kamisaka, Takashi Yoshino, Masaya Chiba</i>	905
Development of a System for Learning Ecology Using 3D Graphics and XML	
<i>Satoru Fujii, Jun Iwata, Yuka Miura, Kouji Yoshida, Sanshiro Sakai, Tadanori Mizuno</i>	912
Practice of Linux Lesson in Blended Learning	
<i>Kazuhiro Nakada, Tomonori Akutsu, Chris Walton, Satoru Fujii, Hiroshi Ichimura, Kunihiro Yamada, Kouji Yoshida</i>	920
Requisites for Talented People in Industry and the Method of Education	
<i>Teruhisa Ichikawa</i>	928
Logic Based Intelligent Information Systems	
Para-Fuzzy Logic Controller	
<i>Jair Minoro Abe</i>	935
Paraconsistent Artificial Neural Networks: An Introduction	
<i>Jair Minoro Abe</i>	942
The Study of the Effectiveness Using the Expanded Neural Network in System Identification	
<i>Shigenobu Yamawaki, Lakhmi Jain</i>	949

A Paraconsistent Logic Program Based Control for a Discrete
Event Cat and Mouse

Kazumi Nakamatsu, Ryuji Ishikawa, Atsuyuki Suzuki.....954

EVALPSN Based Railway Interlocking Simulator

Kazumi Nakamatsu, Yosuke Kiuchi, Atsuyuki Suzuki.....961

Learning by Back-Propagating Output Correlation in Winner-takes-all
and Auto-associative Networks

Md. Shahjahan, K. Murase.....968

Similarity Measures for Content-Based Multimedia Retrieval

Content-Based Video Retrieval Using Moving Objects' Trajectories

Choon-Bo Shim, Jae-Woo Chang.....975

Content-Based Image Retrieval Using Multiple Representations

Karin Kailing, Hans-Peter Kriegel, Stefan Schönauer.....982

Similarity of Medical Images Computed from Global Feature Vectors for
Content-Based Retrieval

*Thomas M. Lehmann, Mark O. Güld, Daniel Keysers, Thomas Deselaers,
Henning Schubert, Berthold Wein, Klaus Spitzer*.....989

Similarity: Measurement, Ordering and Betweenness

Walter ten Brinke, David McG. Squire, John Bigelow.....996

Engineering of Intelligent Systems-Components and Activities

Qualitative Model for Quality Control in Production

Marjan Družovec, Tatjana Welzer.....1003

A Functional Language for Mobile Agents with Dynamic Extension

Yasushi Kambayashi, Munehiro Takimoto.....1010

Verifying Clinical Criteria for Parkinsonian Disorders with CART Decision Trees

*Petra Povalej, Gregor Štiglic, Peter Kokol, Bruno Stiglic, Irene Litvan,
Dušan Flisar*.....1018

Improving Classification Accuracy Using Cellular Automata

Petra Povalej, Mitja Lenič, Gregor Štiglic, Tatjana Welzer, Peter Kokol.....1025

Using Web Services and Semantic Web for Producing Intelligent
Context-Aware Services

Kimmo Salmenjoki, Tatjana Welzer.....1032

Internationalization Content in Intelligent Systems – How to Teach it?

Tatjana Welzer, David Riaño, Boštjan Brumen, Marjan Družovec.....1039

Intelligent System Design

Recognizing Frontal Faces Using Neural Networks <i>Stephen Karungaru, Minoru Fukumi, Norio Akamatsu</i>	1045
Identification of the Multi-layered Neural Networks by Revised GMDH-Type Neural Network Algorithm with PSS Criterion <i>Tadashi Kondo, Abhijit S. Pandya</i>	1051
Detection of Transition of Various Time Series Model Using BP Neural Networks <i>Takahiro Emoto, Masatake Akutagawa, Hirofumi Nagashino, Yohsuke Kinouchi</i>	1060
A Pattern Generator for Multiple Periodic Signals Using Recurrent Neural Networks <i>Fumihiko Takahashi, Masatake Akutagawa, Hirofumi Nagashino, Yohsuke Kinouchi</i>	1068
Identification of Number of Brain Signal Sources Using BP Neural Networks <i>Hirofumi Nagashino, Masafumi Hoshikawa, Qinyu Zhang, Masatake Akutagawa, Yohsuke Kinouchi</i>	1074

Knowledge-Based Intelligent Systems for Health Care

Development of Coronary Heart Disease Database <i>Machi Suka, Takumi Ichimura, Katsumi Yoshida</i>	1081
Extraction of Rules from Coronary Heart Disease Database Using Automatically Defined Groups <i>Akira Hara, Takumi Ichimura, Tetsuyuki Takahama, Yoshinori Isomichi</i>	1089
Immune Multi Agent Neural Network and Its Application to the Coronary Heart Disease Database <i>Shinichi Oeda, Takumi Ichimura, Katsumi Yoshida</i>	1097
FESMI: A Fuzzy Expert System for Diagnosis and Treatment of Male Impotence <i>Constantinos Koutsojannis, Ioannis Hatzilygeroudis</i>	1106
Disease Diagnosis Support System Using Rules, Neural Network and Fuzzy Logic <i>Le Hoai Bac, Nguyen Thanh Nghi</i>	1114
Partial Merging of Semi-structured Knowledgebases <i>Ladislau Bölöni, Damla Turgut</i>	1121
Emotion Oriented Intelligent System for Elderly People <i>Kazuya Mera, Yoshiaki Kurosawa, Takumi Ichimura</i>	1128
Multi-modal Data Fusion: A Description <i>Sarah Coppock, Lawrence J. Mazlack</i>	1136

Multiagent Systems: Ontologies and Conflicts Resolution

Null Values and Chase in Distributed Information Systems <i>Agnieszka Dardzinska Glebocka</i>	1143
Soft Implementations of Epistemic Satisfaction Relations in Communicative Cognitive Agents <i>Radosław Piotr Katarzyna</i>	1150
Multi-agent Web Recommendation Method Based on Indirect Association Rules <i>Przemysław Kazienko</i>	1157
Migration Mechanisms for Multi-class Objects in Multiagent Systems <i>Dariusz Król</i>	1165
A Distributed Model for Institutions in Open Multi-agent Systems <i>Marcos De Oliveira, Martin Purvis, Stephen Cranefield, Mariusz Nowostawski</i>	1172
Deriving Consensus for Conflict Situations with Respect to Its Susceptibility <i>Ngoc Thanh Nguyen, Michal Malowiecki</i>	1179
A Collaborative Multi-agent Based Workflow System <i>Bastin Tony, Roy Savarimuthu, Maryam Purvis</i>	1187
A Subjective Logic-Based Framework for Aligning Multiple Ontologies <i>Krzysztof Juszczyszyn</i>	1194

Operations Research for Intelligent Systems

When to Stop Range Process – An Expanded State Space Approach <i>Kazuyoshi Tsurusaki, Seiichi Iwamoto</i>	1201
A Nondeterministic Dynamic Programming Model <i>Toshiharu Fujita, Takayuki Ueno, Seiichi Iwamoto</i>	1208
Toward The Development of an Auto-poietic Multi-agent Simulator <i>Katsumi Hirayama</i>	1215
A Mean Estimation of Fuzzy Numbers by Evaluation Measures <i>Yuji Yoshida</i>	1222
An Objective Function Based on Fuzzy Preferences in Dynamic Decision Making <i>Yuji Yoshida, Masami Yasuda, Jun-ichi Nakagami, Masami Kurano, Satoru Kumamoto</i>	1230

Intelligent Data Analysis and Application

An Efficient Clustering Algorithm for Patterns Placement in Walkthrough System <i>Shao-Shin Hung, Ting-Chia Kuo, Damon Shing-Min Liu</i>	1237
--	------

Distance Preserving Mapping from Categories to Numbers for Indexing <i>Huang-Cheng Kuo, Yi-Sen Lin, Jen-Peng Huang</i>	1245
An Evolutionary Clustering Method for Part Family Formation with Multiple Process Plans <i>Sheng-Chai Chi, In-Jou Lin, Min-Chuan Yan</i>	1252
Design the Hardware of Genetic Algorithm for TSP and MSA <i>Wen-Lung Shu, Chen-Cheng Wu, Wei-Cheng Lai</i>	1260
Robust Bayesian Learning with Domain Heuristics for Missing Data <i>Chian-Huei Wun, Chih-Hung Wu</i>	1268
OLAM Cube Selection in On-Line Multidimensional Association Rules Mining System <i>Wen-Yang Lin, Ming-Cheng Tseng, Min-Feng Wang</i>	1276
Mining Fuzzy Association Rules with Multiple Minimum Supports Using Maximum Constraints <i>Yeong-Chyi Lee, Tzung-Pei Hong, Wen-Yang Lin</i>	1283
Author Index	1291

Table of Contents, Part III

Engineering of Ontology and Multi-agent System Design

Implementing EGAP-Based Many-Valued Argument Model for Uncertain Knowledge <i>Taro Fukumoto, Takehisa Takahashi, Hajime Sawamura</i>	1
Ontology Revision Using the Concept of Belief Revision <i>Seung Hwan Kang, Sim Kim Lau</i>	8
A Robust Rule-Based Event Management Architecture for Call-Data Records <i>C. W. Ong, J. C. Tay</i>	16
Adaptive Agent Integration in Designing Object-Based Multiagent System <i>Jaya Sil</i>	24
Ontological Representations of Software Patterns <i>Jean-Marc Rosengard, Marian F. Ursu</i>	31

Intelligent Multimedia Solution and the Security for the Next Generation Mobile Networks

Dynamic Traffic Grooming and Load Balancing for GMPLS-Centric All Optical Networks <i>Hyuncheol Kim, Seongjin Ahn, Jinwook Chung</i>	38
Probabilistic Model of Traffic Breakdown with Random Propagation of Disturbance for ITS Application <i>Bongsoo Son, Taewan Kim, Hyung Jin Kim, Soobeom Lee</i>	45
Novel Symbol Timing Recovery Algorithm for Multi-level Signal <i>Kwang Ho Chun, Myoung Seob Lim</i>	52
Development Site Security Process of ISO/IEC TR 15504 <i>Eun-ser Lee, Tai-hoon Kim</i>	60
Improving CAM-DH Protocol for Mobile Nodes with Constraint Computational Power <i>Yong-Hwan Lee, Il-Sun You, Sang-Surm Rhee</i>	67
Space Time Code Representation in Transform Domain <i>Gi Yean Hwang, Jia Hou, Moon Ho Lee</i>	74

A Multimedia Database System Using Mobile Indexing Agent in Wireless Network

Jong-Hee Lee, Kwang-Hyoung Lee, Moon-Seog Jun, Keun-Wang Lee.....81

Bus Arrival Time Prediction Method for ITS Application

Bongsoo Son, Hyung Jin Kim, Chi-Hyun Shin, Sang-Keon Lee.....88

RRAM Spare Allocation in Semiconductor Manufacturing for Yield Improvement

Youngshin Han, Chilgee Lee.....95

A Toolkit for Constructing Virtual Instruments for Augmenting User Interactions and Activities in a Virtual Environment

Kyoung S. Park, Yongjoo Cho.....103

Mobility Grouping Scheme to Reduce HLR Traffic in IMT-2000 Networks

Dong Chun Lee, Gwang-Hyun Kim, Seung-Jae Yoo.....110

Security Requirements for Software Development

Tai-hoon Kim, Myong-chul Shin, Sang-ho Kim, Jae Sang Cha.....116

Operations Research Based on Soft Computing

Intelligent Control Model of Information Appliances

Huey-Ming Lee, Ching-Hao Mao, Shu-Yen Lee.....123

Effective Solution of a Portofolio Selection Based on a Block of Shares by a Meta-controlled Boltzmann Machine

Teruyuki Watanabe, Junzo Watada.....129

Soft Computing Approach to Books Allocation Strategy for Library

Junzo Watada, Keisuke Aoki, Takayuki Kawaura.....136

Analysis of Human Feelings to Colors

Taki Kanda.....143

Possibilistic Forecasting Model and Its Application to Analyze the Economy in Japan

Yoshiyuki Yabuuchi, Junzo Watada.....151

A Proposal of Chaotic Forecasting Method Based on Wavelet Transform

Yoshiyuki Matsumoto, Junzo Watada.....159

Fuzzy Multivariant Analysis

Junzo Watada, Masato Takagi, Jaeseok Choi.....166

Web Mining and Personalization

Using Coherent Semantic Subpaths to Derive Emergent Semantics <i>D.V. Sreenath, W.I. Grosky, F. Fotouhi</i>	173
Retrieval of Product Reputations from the WWW <i>Takahiro Hayashi, Yosuke Kinoshita, Rikio Onai</i>	180
A Logic-Based Approach for Matching User Profiles <i>Andrea Calì, Diego Calvanese, Simona Colucci, Tommaso Di Noia, Francesco M. Donini</i>	187

Learning and Soft Computing with Support Vector Machines (SVM) and RBF NNs

Pose Classification of Car Occupant Using Stereovision and Support Vector Machines <i>Min-Soo Jang, Yong-Guk Kim, Hyun-Gu Lee, Byung-Joo Lee, Soek-Joo Lee, Gwi-Tae Park</i>	196
A Fully Automatic System Recognizing Human Facial Expressions <i>Yong-Guk Kim, Sung-Oh Lee, Sang-Jun Kim, Gwi-Tae Park</i>	203
A Study of the Radial Basis Function Neural Network Classifiers Using Known Data of Varying Accuracy and Complexity <i>Patricia Crowther, Robert Cox, Dharmendra Sharma</i>	210

Novel Methods in Evolutionary Computation

Top Down Modelling with Genetic Programming <i>Daniel Howard</i>	217
A Two Phase Genetic Programming Approach to Object Detection <i>Mengjie Zhang, Peter Andreae, Urvesh Bhowan</i>	224
Mapping XML Schema to Relations Using Genetic Algorithm <i>Vincent Ng, Chan Chi Kong, Stephen Chan</i>	232
Diagnosing the Population State in a Genetic Algorithm Using Hamming Distance <i>Radu Belea, Sergiu Caraman, Vasile Palade</i>	246
Optimizing a Neural Tree Using Subtree Retraining <i>Wanida Pensuwon, Rod Adams, Neil Davey</i>	256

Bioinformatics Using Intelligent and Machine Learning Techniques

Cluster Analysis of Gene Expression Profiles Using Automatically
Extracted Seeds

Miyoung Shin, Seon-Hee Park.....263

Prediction of Plasma Membrane Spanning Region and Topology Using Hidden
Markov Model and Neural Network

Min Kyung Kim, Hyun Seok Park, Seon Hee Park270

Speed Control and Torque Ripple Minimization in Switch Reluctance Motors
Using Context Based Brain Emotional Learning

*Mehran Rashidi, Farzan Rashidi, Mohammad Hossein Aghdai,
Hamid Monavar*.....278

Practical Common Sense Reasoning

Reasoning in Practical Situations

Pei Wang.....285

Commonsense Reasoning in and Over Natural Language

Hugo Liu, Push Sing.....293

A Library of Behaviors: Implementing Commonsense Reasoning About
Mental World

Boris Galitsky.....307

Handling Default Rules by Autistic Reasoning

Don Peterson, Boris Galitsky.....314

Systems for Large-scale Metadata Extraction and Maintenance

An Ontology-Driven Approach to Metadata Design in the Mining of Software
Process Events

Gabriele Gianini, Ernesto Damiani.....321

Knowledge Extraction from Semi-structured Data Based on Fuzzy Techniques

Paolo Ceravolo, Maria Cristina Nocerino, Marco Viviani.....328

Managing Ontology Evolution Via Relational Constraints

Paolo Ceravolo, Angelo Corallo, Gianluca Elia, Antonio Zilli.....335

Service Customization Supporting an Adaptive Information System <i>Antonio Caforio, Angelo Corallo, Gianluca Elia, Gianluca Solazzo</i>	342
Soft Computing in Fault Detection and Diagnosis	
Using Design Information to Support Model-Based Fault Diagnosis Tasks <i>Katsuaki Tanaka, Yoshikiyo Kato, Shin'ichi Nakasuka, Koichi Hori</i>	350
Fault Detection and Diagnosis Using the Fuzzy Min-Max Neural Network with Rule Extraction <i>Kok Yeng Chen, Chee Peng Lim, Weng Kin Lai</i>	357
Refinement of the Diagnosis Process Performed with a Fuzzy Classifier <i>C. D. Bocaniala, J. Sa da Costa, V. Palade</i>	365
ANN-Based Structural Damage Diagnosis Using Measured Vibration Data <i>Eric W.M. Lee, H.F. Lam</i>	373
Induction Machine Diagnostic Using Adaptive Neuro Fuzzy Inferencing System <i>Mohamad Shukri, Marzuki Khalid, Rubiyah Yusuf, Mohd Shafawi</i>	380
Intelligent Feature Recognition and Classification in Astrophysical and Medical Images	
Real Time Stokes Inversion Using Multiple Support Vector Regression <i>David Rees, Ying Guo, Arturo López Ariste, Jonathan Graham</i>	388
Extracting Stellar Population Parameters of Galaxies from Photometric Data Using Evolution Strategies and Locally Weighted Linear Regression <i>Luis Alvarez, Olac Fuentes, Roberto Terlevich</i>	395
Using Evolution Strategies to Find a Dynamical Model of the M81 Triplet <i>Juan Carlos Gomez, Olac Fuentes, Lia Athanassoula, Albert Bosma</i>	404
Automated Classification of Galaxy Images <i>Jorge de la Calleja, Olac Fuentes</i>	411
Automatic Solar Flare Tracking <i>Ming Qu, Frank Shih, Ju Jing, Haimin Wang, David Rees</i>	419
Source Separation Techniques Applied to Astrophysical Maps <i>E. Salerno, A. Tonazzini, E. E. Kuruoğlu, L. Bedini, D. Herranz, C. Baccigalupi</i>	426
Counting Magnetic Bipoles on the Sun by Polarity Inversion <i>Harrison P. Jones</i>	433

Correlation of the He I 1083 nm Line Width and Intensity as a Coronal Hole Identifier <i>Olena Malanushenko, Harrison P. Jones.....</i>	439
Automated Recognition of Sunspots on the SOHO/MDI White Light Solar Images <i>S. Zharkov, V. Zharkova, S. Ipson, A. Benkhalil.....</i>	446
A Procedure for the Automated Detection of Magnetic Field Inversion in SOHO MDI Magnetograms <i>S.S. Ipson, V.V. Zharkova, S.I. Zharkov, A. Benkhalil.....</i>	453
Automatic Detection of Active Regions on Solar Images <i>A. Benkhalil, V. Zharkova, S. Ipson, S. Zharkov.....</i>	460
Automatic Detection of Solar Filaments Versus Manual Digitization <i>N. Fuller, J. Aboudarham.....</i>	467
Adaptation of Shape Dendritic Spines by Genetic Algorithm <i>A. Herzog, V. Spravedlyvyy, K. Kube, E. Korkotian, K. Braun, E. Michaelis.....</i>	476
Detection of Dynamical Transitions in Biomedical Signals Using Nonlinear Methods <i>Patrick E. McSharry.....</i>	483
Applications of Machine Learning Concepts	
On Retrieval of Lost Functions for Feedforward Neural Networks Using Re-Learning <i>Naotake Kamiura, Teijiro Isokawa, Kazuharu Yamato, Nobuyuki Matsui.....</i>	491
Analyzing the Temporal Sequences for Text Categorization <i>Xiao Luo, A. Nur Zincir-Heywood.....</i>	498
Prediction of Women's Apparel Sales Using Soft Computing Methods <i>Les M. Sztandera, Celia Frank, Balaji Vemulapali.....</i>	506
A Try for Handling Uncertainties in Spatial Data Mining <i>Shuliang Wang, Guoqing Chen, Deyi Li, Deren Li, Hanning Yuan.....</i>	513
Combining Evidence from Classifiers in Text Categorization <i>Yaxin Bi, David Bell, Jiwen Guan.....</i>	521
Predicting the Relationship Between the Size of Training Sample and the Predictive Power of Classifiers <i>Natthaphan Boonyanunta, Panlop Zeephongsekul.....</i>	529

Topographic Map Formation Employing kMER with Units Deletion Rule <i>Eiji Uchino, Noriaki Suetake, Chuhei Ishigaki</i>	536
---	-----

Neuro-Fuzzy Hybrid Intelligent Industrial Control and Monitoring

Study on Weld Quality Control of Resistance Spot Welding Using a Neuro-Fuzzy Algorithm <i>Yansong Zhang, Guanlong Chen, Zhongqin Lin</i>	544
---	-----

Exploring Benefits of Neuro Fuzzy Controller with Vehicle Health Monitoring <i>Preeti Bajaj, Avinash Keskar</i>	551
--	-----

Improvement of Low Frequency Oscillation Damping in Power Systems Via an Adaptive Critic Based NeuroFuzzy Controller <i>Farzan Rashidi, Behzad Moshidi</i>	559
---	-----

Use of Artificial Neural Networks in the Prediction of the Kidney Transplant Outcomes <i>Fariba Shadabi, Robert Cox, Dharmendra Sharma, Nikolai Petrovsky</i>	566
--	-----

Intelligent Hybrid Systems for Robotics

An SoC-Based Context-Aware System Architecture <i>Keon Myung Lee, Bong Ki Sohn, Jong Tae Kim, Seung Wook Lee, Ji Hyong Lee, Jae Wook Jeon, Jundong Cho</i>	573
---	-----

An Intelligent Control of Chaos in Lorenz System with a Dynamic Wavelet Network <i>Yusuf Oysal</i>	581
---	-----

Intelligent Robot Control with Personal Digital Assistants Using Fuzzy Logic and Neural Network <i>Seong-Joo Kim, Woo-Kyoung Choi, Hong-Tae Jeon</i>	589
---	-----

Mobile Robot for Door Opening in a House <i>Dongwon Kim, Ju-Hyun Kang, Chang-Soon Hwang, Gwi-Tae Park</i>	596
--	-----

Hybrid Fuzzy-Neural Architecture and Its Application to Time Series Modeling <i>Dongwon Kim, Sam-Jun Seo, Gwi-Tae Park</i>	603
---	-----

Techniques of Computational Intelligence for Affective Computing

Accelerometer Signal Processing for User Activity Detection <i>Jonghun Baek, Geehyuk Lee, Wonbae Park, Byoung-Ju Yun</i>	610
---	-----

Neural Network Models for Product Image Design <i>Yang-Cheng Lin, Hsin-Hsi Lai, Chung-Hsing Yeh</i>	618
Evaluation of Users' Adaptation by Applying LZW Compression Algorithm to Operation Logs <i>Hiroshi Hayama, Kazuhiro Ueda</i>	625
Study on Segmentation Algorithm for Unconstrained Handwritten Numeral Strings <i>Zhang Chuang, Wu Ming, Guo Jun</i>	632
 Information Agents on the Internet and Intelligent Web Mining	
Wavelet-Based Image Watermaking Using the Genetic Algorithm <i>Prayoth Kumsawat, Kittit Attkitmongcol, Arthit Srikaew, Sarawut Sujitjorn</i>	643
Extraction of Road Information from Guidance Map Images <i>Hirokazu Watabe, Tsukasa Kawaoka</i>	650
Dynamic Customer Profiling Architecture Using High Performance Computing <i>Qiubang Li, Rajiv Khosla, Chris Lai</i>	657
 Intelligent Information Systems Using Case-Based Reasoning or Search Engineering	
Predicting Business Failure with a Case-Based Reasoning Approach <i>Angela Y.N. Yip</i>	665
Capturing and Applying Lessons Learned During Engineering Equipment Installation <i>Ian Watson</i>	672
Case-Based Adaptation for UML Diagram Reuse <i>Paulo Gomes, Francisco C. Pereira, Paulo Carreiro, Paulo Paiva, Nuno Seco, José L. Ferreira, Carlos Bento</i>	678
Harmonic Identification for Active Power Filters Via Adaptive Tabu Search Method <i>Thanatchai Kulworawanichpong, Kongpol Areerak, Kongpan Areerak, Sarawut Sujitjorn</i>	687
Active Power Filter Design by a Simple Heuristic Search <i>Thanatchai Kulworawanichpong, Kongpol Areerak, Sarawut Sujitjorn</i>	695
Stochastic Local Search for Incremental SAT and Incremental MAX-SAT <i>Malek Mouhoub, Changhai Wang</i>	702

Finite Convergence and Performance Evaluation of Adaptive Tabu Search <i>Deacha Puangdownreong, Thanatchai Kulworawanichpong, Sarawut Sujitjorn</i>	710
--	-----

Applications of Computational Intelligence to Signal and Image Processing

Knowledge-Based Method to Recognize Objects in Geo-Images <i>Serguei Levachkine, Miguel Torres, Marco Moreno, Rolando Quintero</i>	718
Fast Design of 2-D Narrow Bandstop FIR Filters for Image Enhancement <i>Pavel Zahradnik, Miroslav Vlček</i>	726
Fast Design of Optimal Comb FIR Filters <i>Pavel Zahradnik, Miroslav Vlček</i>	733
Artificial Intelligence Methods in Diagnostics of the Pathological Speech Signals <i>Andrzej Izvorski, Ryszard Tadeusiewicz, Wiesław Wszolek</i>	740
Intelligent Sub-patch Texture Synthesis Algorithm for Smart Camera <i>Jhing-Fa Wang, Han-Jen Hsu, Hong-Ming Wang</i>	749
Exploration of Image Features for Describing Visual Impressions of Black Fabrics <i>Chie Muraki Asano, Satoshi Hirakawa, Akira Asano</i>	756

Emergent Global Behaviors of Distributed Intelligent Engineering and Information Systems

Distributed Resource Allocation via Local Choices: General Model and a Basic Solution <i>Marian F. Ursu, Botond Virginas, Chris Voudouris</i>	764
Behavior Profiling Based on Psychological Data and Emotional States <i>Rajiv Khosla, Chris Lai, Tharanga Goonesekera</i>	772
Extension of Multiagent Data Mining for Distributed Databases <i>Ayahiko Niimi, Osamu Konishi</i>	780
Agent-Based Approach to Conference Information Management <i>Hee-Seop Han, Jae-Bong Kim, Sun-Gwan Han, Hyeoncheol Kim</i>	788
Mining Frequency Pattern from Mobile Users <i>John Goh, David Tanian</i>	795
Semi-supervised Learning from Unbalanced Labeled Data – An Improvement <i>Te Ming Huang, Vojislav Kecman</i>	802

Posters

Handling Emergent Resource Use Oscillations <i>Mark Klein, Richard Metzler, Yaneer Bar-Yam</i>	809
A Practical Timetabling Algorithm for College Lecture-Timetable Scheduling <i>Kyoung-Soon Hwang, Keon Myung Lee, Joongnam Jeon</i>	817
Java Bytecode-to-.NET MSIL Translator for Construction of Platform Independent Information Systems <i>YangSun Lee, Seungwon Na</i>	826
A Scale and Viewing Point Invariant Pose Estimation <i>M. Y. Nam, P. K. Rhee</i>	833
A Novel Image Preprocessing by Evolvable Neural Network <i>M.Y. Nam, W.Y. Han, P.K. Rhee</i>	843
Transition Properties of Higher Order Associative Memory of Sequential Patterns <i>Hiromi Miyajima, Noritaka Shigei, Yasuo Hamakawa</i>	855
Morphological Blob-Mura Defect Detection Method for TFT-LCD Panel Inspection <i>Young-Chul Song, Doo-Hyun Choi, Kil-Houm Park</i>	862
A Recommendation System for Intelligent User Interface: Collaborative Filtering Approach <i>Ju-Hyoung Yoo, Kye-Soon Ahn, Jeong Jun, Phill-Kyu Rhee</i>	869
Fast Half Pixel Motion Estimation Based on the Spatial Correlation <i>Hyo Sun Yoon, Guee Sang Lee</i>	880
A New Vertex Selection Scheme Using Curvature Information <i>Byoung-Ju Yun, Si-Woong Lee, Jae-Soo Cho, Jae Gark Choi, Hyun-Soo Kang</i>	887
Author Index	895