Editors:
Assoc. Prof. Azami Zaharim, University Kebangsaan Malaysia, MALAYSIA
Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria
& Milit. Inst. of University Education, HNA, Greece
Dr. Ioannis Gonos, National Technical University of Athens, NTUA, Greece

RECENT ADVANCES in COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS

Proceedings of the 7th WSEAS International Conference on
COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS
(CIMMACS '08)

Cairo, Egypt, December 29-31, 2008

Electrical and Computer Engineering Series
A Series of Reference Books and Textbooks

ISBN: 978-960-474-049-9
ISSN: 1790-5117

Published by WSEAS Press
www.wseas.org

RECENT ADVANCES in COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS

RECENT ADVANCES in COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS

Proceedings of the 7th WSEAS International Conference on COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS (CIMMACS '08)

Cairo, Egypt
December 29-31, 2008

Electrical and Computer Engineering Series
A Series of Reference Books and Textbooks

Published by WSEAS Press
www.wseas.org

ISSN: 1790-5117
ISBN: 978-960-474-049-9

RECENT ADVANCES in COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS

Proceedings of the 7th WSEAS International Conference on COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS (CIMMACS '08)

Cairo, Egypt
December 29-31, 2008

Electrical and Computer Engineering Series
A Series of Reference Books and Textbooks

Published by WSEAS Press
www.wseas.org

Copyright © 2008, by WSEAS Press

All the copyright of the present book belongs to the World Scientific and Engineering Academy and Society Press. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the Editor of World Scientific and Engineering Academy and Society Press.

All papers of the present volume were peer reviewed by two independent reviewers. Acceptance was granted when both reviewers' recommendations were positive.
See also: http://www.worldses.org/review/index.html

ISSN: 1790-5117
ISBN: 978-960-474-049-9

World Scientific and Engineering Academy and Society

RECENT ADVANCES in COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS

Proceedings of the 7th WSEAS International Conference on COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS (CIMMACS '08)

Cairo, Egypt
December 29-31, 2008

Editors:

Assoc. Prof. Azami Zaharim, University Kebangsaan Malaysia, MALAYSIA
Prof. Nikos Mastorakis, Technical University of Sofia, Bulgaria
and Milit. Inst. of University Education, HNA, GREECE
Dr. Ioannis Gonos, National Technical University of Athens, NTUA, GREECE

International Program Committee Members:

Adrian Burian, FINLAND
Ali Rafiee, IRAN
Ali Khajezadeh, IRAN
Ana Madureira, PORTUGAL
Andrzej Zak, POLAND
Anoop Paharia, INDIA
Bee Theng Lau, MALAYSIA
Bogdan Zak, POLAND
Darius Dilijonas, LITHUANIA
Devinder Kaur, UNITED STATES
Dil Hussain, DENMARK
Doru-Petru Munteanu, ROMANIA
Dr. Ismail Musirin, MALAYSIA
Dr. M. Murtadha Othman, MALAYSIA
Dusan Husek, CZECH REPUBLIC
Eduard Franti, ROMANIA
Felix Martinez, MEXICO
Fituri Belgassem, LIBYA
Fuad Alkoot, KUWAIT
George Papageorgiou, CYPRUS
Georgeta Budura, ROMANIA
Gregor Klajnγek, SLOVENIA
Hadi Zayandehroodi, IRAN
Hamid Abdi, IRAN
Hans Dieter Wacker, GERMANY
Ioan Jivet, ROMANIA
Ioan Lie, ROMANIA
Iulian-Constantin Vizitiu, ROMANIA
Izzatdin Aziz, MALAYSIA
Jalal Karam, KUWAIT
Jan Panus, CZECH REPUBLIC
Janos Csirik, HUNGARY
Jeena Jacob, INDIA
Jerzy Garus, POLAND
Jitender Chhabra, INDIA
Jose A. Moreno Perez, SPAIN
Josef Boercsoek, GERMANY
Juan Frausto-Solis, MEXICO
Keon Myung Lee, KOREA
Lotfi Merad, ALGERIA
Lucian Jurca, ROMANIA
Marius Cristian Luculescu, ROMANIA
Michael Schwarz, GERMANY
Michael Short, UNITED KINGDOM
Mingjun Ji, CHINA
Mojtaba Baghbani, IRAN
Muhammad Sharfi Najib, MALAYSIA
Mukesh Shah, INDIA
Norbert Jankowski, POLAND
Paulo Salgado, PORTUGAL
Pavel Jirava, CZECH REPUBLIC
Pooia Lalbakhsh, IRAN
Praveen Aggarwal, INDIA
Rimvydas Simutis, LITHUANIA
Seungyou Na, KOREA
Shahab Aldin Shamshirband, IRAN
Shaoyan Zhang, UNITED KINGDOM
Stanislav Novotny, CZECH REPUBLIC
Stanislava Simonova, CZECH REPUBLIC
Stephen Karungaru, JAPAN
Sylvia Encheva, NORWAY
Valeri Mladenov, BULGARIA
Vasile Gui, ROMANIA
Vijay Bansal, INDIA
Virgil Tiponut, ROMANIA
Wladimir Rodriguez, VENEZUELA
Wlodzislaw Duch, POLAND

Preface

This book contains most of the papers presented at the conference on COMPUTATIONAL INTELLIGENCE, MAN-MACHINE SYSTEMS and CYBERNETICS (CIMMACS '08) held in Cairo, Egypt, December 29-31, 2008.

The conference provides a platform to discuss the theory and applications of Computational Intelligence, Man-Machine Systems and Cybernetics.

In the last few years the focus has been on topics such as neurobiology and neurosciences, time series analysis, neural network applications in all branches of electrical engineering and computer science, prediction and model identification, quintitative methods, variational principles and applications etc.

This important 3 days multiconference offered to the colleagues 2 banquets (60 different courses -self-service buffet-, live music and live dances with more than 30 dancers and 18 folklore appearances) and one great excursion, (WSEAS offered free buses for the conference excursions and the English speaking tour guide for free. Dec, 31, 2008: Tour in Cairo (Pyramids of Giza, Sun Boat, Sphinx, Papyrus museum, Bazaar), Memphis and Sakkara (Stepped pyramid of Sakkara, Tomps of Nobles, Tomps of ministers, Memphis museum, TiTi pyramyd). The 2 banquets were superb and they included oriental dance in 18 different appearances: http://www.wseas.us/reports/2008/cairo/index.html as well as Sofi dance and many Egyptian singers.

After the excursion of 31/12/2008, we continued with the Session/Symposium: E-Learning with 18 important papers. The International Scientific Committee met during the Conference in a Cairo restaurant well known for the standards of its cuisine and its friendly atmosphere.

Ways to improve the Conference were discussed over dinner: in particular the topics were revised and new ones were suggested. In addition, a few nominations for new committee members were proposed. Following the meeting, the decision was taken to relocate the Conference, and a few locations were suggested.

The WSEAS Conference Division will investigate these so that the dates and location of 2010 are finalized as soon as possible.

Each paper was reviewed at least by 3 independent reviewers. The WSEAS Secretariat sent each paper to 5 reviewers. Some papers received reviews from 5 different referees. The WSEAS Secretariat forwarded these comments by personalized emails to the responsible for the correspondence author. The full list of the reviewers will be available in the web page: http://www.worldses.org/reviewers.htm

The best papers of this multiconference are available now

http://www.wseas.us/reports/2008/best2008.htm#december2008b

We thank you for your feedback about the WSEAS Conferences:

http://www.worldses.org/feedback.htm

The Editors

Table of Contents

Mouse Pointer Controlled by Ocular Movements 11
Job Ramon De La O Chavez, Carlos Aviles Cruz

System Identification Using DNA Computing Approach 19
Ching-Huei Huang, Horn-Yong Jan, Chun-Liang Lin

Signal Transduction Networks in Biological Systems Based on Michaelis-Menten Equation and S-System 25
Yuan-Wei Liu, Ching-Kun Chen, Chun-Liang Lin

Enhancing Situational Awareness through Neural Regulation of Take-Off and Landing Manoeuvres in Unmanned Helicopter 29
Igor Astrov, Andrus Pedai

The Effect Assessment Method of Design Factors on Search for High Risk Events of Power Systems 35
Tetsushi Miki

Pre-Processing of Low-Field Brain MRI 41
N. F. Ishak, R. Logeswaran, W. H. Tan

Constructing Field Association Words Using Declinable Words and Concurrent Words 47
El-Sayed Atlam, Kazuhiro Morita, Masoa Fuketa, Jun-Ichi Aoe

Auto-tuning and Fuzzy PID Temperature Controllers for Hollow Metal Block 52
Shiuh-Jer Huang, Yi-Ho Lo

A Perception-Based Estimation of Uncertainty and its Application to Financial Portfolios 59
Yuji Yoshida

Prediction of Hemoglobin Structure from DNA Sequence through Neural Network and Hidden Markov Model 65
R. I. Mubark, H. A. Keshk, M. I. Eladawy

Automation of Database Design through Semantic Analysis 71
Nazlia Omar, Rosilah Hassan, Haslina Arshad, Shahnorbanun Sahran

Modeling and Simulating the Impact of Physical Propagation Environment on Ad Hoc Network Routing Protocols 77
Nuraj Pradhan, Tarek Saadawi

Solving Traveling Salesman Problem on High Performance Computing using Message Passing Interface 83
Izzatdin A. Aziz, Nazleeni Haron, Mazlina Mehat, Low Tan Jung, Aisyah Nabilah

Intelligent Control System for Monitoring Drilling Process 88
Sorin Dan Grigorescu, Costin Cepisca, Octavian Mihai Ghita, Ion Potarniche, Elena Grigorescu

Intelligent Dataspaces for e-Science 94
Ibrahim Elsayed, Adnan Muslimovic, Peter Brezany

Analysis of Shape Coding Approaches Used in MPEG-4 101
Alaa Hamdy, Mayada Khairy

Visual Surveillance in Dynamic Scene 108
Alaa Hamdy, Shady Hamdy

Image Processing for Sediment Classification 113
Cristian Molder, Florin Serban, Iulian C. Vizitiu, Mihai I. Stanciu

Symbol Occurrence Probability Vectors for Syntax Correction in Automatic Number Plate Recognition Systems 119
Cristian Molder, Florin Serban, Iulian C. Vizitiu, Mihai I. Stanciu

Fast Detection of Specific Information in Voice Signal over Internet Protocol 125
Hazem M. El-Bakry, Nikos Mastorakis

A Distributed Controller for Roaming Robot Formations using Local Sensing and Limited Range Communications 137
E. M. Saad, M. H. Awadalla, A. M. Hamdy, H. I. Ali

Illumination-Robust Face Recognition based on Gabor Feature Face Intrinsic Identity PCA Model 143
Tae In Seol, Sun-Tae Chung, Sunho Ki, Seongwon Cho, Yun-Kwang Hong

The Experimental and Numerical Studies of Laminar Mixing in Stirred Tanks 149
Z. Yaakob, S. K. Kamarudin, U. A. Hasran

Simulation of Turning Process of AISI 1045 and Carbide Tool Using Finite Element Method 152
A. G. Jaharah, Y. Hendri, C. H. Che Hassan, R. Ramli, Z. Yaakob

Tool Wear Monitoring by Detecting the Cutting Force Signal using C++ and VB Languages 157
A. G. Jaharah, A. Sayuti, M. Z. Nuawi, C. H. Che Hassan, R. Ramli, Z. Yaakob

Robust Character Region Extraction against Camera Motion and Illumination Variation 161
Miyoung Choi, Gyeyoung Kim, Hyungil Choi

Face Recognition in Color Images Using Major Color Component and Topological Relations of Facial Features 165
Kyunghwan Baek, Hernsoo Hahn

An Intelligent System for Customized Clothing Making 171
Jun-Ming Lu, Mao-Jiun J. Wang

Tunable Robust Compensator Design for an Adaptive Optics System 175
Reziwan Maimaiti, Noriaki Miura, Toshio Eisaka

Piezoelectric Device with Volume Elastic Wave for Ultrasonic Pulses Generating 180
Marian Pearsica, Ciprian Racuciu, Nicolae Jula, Dan Raducanu

Comparative Analysis for the New Generation of Encryption Algorithms Involved in NESSIE and CRYPTREC Projects 186
Ciprian Racuciu, Dan Grecu, Florin Medeleanu, Nicolae Jula, Dan Raducanu

Design of Central Pattern Generators (CPGs) for Trajectory Tracking of Fish-Mimetic Robots 191
Donghee Kim, Seunghee Lee, Jong Hyeon Park

Load Curve Estimation for Distribution Systems using ANN 197
J. N. Fidalgo

A Comparative Study of FFT, STFT and Wavelet Techniques for Induction Machine Fault Diagnostic Analysis 203
Neelam Mehala, Ratna Dahiya

A Physics-Inspired Model of Image Structure Representation by Deformable Elastic Grid 209
X. D. Zhuang, N. E. Mastorakis

On the Implementation of a Robotic Assistant for the Elderly. A Novel Approach 215
Ioan Susnea, Grigore Vasiliu, Adrian Filipescu, George Coman

Information Retrieval Based on Image Detection on Web Pages 221
Hazem M. El-Bakry, Nikos Mastorakis

Fast Information Retrieval from Web Pages 229
Hazem M. El-Bakry, Nikos Mastorakis

System Theoretic Viewpoint on Modeling of Complex Systems: Design, Synthesis, Simulation, and Control 248
Armen G. Bagdasaryan

HIROFILOS: A Medical Expert System for Prostate Diseases 254
Constantinos Koutsojannis, Maria Tsimara, Eman Nabil

Authors Index

Ali, H. I. 137
Aoe, J.-I. 47
Arshad, H. 71
Astrov, I. 29
Atlam, E.-S. 47
Aviles Cruz, C. 11
Awadalla, M. H. 137
Aziz, I. A. 83
Baek, K. 165
Bagdasaryan, A. G. 248
Brezany, P. 94
Cepisca, C. 88
Chen, C.-K. 25
Cho, S. 143
Choi, H. 161
Choi, M. 161
Chung, S.-T. 143
Coman, G. 215
Dahiya, R. 203
De La O Chavez, J. R. 11
Eisaka, T. 175
Eladawy, M. I. 65
El-Bakry, H. M. 125, 221, 229
Elsayed, I. 94
Fidalgo, J. N. 197
Filipescu, A. 215
Fuketa, M. 47
Ghita, O. M. 88
Grecu, D. 186
Grigorescu, E. 88
Grigorescu, S. D. 88
Hahn, H. 165
Hamdy, A. M. 101, 108, 137
Hamdy, S. 108
Haron, N. 83
Hasran, U. A. 149
Hassan, C. H. C. 152, 157
Hassan, R. 71
Hendri, Y. 152
Hong, Y.-K. 143
Huang, C.-H. 19
Huang, S.-J. 52
Ishak, N. F. 41
Jaharah, A. G. 152, 157
Jan, H.-Y. 19
Jula, N. 180, 186
Jung, L. T. 83
Kamarudin, S. K. 149
Keshk, H. A. 65
Khairy, M. 101
Ki, S. 143
Kim, D. 191
Kim, G. 161
Koutsojannis, C. 254
Lee, S. 191
Lin, C.-L. 19, 25
Liu, Y.-W. 25
Lo, Y.-H. 52
Logeswaran, R. 41
Lu, J.-M. 171
Maimaiti, R. 175
Mastorakis, N. E. 125, 209, 221, 229
Medeleanu, F. 186
Mehala, N. 203
Mehat, M. 83
Miki, T. 35
Miura, N. 175
Molder, C. 113, 119
Morita, K. 47
Mubark, R. I. 65
Muslimovic, A. 94
Nabil, E. 254
Nabilah, A. 83
Nuawi, M. Z. 157
Omar, N. 71
Park, J. H. 191
Pearsica, M. 180
Pedai, A. 29
Potarniche, I. 88
Pradhan, N. 77
Racuciu, C. 180, 186
Raducanu, D. 180, 186
Ramli, R. 152, 157
Saad, E. M. 137
Saadawi, T. 77
Sahran, S. 71
Sayuti, A. 157
Seol, T. I. 143
Serban, F. 113, 119
Stanciu, M. I. 113, 119
Susnea, I. 215
Tan, W. H. 41
Tsimara, M. 254
Vasiliu, G. 215
Vizitiu, I. C. 113, 119
Wang, M.-J. J. 171
Yaakob, Z. 149, 152, 157
Yoshida, Y. 59
Zhuang, X. D. 209