# TABLE of CONTENTS

Scroll to the title and select a Blue link to open a paper. After viewing the paper, use the bookmarks to the left to return to the beginning of the Table of Contents.

## Session M.HMS.A03: Workshop on Brain-Machine Interfaces I

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning User Habits for Semi-Autonomous Navigation using Low Throughput Interfaces</td>
<td>1</td>
</tr>
<tr>
<td>Xavier Perrin, Francis Colas, Ricardo Chavarriaga, Cédric Pradalier, José del R. Millán, Roland Siegwart</td>
<td></td>
</tr>
<tr>
<td>A Multi-Class Pattern Recognition Method for Motor Imagery EEG Data</td>
<td>7</td>
</tr>
<tr>
<td>Yonghui Fang, Mingyou Chen, Robert F. Harrison, Yonghui Fang</td>
<td></td>
</tr>
<tr>
<td>Performance Analysis of Spectral Estimation Techniques for Steady State Visual Evoked Potentials (SSVEPs) based Brain Computer Interfaces (BCIs)</td>
<td>13</td>
</tr>
<tr>
<td>Mayank Dobriyal, Nuri Yilmazer, Rajab Challoo</td>
<td></td>
</tr>
</tbody>
</table>

## Session M.HMS.B03: Workshop on Brain-Machine Interfaces II

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Probabilistic Approach to Spatio-Spectral Filters Optimization in Brain-Computer Interface</td>
<td>19</td>
</tr>
<tr>
<td>Heung-Il Suk, Seong-Whan Lee</td>
<td></td>
</tr>
<tr>
<td>An Analytical Method for Face Detection based on Image Patterns of EEG Signals in the Time-Frequency Domain</td>
<td>25</td>
</tr>
<tr>
<td>Koji Kashihara, Momoyo Ito, Minoru Fukumi</td>
<td></td>
</tr>
</tbody>
</table>

## Session S.WKS.A01: Workshop on Robust Machine Learning Technologies for Human Activity Detection using Body-Worn Sensors

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection and Curation of a Large Reference Dataset for Activity Recognition</td>
<td>30</td>
</tr>
<tr>
<td>Alberto Calatroni, Daniel Roggen, Gerhard Troster</td>
<td></td>
</tr>
<tr>
<td>Benchmarking Classification Techniques using the Opportunity Human Activity Dataset</td>
<td>36</td>
</tr>
<tr>
<td>Hesam Sagha, Sundara Tejaswi Digumarti, Jose del R. Millan, Ricardo Chavarriaga, Alberto Calatroni, Daniel Roggen, Gerhard Troster</td>
<td></td>
</tr>
<tr>
<td>Benchmarking ‘Radio Exercises’ Recognition with a Three-Axis Accelerometer</td>
<td>41</td>
</tr>
<tr>
<td>Akio Terumoto, Sozo Inoue, Yuichi Hattori</td>
<td></td>
</tr>
<tr>
<td>Exploring and Extending the Boundaries of Physical Activity Recognition</td>
<td>46</td>
</tr>
<tr>
<td>Attila Reiss, Markus Weber, Didier Stricker</td>
<td></td>
</tr>
<tr>
<td>Unsupervised Model Generation for Motion Monitoring</td>
<td>51</td>
</tr>
<tr>
<td>Markus Weber, Gabriele Bleser, Gustaf Hendeby, Attila Reiss, Didier Stricker</td>
<td></td>
</tr>
</tbody>
</table>
Session M.SYS.A01: Service Systems

Service-Based Community for Emergency Response in Smart Space ................................................................. 55
Alexander Smirnov, Alexey Kashevnik, Tatiana Levashova, Nikolay Shilov

Modeling and Analysis of Check-In Procedure by Simulation ................................................................. 61
Kaikai Xu

Plot Preservation Approach for Video Summarization .................................................................................. 67
Yeosun Lim, Youngjung Uh, Hyeran Byun, Tackdon Han

Analysis of Information Flows at Interfaces between Strategic Product Planning, Product Development and Production to Support Process Management – A Literature Based Approach .......... 72
Florian Behncke, Frank Gabriel, Stefan Langer, Clemens Hepperle, Udo Lindemann, Florian Karl, Johannes Pohl, Sebastian Schindler, Gunther Reinhart, Michael F. Zaeh

Suitability of using Technical Indicator-Based Strategies as Potential Strategies within Intelligent Trading Systems .............................................................................................................. 80
Evan Hurwitz, Tshilidzi Marwala

Session M.SYS.A02: Homeland Security Systems

Smart Camera Network System for use in Railway Stations ............................................................................. 85
Atsushi Kawamura, Yuji Yoshimitsu, Kouichiro Kajitani, Takeshi Naito, Kaichi Fujimura, Shunsuke Kamijo

Behavior Understandings based on State Transition of Postures and Locations at Railway Station ...... 91
Kaichi Fujimura, Shunsuke Kamijo, Yuji Yoshimitsu, Takeshi Naito

A CSP Solution to Multi-Camera Surveillance and Target Tracking .......................................................... 97
Anton Dukeman, Monica Anderson

Human Intruder Detection with Leaky Coaxial Cables for Wide Area Surveillance System .................. 103
Koichi Ikuta, Hiroshi Kage, Makito Seki, Takashi Hirai

A Preventive Anticipation Model for Crisis Management Supply Chain .................................................. 109
Ayda Kaddoussi, Nesrine Zoghlimi, Hayfa Zgaya, Slim Hammadi, Francis Bretaudeau

Session M.HMS.A04: Virtual/Augmented Reality and Training Systems

UML-Based Design of Intelligent Vehicles Virtual Reality Platform .......................................................... 115
Minzhi LUO, Abdelkader El Kamel, Guanghong Gong

Evaluation of Depth Perception of Monocular Video See-Through Head Mounted Display .................. 121
Kazuyo Iwamoto, Yuko Kizuka

An Evaluation Method for Real-Time Soft-Tissue Model used for Multi-Vertex Palpation .................. 127
Antoine Widmer, Yaoping Hu

On the Way to Pole Position: The Effect of Tire Grip on Learning to Drive a Racecar ............................ 133
Stefan de Groot, Joost C.F. de Winter
Combination of Microphone Array and Camera Image Processing for Visualizing Sound Pressure Distribution

Masafumi Goseki, Ming Ding, Hiroshi Takemura, Hiroshi Mizoguchi

Session M.CYB.A05: Agent-Based Modeling

A Bidding Strategy for Continuous Double Auctions based on Genetic Network Programming with Generalized Judgments

Chuan Yue, Shingo Mabu, Kotaro Hirasawa

Empirical Data-Based Modeling of Teaching Material Sharing Network Dynamics

Rong-Huei Chen, Shi-Chung Chang, Yi-Ren Chiou, Chia-Chiang Lai, Li-Wei Yeh

Energy Management of Multi-Zone Buildings based on Multi-Agent Control and Particle Swarm Optimization

Rui Yang, Lingfeng Wang

Deception Detection in Human Reasoning

Deqing Li, Eugene Santos, Jr.

Eliciting Agents' Preferences from Contextual Knowledge about their Goals, Constraints, Priorities, Emotions and Attitudes using the Constrained Rationality Framework

Majed Al-Shawa

Session M.SPS.A06: Human Centered Transportation Systems

Basic Study of a Sea Pilot Candidate Performance using Small Acceleration Sensor

Koji Murai, Yuji Hayashi, Tsunemasa Saiki, Kohei Higuchi, Takayuki Fujita, Kazusuke Maenaka

Study on Pre-Control of Non-Power Vessels base on Risk Assessment

Jie Wang, Zhou-na Wang

Development of a Training Support Tool for Marine Pilot Trainees

Tadatsugi Okazaki

On the Evaluation of Ship Maneuvering for Collision Avoidance by using OZT

Jun Kayano, Hayama Imazu, Ryo Matsui, Akiya Shibata

Identification for Human Posture Dynamics Induced by Visual Stimulation

Takashi Imamura, Hiroyuki Tominaga, Megumi Fujiyasu, Zhong Zhang, Tetsuo Miyake, Kiyoaki Kakihara

Session M.SPS.A07: Awareness Science and Engineering

Systematic Analysis and Synthesis of Human Subjective Knowledge of Space and Time for Intuitive Human-Robot Interaction

Masao Yokota

Robust Sound Recognition Applied to Awareness for Health/Children/Elderly Care

Po-Yi Shih, Jhing-Fa Wang, Zhon-Hua Fu, Sheng-Chieh Lee
Phrase Animation Generation based on Impressions of Phrase Motion and Color Scheme .......................... 220
Motoo Yagi, Takehisa Onisawa

Card User Awareness based on Linear Sub-Space Representation .......................................................... 227
Qiangfu Zhao, Cheng-Hsiung Hsieh

Survey-Based Hospital Closure Estimation using Agent-Based Simulation .............................................. 233
Tadahiko Murata, Goichi Morimoto, Shintaro Tokura

Session M.SPS.A08: Soft Computing I

Internal Topographical Structure in Training Autonomous Robot .............................................................. 239
Pitoyo Hartono, Thomas Trappenberg

Robot Perception of Unexpected Objects based on Human Visual Structure using a 3D Range Camera .......................................................... 244
Hiroyuki Masuta, Eriko Hiwada, Naoyuki Kubota

Learning of Keepaway Task for RoboCup Soccer Agent based on Fuzzy Q-Learning ............................................ 250
Toru Sawa, Toshihiko Watanabe

Nature of Real-World Multi-Objective Vehicle Routing with Evolutionary Algorithms ........................................ 257
Juan Castro-Gutierrez, Dario Landa-Silva, José A. Moreno-Pérez

Hand Sign Recognition System based on SOM-Hebb Hybrid Network ..................................................... 265
Hiroomi Hikawa, Keishi Kaida

Session M.SPS.A09: Soft Computing II

Decentralized and Partially Decentralized Reinforcement Learning for Designing a Distributed Wetland System in Watersheds .......................................................... 271
Omkar Tilak, Meghna Babbar-Sebens, Snehasis Mukhopadhyay

Learning in a Fuzzy Random Forest Ensemble from Imperfect Data ............................................................. 277
Jose M. Cadenas, M. Carmen Garrido, Raquel Martinez

Fuzzy Association Rules Mining Algorithm based on Output Specification and Redundancy of Rules .......................................................... 283
Toshihiko Watanabe

Design of Fuzzy Knowledge based Systems with Multi-Set Confidence Models ........................................ 290
Leonid Sheremetov, Ildar Batyrshin, Jorge Martínez-Muñoz

The Effect of Environmental Dynamism on Evolution and Evolvability ..................................................... 296
Gregg Vesonder
Session M.SPS.A10: Soft Computing III

A New Validation Index for Fuzzy Clustering and Its Comparisons with Other Methods ........................................... 301
Elid Rubio, Oscar Castillo

Feature Clustering for Orthophotomap Analysis ........................................................................................................... 307
Zdenek Horak, Milos Kudelka, Vaclav Snasel

Fuzzy Classification by Evolutionary Algorithms ........................................................................................................ 313
Pavel Kromer, Jan Platos, Vaclav Snasel, Ajith Abraham

Musical Expression Generation in Several Music Genres by Fuzzy Rules ................................................................. 319
Mio Suzuki, Takehisa Onisawa

Toward an Optimal QCDE in Manufacturing by Health Monitoring of Equipment Energy Consumption ......................................................... 327
Maki Endo, Kosuke Tsuruta, Yumi Saitoh, Hiroshi Nakajima, Yutaka Hata

Session M.SPS.A11: Enterprise Information Systems and Adaptive Collaboration

Features of Enterprise Information Systems Integration: A Systemic Analysis .......................................................... 333
Song Wang, Li Xu, Ling Li, Kanliang Wang, Jung Choi

An Analysis of Enterprise Architectures using General Systems Theory ........................................................................ 340
Christine Hoyland

Crosscutting Concerns at Enterprise Architecture Level ................................................................................................. 345
Fabiana Jack Nogueira Santos, Flávia Maria Santoro, Claudia Cappelli

Collective Group Role Assignment and Its Complexity ................................................................................................. 351
Haibin Zhu

Comparative Study of Attractive Dish Arrangements for a Tabletop Dish Recommendation System ................................................................. 357
Yuichiro Otsuka, Tomoo Inoue

Session M.SPS.A12: Social Signal Processing

Humans as Feature Extractors: Combining Prosody and Personality Perception for Improved Speaking Style Recognition ................................................................. 363
Gelareh Mohammadi, Alessandro Vinciarelli

Towards Visual and Vocal Mimicry Recognition in Human-Human Interactions ................................................................. 367
Xiaofan Sun, Khiet P. Truong, Maja Pantic, Anton Nijholt

Understanding Social Signals in Multi-Party Conversations: Automatic Recognition of Socio-Emotional Roles in the AMI Meeting Corpus ................................................................. 374
Alessandro Vinciarelli, Fabio Valente, Sree Harsha Yella, Ashtosh Sapru
Recent Developments in Social Signal Processing ................................................................. 380
Albert Ali Salah, Maja Pantic, Alessandro Vinciarelli

The Nuances of Collaborative Interaction ........................................................................... 386
Kan Lo, Yaoping Hu

Session M.SYS.B01: Infrastructure Systems

A New Splitting-Based Displacement Prediction Approach for Location-Based Services .......... 392
Mohammad Daoud, Aladdin Ayesh, Mustafa Al-Fayoumi, Adrian Hopgood

Sustainability and Dependability Evaluation on Data Center Architectures ................................ 398
Gustavo Callou, Paulo Maciel, Eduardo Tavares, Erica Sousa, Bruno Silva, Jair Figueiredo, Carlos Araujo, Fábio Magnani, Francisco Neves

Comparison Analysis of Statistical Control Charts for Quality Monitoring of Network Traffic Forecasts ................................................................. 404
Ana Maria M. Carvalho, Rivalino Matias, Jr., Lucio B. Araujo, Paulo Maciel

Experimental Study on the use of Compound System Calls in the Linux Operating System .......... 410
Elder Vicente P. Sobrinho, Rivalino Matias, Jr., Lucio B. Araujo

An Authentication System using Smart Phones as Secure Storage ........................................ 415
Katsuyuki Umezawa, Satoru Tezuka, Shigeichi Hirasawa

Estimating Reliability Importance and Total Cost of Acquisition for Data Center Power Infrastructures .................................................................................................................. 421
José Figueirêdo, Paulo Maciel, Gustavo Callou, Eduardo Tavares, Erica Sousa, Bruno Silva

Session M.SYS.B02: Manufacturing Systems

Ontology-Driven Automated Software Configuration for Manufacturing System Components .......... 427
Wilfried Lepuschitz, Alois Zoitl, Munir Merdan

Holonic-Based Flexible Allocation of Workforce in Labour-Intensive Manufacturing Shop Floors ...... 434
Guiovanni Jules, Mozafar Saadat, Melissa Tan, Mohammad Owliya

Reducing the Bullwhip Effect in Supply Chains using Genetic Algorithm and Control Engineering .... 440
Khaled A.A.A. Othman, Hesham Gomma

A Conceptual Data Management Model of a Feedback Assistance System to Support Product Improvement ................................................................................................................. 446
Susanne Dienst, Madjid Fathi, Michael Abramovici, Andreas Lindner

A Ring-Based Interaction Protocol for Job Allocation in Manufacturing Networks ...................... 452
Mohammad Owliya, Guiovanni Jules, Mozafar Saadat

Hierarchies of Adaptable Learning during Product Development ............................................. 458
Anna Chatzimichali, Vassilios Tourassis
Session M.CYB.B04: Advances in Machine Learning I

Estimation of External Quantum Efficiency for Multi-Junction Solar Cells under Influence of Charged Particles using Artificial Neural Networks ................................................................. 465
Jagdish C. Patra, Lian Lian Jiang, Douglas L. Maskell

Supervised LDA for Image Annotation ......................................................................................................... 471
Qiaojin Guo, Ning Li, Yubin Yang, Gangshan Wu

Optimality Principle Broken by Considering Structured Plant Variation and Relevant Robust Reinforcement Learning ........................................................................................................ 477
Kei Senda, Yurika Tani

Evolving Matched Forward and Inverse Transforms for Improved Lossy Compression of Images from Mars ........................................................................................................................................ 484
Frank Moore, Brendan Babb, Shawn Aldridge, Michael R. Peterson

Profit Sharing that Can Learn Deterministic Policy for POMDPs Environments ................................................. 490
Yohei Takamori, Yuko Osana

Reinforcement Learning by Improved Kohonen Feature Map Probabilistic Associative Memory based on Weights Distribution using Extended Eligibility .................................................................................. 496
Kousuke Watanabe, Yuko Osana

Session M.CYB.B05: Pattern Recognition I

Fast Dependency-Aware Feature Selection in Very-High-Dimensional Pattern Recognition .......... 502
Petr Somol, Jiri Grim, Pavel Pudil

A SVM based Off-Line Handwritten Digit Recognizer ............................................................................................ 510
Renata F.P. Neves, Alberto N.G. Lopes Filho, Carlos A.B. Mello, Cleber Zanchettin

A Supervised Learning Framework for PCA-Based Face Recognition using GNP Fuzzy Data Mining ......................................................................................................................................................... 516
Deng Zhang, Shingo Mabu, Feng Wen, Kotaro Hirasawa

Fast Eye Detection using Different Color Spaces .................................................................................................... 521
Shuo Chen, Chengjun Liu

A K-Medoids Clustering Algorithm for Mixed Feature-Type Symbolic Data ................................................. 527
Elaine Cristina de Assis, Renata M.C.R. de Souza

Global and Local Features based Topic Model for Scene Recognition .............................................................. 532
Heping Li, Fangyuan Wang, Shuwu Zhang

Session M.SPS.B06: Human Centered Intelligent Transportation and Discrete Event Systems

Development of an Autonomous Human-Sensing System with MEMS Devices ........................................... 538
Takayuki Fujita, Kazusuke Maenaka, Sayaka Okochi, Katsuhisa Yamamoto, Kohei Higuchi
Gaze Interaction on Multiple Displays in an Automotive Environment .......................................................... 543
Florian Laquai, Tony Poitschke, Stilyan Stamboliev, Gerhard Rigoll

Real Time Detection of the Back View of a Preceding Vehicle for Automated Heterogeneous Platoons in Unstructured Environment using Video ................................................................. 549
Mohammad Alfraheed, Alicia Droge, Ralph Kunze, Daniel Schilberg, Sabina Jeschke, Max Klingender

Modelling of Emergency Vehicle Preemption Systems using Statecharts .......................................................... 556
Yi-Shun Weng, Yi-Sheng Huang

A Colored Petri Net Model of Motorways for Risk Evaluation of HAZMAT Transportation .................. 562
Giampaolo Centrone, Maria Pia Fanti, Giorgio Iacobellis, Walter Ukovich

An Efficient Deadlock Prevention Policy for FMSs Using Reduction method and Theory of Regions...... 568
Yen-Liang Pan, Yi-Sheng Huang, MuDer Jeng

Session M.SPS.B07: Emerging Technologies in Medical Mechatronics

Development of an Underactuated Wheel Module for a Power Wheelchair .................................................. 574
Wei-chen Lee, Jyun-An Yao

A Wireless Sensor Network Approach for Rehabilitation Data Collections .................................................. 579
Chung-Hsien Kuo, Chun-Tzu Chen, Ting-Shuo Chen, Yu-Chen Kuo

MMG-Torque Estimation under Dynamic Contractions .................................................................................. 585
Kin Fong Lei, Wen-Wei Tsai

A Brain-Controlled Rehabilitation System with Multiple Kernel Learning .................................................. 591
Yi-Hung Liu, Han-Pang Huang, Tz-Hau Huang, Zhi-Hao Kang, Jyh-Tong Teng

A Novel Radiation-free Shoulder Joint Stiffness Evaluation Protocol using Non-Invasive Ultrasonographic Images ................................................................................................................. 597
Wen-Wei Tsai, Ming-yih Lee, Wen-Lin Yeh, Kok-Soon Soon

Eye Detection Method Robust to Facial Pose Changes for Eye Input Device ............................................. 602
Masayuki Asano, Hironobu Takano, Kiyomi Nakamura

Session M.SPS.B08: Soft Computing IV

Discovering Semantic Web Services via Advanced Graph-Based Matching .................................................. 608
Alfredo Cuzzocrea, Marco Fisichella

Two Steps for Self-Organized Social Network Pre-Construction ................................................................. 616
Wei-Lun Chang

A Non-Heuristic Model of Decision-Making based on Human Perception under Time Constraints ..... 621
Hideyasu Sasaki

A New Genetic Algorithm with Self-Configuration Chromosome to Discover Optimal Fleeing Paths in Blaze Scene .................................................................................................................. 627
Mong-Fong Horng, Yi-Ting Chen, Sin-Man Zeng, Bin-Yi Liao
Fuzzy Signatures Organized using S-Tree ................................................................. 633
Vaclav Snasel, Zdenek Horak, Milos Kudelka, Ajith Abraham

Evolutionary Learning of Regularization Networks with Product Kernel Units ..................... 638
Petra Vidnerova, Roman Neruda

Session M.SPS.B09: Soft Computing V

An Optimization Algorithm to Provide Individual Illuminance using LED Ceiling Lights and Verification at the Actual Office ................................................................. 644
Keiko Ono, Mitsunori Miki, Hiroyuki Yonemoto, Tatsuo Nishimoto, Tetsuya Omi, Hiroshi Adachi

A Memetic Algorithm with One-Step Local Search to Guide Diversity Increase in Dynamic Multiobjective Problems ................................................................. 649
Cicero Garrozi, Aluizio F.R. Araujo

Levy Mutated Artificial Bee Colony Algorithm for Global Optimization .................................. 655
Rajasekhar Anguluri, Ajith Abraham, Millie Pant

Evolutionary Multi-Objective Optimization using Expected Improvement and Generalized DEA ...... 663
Yeboon Yun, Hirotaka Nakayama, Min Yoon

Effectiveness of Genetic Multistep Searches in Interpolation and Extrapolation Domains on Multiobjective Optimization ................................................................. 669
Yoshiko Hanada, Takumi Tani, Cuimin Li, Mitsuji Muneyasu

A Study on Distributed Parameter Free Genetic Algorithm for TSP Problem .......................... 675
Fumitaka Kondo, Toshihiko Watanabe

Session M.SPS.B10: Minimally Invasive Brain Microsurgery for Epilepsy (Mini-Symposium on MHCT)

Alternative Treatment of Intractable Epilepsy with Focal Brain Cooling:
A Review of our Past Studies ......................................................................................... 681
Masami Fujii, Takao Inoue, Yeting He, Yuichi Maruta, Hirochika Imoto, Sadahiro Nomura, Michiyasu Suzuki, Tatsuji Tokiwa, Satoshi Ishizuka, Takeshi Yamakawa, Toshitaka Yamakawa

The Effect of Focal Brain Cooling on Epileptic Discharges in Rats:
Frequency Analysis of Electroencephalogram .................................................................. 686
Hiroyuki Kida, Masami Fujii, Takao Inoue, Yeting He, Yuichi Maruta, Sadahiro Nomura, Michiyasu Suzuki, Kazuhiro Taniguchi, Takuya Ichikawa, Takashi Saito, Takeshi Yamakawa

Development of Focal Cerebral Cooling System for the Treatment of Intractable Epilepsy:
An Experimental Study in Cats and Non-Human Primate .................................................. 691
Takao Inoue, Masami Fujii, Yeting Hu, Yuichi Maruta, Hirokuya Kida, Sadahiro Nomura, Michiyasu Suzuki, Toshitaka Yamakawa, Tatsuji Tokiwa, Takeshi Yamakawa, Kenichi Hirano, Masanori Niiyama, Hiromi Yamazaki

Effects of Freezing Brain Tissue by a Micro-Cryoprobe on the Neuronal/Circulatory Functions .... 696
Hiroaki Koga, Zimin Lev Grigorievich, Satoru Ishizuka, Takeshi Yamakawa
Minimally-Invasive Epileptogenic Focus Detection using the Subdural Electrodes Manipulated by the Shape-Memory-Alloy Thin Wire ................................................................. 701
Toshitaka Yamakawa, Takeshi Yamakawa, Takao Inoue, Shuji Aou, Tatsuji Tokiwa, Masami Fujii, Michiyasu Suzuki

Trans-Skull Brain Imaging by Image Registration of 0.5 and 1.0 MHz Waves ........................................ 706
Naomi Yagi, Yoshitetsu Oshiro, Osamu Ishikawa, Yutaka Hata, Toshio Yanagida

Session M.SPS.B11: Medical and Health Care Robots (Mini-Symposium on MHCT)

Kinematic Evaluation of Commercial Wheelchair-Mounted Robotic Arms ............................................. 711
John Capille, Redwan Alqasemi, Stephanie Carey, Rajiv Dubey, Rajiv Dubey

Adaptive Perception-Assist to Various Tasks for an Upper-Limb Power-Assist Exoskeleton Robot ..... 717
Kazuo Kiguchi, Yoshiaki Hayashi

Development of a Robotic Manipulator System for Congenital Diaphragmatic Hernia ............................ 723
Bo Zhang, Yo Kobayashi, Yoshinari Maeda, Toshio Chiba, Masakatsu Fujie

Development of Robotic Upper Limb Orthosis with Tremor Suppressibility and Elbow Joint Movability .............................................................. 729
Masatoshi Seki, Yuya Matsumoto, Takeshi Ando, Yo Kobayashi, Masakatsu G. Fujie, Hiroshi Iijima, Masanori Nagaoka

A Compact Sensor System for Reading Braille ............................................................................................ 736
Takeshi Okuyama, Mami Tanaka

Study on Evaluation of Muscle Conditions using a Mechanomyogram Sensor ........................................ 741
Mami Tanaka, Takeshi Okuyama, Kazuhiro Saito

Session M.SPS.B12: Medical and Health Care Technology I (Mini-Symposium on MHCT)

Particle Filter for Implanted Knee Kinematic Analysis using Dynamic Radiograph Video ......................... 746
Syoji Kobashi, Norikazu Ikoma, Fumiaki Imamura, Nao Shibanuma, Kei Kuramoto, Tomomoto Ishikawa, Yutaka Hata

Label Guided Snake for Bone Segmentation and Its Application on Medical Rapid Prototyping .......... 752
Shengzhe Li, Xuenan Cui, Naw Chit Too June, Hakil Kim, Kyu-sung Kwack

Blood Flow Detection under Skull by Doppler Effect ................................................................................. 758
Masato Nakamura, Tomomoto Ishikawa, Syoji Kobashi, Kei Kuramoto, Yutaka Hata

An Analysis Method of Femur and Patellar for Patellar Subluxation Diagnosis using MDCT Image .................. 764
Kouki Nagamune, Shinya Oka, Seiji Kubo, Ryosuke Kuroda, Masahiro Kurosaka

Foot Age Estimation for Fall-Prevention using Sole Pressure by Fuzzy Logic ............................................. 769
Takahiro Takeda, Yoshitada Sakai, Kei Kuramoto, Syoji Kobashi, Tomomoto Ishikawa, Yutaka Hata
### Session M.SYS.C01: Intelligent Power and Energy Systems

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Telematics Gateway and Power Saving Method for Electric Vehicles</td>
<td>780</td>
</tr>
<tr>
<td>Po-Lun Chang, Yu-Xin Guo, Mu-Der Jeng</td>
<td></td>
</tr>
<tr>
<td>Swarm-Based Optimal Power Flow Considering Generator Fault in</td>
<td>786</td>
</tr>
<tr>
<td>Distribution Networks</td>
<td></td>
</tr>
<tr>
<td>Qi Kang, Tian Lan, Yong Yan, Jing An, Lei Wang</td>
<td></td>
</tr>
<tr>
<td>Attempt on Plant Machine Interface</td>
<td>791</td>
</tr>
<tr>
<td>Dominique Cadosch, Po-Ting Huang, Dana D. Damian, Shuhei Miyashita,</td>
<td></td>
</tr>
<tr>
<td>Atsushi Aoyama, Rolf Pfeifer</td>
<td></td>
</tr>
<tr>
<td>Challenges to Implementing Distributed Generation in Area Electric</td>
<td>797</td>
</tr>
<tr>
<td>Power System</td>
<td></td>
</tr>
<tr>
<td>Loi Lei Lai, S.W. Chan, P.K. Lee, C.S. Lai</td>
<td></td>
</tr>
<tr>
<td>e-MLP-Based Modeling of High-Power PEM Fuel Cell Stacks</td>
<td>802</td>
</tr>
<tr>
<td>Jagdish Patra, Goutam Chakraborty</td>
<td></td>
</tr>
<tr>
<td>Modeling and Optimal Operation of Distributed Energy Systems via</td>
<td>808</td>
</tr>
<tr>
<td>Dynamic Programming</td>
<td></td>
</tr>
<tr>
<td>Toshiaki Tashiro, Kenichi Tamura, Kenichiro Yasuda</td>
<td></td>
</tr>
</tbody>
</table>

### Session M.SYS.C02: Discrete Event Systems and Petri Nets

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modeling and Analysis of Discrete Event Systems using a Petri Net</td>
<td>814</td>
</tr>
<tr>
<td>Component</td>
<td></td>
</tr>
<tr>
<td>Michel dos Santos Soares</td>
<td></td>
</tr>
<tr>
<td>Petri Net Decomposition Approach for Bi-Objective Conflict-Free</td>
<td>820</td>
</tr>
<tr>
<td>Routing for AGV Systems</td>
<td></td>
</tr>
<tr>
<td>Shuhei Eda, Tatsushi Nishi, Toshisada Maruyama, Satomi Kataoka,</td>
<td></td>
</tr>
<tr>
<td>Kazuya Shoda, Katsuhiko Matsumura</td>
<td></td>
</tr>
<tr>
<td>Optimal Siphon-Based Deadlock Prevention Policy for a Class of Petri</td>
<td>826</td>
</tr>
<tr>
<td>Nets in Automation</td>
<td></td>
</tr>
<tr>
<td>ShouGuang Wang, ChengYing Wang, MengChu Zhou</td>
<td></td>
</tr>
<tr>
<td>On Behaviorally and Structurally Optimal Supervisor to Solve Forbidden</td>
<td>832</td>
</tr>
<tr>
<td>State Problems in Discrete Event Systems</td>
<td></td>
</tr>
<tr>
<td>Zhiwu Li, Yufeng Chen, Mengchu Zhou</td>
<td></td>
</tr>
<tr>
<td>Game Modeling using WorkFlow Nets</td>
<td>838</td>
</tr>
<tr>
<td>Guilherme Willian de Oliveira, Stéphane Julia, Lígia Maria Soares</td>
<td></td>
</tr>
<tr>
<td>Passos</td>
<td></td>
</tr>
<tr>
<td>Liveness Supervision of AMS with Complex Processes using Petri Nets</td>
<td>844</td>
</tr>
<tr>
<td>Hesuan Hu, Ying Tang, Mengchu Zhou, Zhiwu Li</td>
<td></td>
</tr>
</tbody>
</table>

### Session M.CYB.C04: Semantic Web and Intelligent Internet

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Improved Topic Relevance Algorithm for Focused Crawling</td>
<td>850</td>
</tr>
<tr>
<td>Hong-Wei Hao, Cui-Xia Mu, Xu-Cheng Yin, Shen Li, Zhi-Bin Wang</td>
<td></td>
</tr>
</tbody>
</table>
Bayesian Knowledge-Driven Ontologies: Intuitive Uncertainty Reasoning for Semantic Networks .......................... 856
Eugene Santos, Jr., Jacob C. Jurmain

Improving Dynamic Web Service Selection in WS-BPEL using SPARQL ..................................................... 864
Neil Paiva Tizzo, Juan Manuel Adán Coello, Eleri Cardozo

Heterogeneous Node Split Measure for Decision Tree Construction ................................................................. 872
B. Chandra, Venkata Naresh Babu Kuppili

Search Scripts Mining from Wisdom of the Crowds .................................................................................... 878
Chieh-Jen Wang, Hsin-Hsi Chen

SIRA: A Socially Inspired Game Theoretic Uplink/Downlink Resource Aware Allocation in OFDMA Systems ........................................................................................................ 884
Ahmad M. El Hajj, Mariette Awad, Zaker Dawy

Session M.CYB.C05: Biometrics and Bioinformatics

A Study of the Relations between the Elderly and the Care Workers in the Welfare Facilities for the Elderly, using Non Linear Analysis of Finger Plethysmograms ...................................................................... 891
Yoko Hirohashi, Mayumi Oyama-Higa, Sang-jae Lee

Sensitivity-Based Data Selection for Predicting Individual’s Sub-Health on TCM Doctors’ Diagnosis .......... 896
Yi Wang, Ying Dai, Feng Guo, Shaozi Li

A Novel Surface Pattern for 3D Facial Surface Encoding and Alignment ......................................................... 902
Naoufel Werghi, Mohamed K. Naqbi

Procedure for Stability Analysis of Gene Selection from Cross-Site Gene Expression Data .......................... 909
John N. Korecki, Lawrence O. Hall, Dmitry Goldgof, Steven Eschrich

Real-Time Scale-Invariant Face Detection on Range Images .............................................................................. 914
Mauricio Pamplona Segundo, Luciano Silva, Olga Regina Pereira Bellon

Identification of Plant Messenger RNA Polyadenylation Sites using Length-Variable Second Order Markov Model .................................................................................................................. 920
Guoli Ji, Huanghui Zhang, Xiaohui Wu, Meishuang Tang

Session M.SPS.C06: Computational Collective Intelligence

A New Scheme of Ant Colony System Algorithm to Discovery Optimal Solution with Flip-Flop Search ................................................................................................................................. 925
Yi-Ting Chen, Mong-Fong Horng, Chih-Cheng Lo, Shu-Chuan Chu, Jeng-Shyang Pan

A Framework of An Effective Fuzzy Ontology Alignment Technique ............................................................. 931
Hai Bang Truong, Ngoc Thanh Nguyen

A Consensus-Based Approach to the Distributed Learning ............................................................................... 936
Ireneusz Czarnowski, Piotr Jedrzejowicz
Anchor-Prior: An Effective Algorithm for Ontology Integration ................................................................. 942
Trong Hai Duong, Geun Sik Jo

Computational Collective Intelligence in Electronic Commerce: Incentive Design in Evaluation System ... 948
Koki Murakata, Tokuro Matsuo

Fuzzy Markup Language for University Assessment ......................................................................................... 954
Chang-Shing Lee, Mei-Hui Wang, Ming-Kai Su, Nai-Yun Wu, Che-Hung Liu, Yu-Yang Tseng,
Yuan-Liang Wang, Hui-Ming Wang

Session M.SPS.C07: Machine Learning

A New Approach for Classification of Patterns having Categorical Attributes ............................................. 960
Chandra Bala, Shalini Bhaskar

Feature Set Comparison for Automatic Bird Species Identification ............................................................. 965
Marcelo Teider Lopes, Carlos Silla Junior, Alessandro Koerich, Celso Kaestner

A Study of Block-Global Feature based Supervised Image Annotation ............................................................ 971
Jing He, Ziheng Jiang, Ping Guo

Design of Robust Classifiers for Adversarial Environments ........................................................................... 977
Battista Biggio, Giorgio Fumera, Fabio Roli

A Novel One-Class Classification Method based on Feature Analysis and Prototype Reduction ... 983
George Cabral, Adriano Oliveira

Two Dimensional Rectilinear Polygon Packing using Genetic Algorithm with a Hierarchical Chromosome ........................................................................... 989
Mitsukuni Matayoshi

Session M.SPS.C08: Collaborative Manufacturing and Supply Chains

A Collaborative Evolutionary Algorithm for Multi-Objective Flexible Job Shop Scheduling Problem ... 997
Xinyu Li, Liang Gao

A Resource and Capability Virtualization Method for Cloud Manufacturing Systems ......................... 1003
Ning Liu, Xiaoping Li, Qian Wang

An Interactive Heuristic Approach for the P-Forest Problem ......................................................................... 1009
David Meignan, Jean-Marc Frayret, Gilles Pesant

An Agent-Based Model to Support Negotiation-Based Order Acceptance in a Multi-Plant Enterprise ........................................................................... 1014
Zahra Mobini, Behzad Behdani, Zofia Lukszo, Margot Weijnen

Bidding without Pricing: An Iterative Bidding Mechanism for Scheduling Non-Commercial Services ... 1020
Chun Wang

A RFID-Based Dual-Command Method for Unit-Load Warehouse Systems .................................................. 1026
Zhuxi Chen, Xiaoping Li
Session M.SPS.C09: Shared Control

Real-Time Driver Characterization during Car Following using Stochastic Evolving Models .............. 1031
Dimitar Filev, Jianbo Lu, Finn Tseng, Kwaku Prakah-Asante

Shared Control for Road Departure Prevention ................................................................. 1037
Diomidis Katzourakis, Mohsen Alirezaei, Joost C.F. de Winter, Matteo Corno, Riender Happee,
A. Ghaffari, R. Kazemi

Evaluation of Proportional and Discrete Shared Control Paradigms for Low Resolution User Inputs .... 1044
Tom Carlson, Guillaume Monnard, Robert Leeb, José del R. Millán

Preparing Drivers for Dangerous Situations: A Critical Reflection on Continuous Shared Control ... 1050
Joost De Winter, Dimitra Dodou

Correct and Faulty Driver Support from Shared Haptic Control During Evasive Maneuvers .......... 1057
Mark Mulder, David A. Abbink

Design and Evaluation of Situation-Adaptive Pedestrian-Vehicle Collision Avoidance System ........ 1063
Makoto Itoh, Tatsuya Horikome, Toshiyuki Inagaki

Session M.SPS.C10: Support Systems for Handicapped Persons
(Mini-Symposium on MHCT)

Voice Pitch Control Ability of Hearing Persons with or without Tactile Feedback using a
Two-Dimensional Tactile Display System ........................................................................ 1069
Masatsugu Sakajiri, Shigeki Miyoshi, Kenryu Nakamura, Satoshi Fukushima, Tohru Ifukube

Contribution of Acoustical Characteristics to Auditory Perception of Silent Object ...................... 1074
Takahiro Miura, Shigeto Furukawa, Tohru Ifukube

Utilization of Auditory Perceptions of Sounds and Silent Objects for Orientation and
Mobility by Visually-Impaired People .............................................................................. 1080
Takahiro Miura, Yuka Ebihara, Masatsugu Sakajiri, Tohru Ifukube

Contour Pattern Recognition through Auditory Labels of Freeman Chain Codes for
People with Visual Impairments ..................................................................................... 1088
Junji Onishi, Tsukasa Ono

A Proposal on a Haptic Learning-Science Simulator for Visually Impaired Students ..................... 1094
Takashi Suzuki, Tomoyuki Araki

Walking Support System with Robust Image Matching for Users with Visual Impairment ............ 1100
Kenta Yamamoto, Katsuya Sugaumna, Masaki Murotani, Takeshi Iwamoto, Michito Matsumoto,
Daisuke Sugimori

Session M.SPS.C11: Medical and Health Care Technology II
(Mini-Symposium on MHCT)

A Visual Inspection System for Drug Tablets ....................................................................... 1106
Masakazu Morimoto, Kensaku Fujii
Formula Selection for Intraocular Power Calculation using Support Vector Machines and Self-Organizing Maps .......................................................... 1111
Tomoya Fukuda, Naotake Kamiura, Ayumu Saitoh, Teijiro Isokawa, Nobuyuki Matsui, Hitoshi Tabuchi

Fuzzy PID Controllers for Dual-Sensor Pacing Systems in Patients with Bradycardias at Rest ........ 1117
Wei Shi, MengChu Zhou

Effect of Beta-Blockers on the Heart Rhythm Complexity in Children ............................................. 1123
Ahmet Ugur, Selman Nas, Volkan Tuzcu

Prediction of Coding Region in the DNA Sequences ................................................................. 1128
Hitham Jleed, Sos Agaian

Flexible Usage of Space for Telemedicine .................................................................................. 1134
Roopa Makena, Caroline Hayes

Session M.SPS.C12: Medical and Health Care Technology III (Mini-Symposium on MHCT)

Test Firmware Architecture for a Flexible Wireless Physiological Multi-Sensor .......................... 1140
Camille Jaggernauth

Identification of Human Pulse Waveform by Silicon Microphone Chip ........................................... 1145
Shusaku Nomura, Yasushi Hanasaka, Masako Hasegawa-Ohira, Tadashi Ishiguro, Hiroshi Ogawa

Activity-Aware HRV Analysis ........................................................................................................... 1151
Lianying Ji, Jiankang Wu, Yuanjing Yang, Aiguang Li, Shaofeng Wang

Behavior Extraction from Multiple Sensors Information for Human Activity Monitoring .......... 1157
Manabu Nii, Kazuki Nakai, Yutaka Takahashi, Kohei Higuchi, Kazusuke Maenaka

Development of an Evaluation Method of the Frictional Property of Human Hair — Microscopic Mechanism of Lowering effect of “Squeaky” Sensation by Shampoo ........................................ 1162
Yoko Akiyama, Yukako Matsue, Fumihito Mishima, Shigehiro Nishijima

Systems Healthcare ......................................................................................................................... 1167
Hiroshi Nakajima, Toshikazu Shiga, Yutaka Hata

Session T.SYS.A01: Enterprise Information Systems

Formal Verification of Business Processes with Temporal and Resource Constraints .................... 1173
Kenji Watahiki, Fuyuki Ishikawa, Kunihiro Hiraishi

Using Process Mining in Software Development Process Management: A Case Study .................. 1181
Artini Lemos, Caio Sabino, Ricardo Lima, Cesar Oliveira

Column Generation for Sequence Dependent Flowshop Scheduling to Minimize the Total Weighted Tardiness ..................................................................... 1187
Tatsushi Nishi, Yukinori Isoya, Masahiro Inuiguchi
A Lean Manufacturing Procedure using Value Stream Mapping and the Analytic Hierarchy Process ................................................................. 1193
Mariagrazia Dotoli, Maria Pia Fanti, Giuliana Rotunno, Walter Ukovich

Itinerary Optimisation Approach with Time Windows Inside Hypermarkets ................................................................. 1199
Ismahène Hadj Khalifa, Nozha Zribi, Abdelkader El Kamel

Session T.SYS.A02: System Modeling and Fault Diagnosis

Probabilistic Fault Diagnosis and its Analysis in Multicomputer Systems ................................................................. 1205
Manabu Kobayashi, Toshinori Takabatake, Toshiyasu Matsushima, Shigeichi Hirasawa

A Cellular Automata based Scheme for Diagnosis of Faulty Nodes in WSN ................................................................. 1212
Ilora Maity, Gunjan Bhattacharya, Sukanta Das, Biplab K Sikdar

Fault Measure of Discrete Event Systems using Probabilistic Timed Automata ................................................................. 1218
Yi-Sheng Huang, Ho-Shan Chiang, MuDer Jeng

Evolutionary Game of Driver Response to Variable Message Signs' Information ................................................................. 1224
Li Zhenlong, Wang Chonglun

Towards Accuracy-Adaptive Simulation for Efficient Design-Space Optimization ................................................................. 1230
Armin Zimmermann, Christoph Bodenstein

Session T.SYS.A03: Complexity in Systems (and SoS) Engineering

A Markov Perspective on System-of-Systems Complexity ................................................................. 1238
Muharrem Mane, Daniel DeLaurentis, Arthur Frazho

The Role of Human Factors in Addressing Systems of Systems Complexity ................................................................. 1244
Huseyin Dogan, Sofia Ahlberg Pilfold, Michael Henshaw

Complexity Enabled Design Space Exploration ................................................................. 1250
Shashank Tamaskar, Kartavya Neema, Tatsuya Kotegawa, Daniel DeLaurentis

Responsibility Modeling for the Sociotechnical Risk Analysis of Coalitions of Systems ................................................................. 1256
David Greenwood, Ian Sommerville

Attack Strategy for Operation System of Systems based on FINC-E Model and Edge Key Potential ................................................................. 1262
Guoli Yang, Weiming Zhang, Baoxin Xiu, Yong Zhang, Shidong Qiao

Session T.HMS.A05: Web Intelligence, Security and Interactive Digital Media

The Characteristics of the use of Twitter by Beginners: Study of the Applicability to the e-Healthcare ................................................................. 1268
Masaomi Oda

System for a Model based Analysis of user Interaction Patterns within Web-Applications ................................................................. 1274
Francois Kruger, Carsten Winkelholz, Christopher M. Schlick
Interactive Architecture for Interactive Social Inclusion Applications ............................................... 1280
Gabriel M. Prado, Sergio Donizetti Zorzo, Luis Carlos Trevelin,
Marcelo de Paiva Guimaraes, Bruno Barberi Gnecco

Fostering Collaborative Work between Educators in Higher Education .............................................. 1286
Dulce Mota, Carlos Vaz de Carvalho, Luis Paulo Reis

Premature Silent Workflow Termination in Publicly Posted Composite Documents .......................... 1292
Helen Balinsky, Steven Simske, Liqun Chen

Session T.CYB.A06: Support Vector Machines

Accelerating SVMs by Integrating GPUs into MapReduce Clusters ..................................................... 1298
Sergio Herrero-Lopez

Developing a Classifier Model for Lung Tumors in CT-Scan Images .................................................. 1306
Satrajit Basu, Lawrence O. Hall, Dmitry B. Goldgof, Yuhua Guimaraes, Virendra Kumar, Jung Choi,
Robert J. Gillies, Robert A. Gatenby

Prediction of Protein Translation Initiation Site from the Perspective of Imbalanced Classes ............. 1313
Felipe Carvalho de Souza Teixeira, Cristiane Neri Nobre, Lívia Márcia Silva, Luis Enrique Zárate

Activity Recognition based on Wearable Sensors using Selection/Fusion Hybrid Ensemble ................ 1319
Jun-Ki Min, Sung-Bae Cho

Learning Boundaries on Military Operational Plans from Simulation Data .................................... 1325
Johan Schubert, Anna Linderhed

Session T.CYB.A07: Knowledge Acquisition

Autonomous Identification, Categorization and Generalization of Policies based on Task Type .......... 1333
Srividhya Rajendran, Manfred Huber

Classification System for Time Series Data based on Feature Pattern Extraction .......................... 1340
Hiroshi Sugimura, Kazunori Matsumoto

SmartNotes: Application of Crowdsourcing to the Detection of Web Threats .................................. 1346
Mehrbod Sharifi, Eugene Fink, Jaime G. Carbonell

Efficient Visual Salient Object Landmark Extraction and Recognition .............................................. 1351
Lae-Kyoung Lee, Su-Yong An, Se-Young Oh

An Automatic Topic Ranking Approach for Event Detection on Microblogging Messages .......... 1358
Chung-Hong Lee, Tzan-Feng Chien, Hsin-Chang Yang

Session T.CYB.A08: Advances in Soft Computing I

Classical and Quantum-Inspired Tabu Search for Solving 0/1 Knapsack Problem .......................... 1364
Yao-Hsin Chou, Yi-Jyuan Yang, Chia-Hui Chiu
A Proposal for Optimization of Sign Sound using Interactive Differential Evolution
Makoto Fukumoto, Shintaro Ogawa

On the BP Training Algorithm of Fuzzy Neural Networks (FNNs) via Its Equivalent Fully Connected Neural Networks (FFNNs)
Jing Wang, Chi-Hsu Wang, C.L. Philip Chen

Variable-Sized Fast Kohonen Feature Map Associative Memory using Area Representation for Sequential Patterns
Junpei Amano, Yuko Osana

Automatic Composition System using Genetic Algorithm and N-gram Model – Influence of N in N-Gram Model
Kazuki Fujii, Mitsuhiro Takeshita, Yuko Osana

Session T.SPS.A09: Cloud Computing and Services

Cloud Computing Architectures
Huanglory Tianfield

Dynamic Access Control in Cloud Services
Vladimir Zaborovsky, Alexey Lukashin, Sergey Kupreenko, Vladimir Mulukha

How to Manage Information Security in Cloud Computing
Jen-Sheng Wang, Che-Hung Liu, Grace TR Lin

Software Aging Issues on the Eucalyptus Cloud Computing Infrastructure
Jean Araujo, Rubens Matos, Paulo Maciel, Rivalino Matias

Session T.SPS.A10: Intelligent Internet Systems

Constraint-Based Playlist Generation by Applying Genetic Algorithm
Jia-Lien Hsu, Shuk-Chun Chung

Performance of Hybrid Hopfield Neural Networks with EM Algorithms for Multiuser Detection in Ultra-Wide-Band Communication Systems
Ho-Lung Hung, Yung-Fa Huang, Chia-Hsin Cheng

A Cascade Classifier using Adaboost Algorithm and Support Vector Machine for Pedestrian Detection
Wen-Chang Cheng, Ding-Mao Jhan

Carrier Frequency Offsets Estimation for Uplink OFDMA Systems using Enhanced PSO and Multiple Access Interference Cancellation
Tan-Hsu Tan, Yung-Fa Huang, Ling-Cheng Hsu, Kuan-Ren Lin

PISAR: Progressive Image Search And Recommendation System by Auto-interpretation and User Behavior
Jen-Wei Huang, Chi-Yao Tseng, Meng-Cheng Chen, Ming-Syan Chen

An Audit Evidence Gathering Model in Online Auditing Environments ........................................... 1448
Wei Chen, Wally J. Smeliauskas, Gerhard Trippen

Study on the Motivation of Foreign Capital Withdrawal in Post-Crisis Era by a Grey Correlation Degree based Decision Tree Algorithm ................................................................. 1453
Wenping Wang, Xinhuan Huang, Wenzheng Wang

Method of Multi-Attribute Decision Analysis based on Rough Sets Dealing with Grey Information ... 1457
Mingli Hu, Feifei Shen, Yahuan Chen, Junjie Wang

Maturity Model of the Integration of Information Technology and Industrialization based on Grey Clustering ................................................................. 1463
Lei Yang, Chuanmin Mi, Jiajia Jin, Sifeng Liu, Tingting Ma

Relational Analysis between Regional Scientific and Technological Strength and Modern Service Industry in Nanjing based on Grey Advantage Analysis ........................................ 1469
Qian Wu-yong, Dang Yaoguo, Li Xuemei, Lin Chenyu

Session T.SPS.A12: Wavelet, Multiresolution, Biometrics and Pattern Recognition

Identification of Time Variant Neuromuscular Admittance using Wavelets ........................................ 1474
Mark Mulder, Tom Verspecht, David A. Abbink, Marinus M. van Paassen, David C. Balderas S., Alfred Schouten, Erwin de Vlugt, Max Mulder

Spoken Arabic Digits Recognition based on Wavelet Neural Networks ............................................. 1481
Xiaohui Hu, Lvjun Zhan, Yun Xue, WeiXing Zhou, Liangjun Zhang

Instantaneous Frequencies of Simple Waves and Their Application to Sleep Spindle Detection ........ 1486
Liming Zhang, Hong Li, Yantao Wei

Scale Estimate of Self-Organizing Map for Color Image Segmentation ............................................ 1491
Haifeng Sima, Ping Guo, Lixiong Liu

Color Image Enhancement Algorithms based on the DCT Domain ................................................... 1496
Junjun Xia, Karen Panetta, Sos Agaian

Session T.SYS.B01: Humanoid Robot and Redundant Manipulator Control

Implementation of a Trajectory Library Approach to Controlling Humanoid Standing Balance .......... 1502
Chenggang Liu, Jianbo Su

LMI based Physiological Cost Optimization for Biomechanical STS Transfer ................................... 1508
Asif Mughal, Sunbal Perviaz, Kamran Iqbal

Walking Controllers under Perturbations ......................................................................................... 1514
Dengpeng Xing, Jianbo Su
Examples of Spatial Positioning Redundant Robotic Manipulators that are Optimally Fault Tolerant

Khaled Ben-Gharbia, Anthony Maciejewski, Rodney Roberts

A Class of Optimal Fault Tolerant Jacobian for Minimal Redundant Manipulators based on Symmetric Geometries

Hamid Abdi, Saeid Nahavandi, Yakov Frayman

Session T.SYS.B02: Industrial Applications

Bifurcation Analysis of a Centrifugal Compressor

Der-Cherng Liaw, Shih-Tse Chang

Application Oriented Data Cleaning for RFID Middleware

Chunkai Zhang, Yuan Li, Yan Chen

Application of Taguchi Method to Robust Multi-Criteria Optimum Design for Ultra-Thin Centrifugal Fan

Kuang-Hung Hsien, Shyh-Chour Huang

Application to Harmony Search to Container Storage Location

Imen Ayachi, Ryan Kammarti, Mekki Ksouri, Pierre Borne

Magnetic Pole Shape Optimization for Motor using Integrated Optimization with Constraints

Takahiro Kosuge, Keiichiro Yasuda, Junichi Tsuchiya

The Estimation of the State of Charge for Lithium-Ion Battery by Fuzzy C-Regression Model (FCRM) Clustering Algorithm

Chung-Chun Kung, Shuo-Chieh Chang

Session T.SYS.B03: System Modeling and Control

System Forecast using a Case-Based Reasoning Methodology

Guilherme Rocha, Karl Kienitz

Textile Plant Modeling using Recurrent Neural Networks

Lotfi Hamrouni, Monji Kherallah, Adel Alimi

Identification of Quasi-ARX Neurofuzzy Model by using SVR-Based Approach with Input Selection

Yu Cheng, Lan Wang, Jing Zeng, Jinglu Hu

Switched Bond Graph Determination of Controllability Subspaces for Pole Assignment

Hicham Hihi

Strong Reduction in Fuel Consumption Driving Trains in Bi-Directional Single Line using Crossing Loops

Osmar Dordal, André Borges, Richardson Ribeiro, Fabrício Enembreck, Edson Scalabrini, Bráulio Ávila
Adaptive Hypersonic Flight Control via Back-Stepping and Kriging Estimation .............................................. 1603
Bin Xu, Fuchun Sun, Shixing Wang, Hao Wu

Session T.HMS.B04: Human-Machine Systems Design

Including Collective Intelligence in Human-Machine Interactive Decision-Making under Time Constraints ................................................................. 1609
Hideyasu Sasaki

Elena Dalinger, Daniel Ley

Hardware/Software Co-Design for Fast-Trainable Speaker Identification System based on SMO .......... 1621
Jhing-Fa Wang, Jr-Shiang Peng, Jia-Ching Wang, Po-Chuan Lin, Ta-Wen Kuan

Modeling and Analyzing Agents' Collective Options in Collaborative Decision Making Situations using the Constrained Rationality Framework ....................................................... 1626
Majed Al-Shawa

Evaluation of Gyroscope-Embedded Mobile Phones .................................................................................. 1632
Christopher Barthold, Kalyan Pathapati Subbu, Ram Dantu

Indoor Localization through Dynamic Time Warping ................................................................................ 1639
Kalyan Pathapati Subbu, Brandon Gozick, Ram Dantu

Session T.HMS.B05: Human-Centered Transportation Systems Applications I

Driver Verification based on Handgrip Recognition on Steering Wheel ................................................. 1645
Ronghua Chen, Mary She, Jin Wang, Xiangping Sun, Lingxue Kong

Measurements of Muscle use during Steering Wheel Manipulation ....................................................... 1652
David A. Abbink, Mark Mulder, Marinus M. van Paassen

Is Grip Strength Related to Neuromuscular Admittance during Steering Wheel Control? ...................... 1658
Hiroki Nakamura, David Abbink, Mark Mulder

Sternocleidomastoid Muscle Activity in Keeping the Head Stable while Slalom Driving .......................... 1664
Rencheng Zheng, Kimihiko Nakano, Yuji Okamoto, Masanori Ohori, Shigeyuki Hori, Yoshihiro Suda

Cancelling Biodynamic Feedthrough requires a Subject and Task Dependent Approach ....................... 1670
Joost Venrooij, Mark Mulder, Marinus M. van Paassen, David A. Abbink, Heinrich H. Bülthoff, Max Mulder

Bayesian Modeling of Pilot Belief and Visual Misperception in Helicopter Overland Navigation .............. 1676
Ji Hyun Yang, Quinn Kennedy, Joseph Sullivan, Michael Day

Session T.CYB.B06: Machine Vision and Image Processing I

DifFocus: An Approach for Image Segmentation ....................................................................................... 1682
Diogo C. Costa, Ing R. Tsang, Carlos A.B. Mello
A Soft Unsupervised Two-Phase Image Segmentation Model based on Global Probability Density Functions
Vinicius R. Pereira Borges, Marcos A. Batista, Celia A. Zorzo Barcelos

Weighted Variational Two-Phase Image Segmentation based on Fuzzy Region Competition
Vinicius R.P. Borges, Marcos Aurelio Batista, Celia A.Z. Barcelos, Denise Guliato

Vision based 3-D Position Control for a Robot Arm
Cheng-Hao Huang, Chi-Sheng Hsu, Po-Chien Tsai, Rong-Jyue Wang, Wen-June Wang

Identification of Artifacts in Scenery Images using Color and Line Information by RBF Network – Segmentation by K-Means Algorithm and Edge Information
Yuta Sakashita, Yuko Osana

Similarity-Based Image Retrieval Considering Artifacts by Self-Organizing Map with Refractoriness – Image Segmentation by K-Means Algorithm
Shohei Hayasida, Yuko Osana

Session T.CYB.B07: Pattern Recognition II

Integrated Image Enhancement Method for Biometric Security
Kashif Iqbal, Michael O. Odetayo, Anne James

On Predictive Errors of SQL Injection Attack Detection by the Feature of the Single Character
Takeshi Matsuda, Daiki Koizumi, Michio Sonoda, Shigeichi Hirasawa

Joint Feature Selection and Hierarchical Classifier Design
Cecille Freeman, Dana Kulic, Otman Basir

Locally Induced Predictive Models
Ulf Johansson, Tuve Löfström, Cecilia Sönströd

A Proposal of Extended Cosine Measure for Distance Metric Learning in Text Classification
Kenta Mikawa, Takashi Ishida, Masayuki Goto

Self-Organizing Map based on Hausforff Distance for Interval-Valued Data
Chantal Hajjar, Hani Hamdan

Session T.CYB.B08: Advances in Soft Computing II

Basic Study of Proximate Optimality Principle based Combinatorial Optimization Method
Kouta Yaguchi, Kenichi Tamura, Keiichiro Yasuda, Atsushi Ishigame

Spiral Optimization – A New Multipoint Search Method
Kenichi Tamura, Keiichiro Yasuda

Constrained Optimization using the Quasi-Chaotic Optimization Method with the Exact Penalty Function and the Sequential Quadratic Programming
Takashi Okamoto, Hironori Hirata
Combining Interpretable Fuzzy Rule-Based Classifiers via Multi-Objective Hierarchical Evolutionary Algorithm
Jingjing Cao, Sam Kwong, Hanli Wang, Ke Li

A Novel Fuzzy Model for the Traffic Signal Control of Modern Roundabouts
Yue-jiao Gong, Jun Zhang, Ou Liu, Yi Liu

Global Optimization using Novel Randomly Adapting Particle Swarm Optimization Approach
Nai-Jen Li, Wen-June Wang, Chen-Chien Hsu

Session T.SPS.B09: Applications of Formal Methods to Human-Automation Interaction

Evaluating Human-Automation Interaction using Task Analytic Behavior Models, Strategic Knowledge-Based Erroneous Human Behavior Generation, and Model Checking
Matthew Bolton, Ellen Bass

HMI Aspects of Automotive Climate Control Systems
Asaf Degani, Andrew Gellatly, Michael Heymann

A Formal Framework for Design Analysis of Human-Machine Interaction
Sébastien Combéfis, Dimitra Giannakopoulou, Charles Pecheur, Michael Feary

Robustness for Protection Envelopes with Respect to Human Task Variation
Ayesha Yasmeen, Elsa Gunter

Toward a Multi-Method Approach to Formalizing Human-Automation Interaction and Human-Human Communications
Ellen Bass, Matthew Bolton, Karen Feigh, Dennis Griffith, Elsa Gunter, William Mansky, John Rushby

Automated Test Case Generation for an Autopilot Requirement Prototype
Dimitra Giannakopoulou, Neha Rungta, Michael Feary

Session T.SPS.B10: Innovations in Computation, Intelligent Learning and Granular Computing

Analysis of using RLS in Neural Fuzzy Systems
Jen-Wei Yeh, Shun-Feng Su

An Unified Intelligent Inference Framework for Complex Modeling and Classification
Geng Zhang, Han-Xiong Li

A Cyber-Physical Integrated Security Framework with Fuzzy Logic Assessment for Cultural Heritages
Yin-Jun Chen, Jia-Shing Shih, Sheng-Tzong Cheng

Designing and Analyzing Resource Allocation based on Grouped Grid Nodes
Chih-Ting Tsai, Huey-Ming Lee

A Dynamic Vertical Partitioning Approach for Distributed Database System
Lisbeth Rodriguez, Xiaou Li
C&C Tracer: Botnet Command and Control Behavior Tracing .............................................................. 1859
Meng-Han Tsai, Kai-Chi Chang, Chang-Cheng Lin, Ching-Hao Mao, Huey-Ming Lee

Session T.SPS.B11: Grey Systems: Theory and Applications II

Construction and Application of a New kind of Strengthening Buffer Operator Based on the Convex Function ......................................................................................................................... 1865
Peng Peng, Wei Yong

A Grey Measurement of Business Synergy ................................................................................................. 1870
Zhuo Zhang, Jun Jia, Naiming Xie

Artificial Neural Networks Prediction for Blood Concentration and Dosage of Cyclosporine A ....... 1875
Li Shan, Li Shan, Xia Jie

A New Grey Incidence Model of Interval Numbers and Its Application ......................................................... 1881
Zheng Qing-li, Guan Ye-qing

Advance in Grey Incidence Analysis Modelling ........................................................................................ 1886
Sifeng Liu, Hua Cai, Ying Cao, Yingjie Yang

The Study on Model of Functional Zero-Sum Game and its Solution based on Grey Information ..... 1891
Zhigeng Fang, Baohua Yang, Xi Feng, Yaping Li, Shawei He

Session T.SPS.B12: Collaborative Technologies and Applications

Knowledge Management Mechanism and System Supporting Overall E-Learning Lifecycle Process ... 1897
Wenan Tan, Guosheng Zhu, Chuanqun Jiang, Yi Du, Xiaoxia Cao

A Two-Stage Composite Heuristic for Dual Cycling Quay Crane Scheduling Problem ......................... 1902
Dandan Wang, Xiaoping Li, Qian Wang

Improving Information Exchanges among Cognitive Agents in Collaborative Environments .......... 1908
Jean-Paul Barthès

Bridging the Multiple Reality Gap: Application of Augmented Reality in New Product Development .... 1914
Anna Chatzimichali, Wim Gijselaers, Mien Segers, Hetty van Emmerik, Frido Smulders, Piet van den Bossche, Pieter P. Jonker, Jouke C. Verlinden

A Modular Method to Implement Multidisciplinary CAE Systems into a Distributed Simulation Environment ......................................................................................................................... 1920
Pengfei Cui, Heming Zhang, Chun Zhang, Hongwei Wang

Collaborative Narratives for Business Rule Elicitation ............................................................................. 1926
João Carlos de A.R. Gonçalves, Fernanda Baiao, Flavia Santoro

Session T.SYS.C01: Mobile Robot Control

A Robust Dynamic Leader-Follower Formation Control with Active Obstacle Avoidance ................. 1932
Mojtaba Naderi Soorki, Heidar Ali Talebi, Seyed Kamaloddin Nikravesh
Using Cyclic Genetic Algorithms to Learn Gaits for an Actual Quadruped Robot ................................. 1938
Gary Parker, William Tarimo

Fitness Biasing for the Box Pushing Task ......................................................................................... 1944
Gary Parker, Jim O'Connor

An Adjustable Force Field for Multiple Robot Mission and Path Planning ........................................... 1950
Hamid Abdi, Timothy Black, Saeid Nahavandi

Design and Preliminary Experiments of a Robot for Searching Interior of Rubble ............................ 1956
Lin Chen, Xingsong Wang, Jing Lu, W.L. Xu

Lyapunov Stability Study for a Special Actuated Holonomic Wheeled Mobile Robot ......................... 1962
Ahmed El-Shenawy, Achim Wagner, Amr Kandil, Essam Badreddin

Session T.SYS.C02: Wireless and Distributed Sensor Networks

Developments of Wireless Sensor System for Intersection Safety ..................................................... 1968
Shoma Hisaka, Shunsuke Kamijo

Shengwei Yu, C.S. George Lee, Jianghai Hu

Improving Node Localization in WSN by using Obstruction Level Indicator ...................................... 1981
Salvador Jauregui-Ortiz, Mario Siller, Felix Ramos, Edson Scalabrin

Compressive Sensing Indoor Localization ............................................................................................. 1986
Arash Tabibiazar, Otman Basir

Chatura Wickrema Seneviratne, Henry Leung

Toward an Evaluation Framework for Gap Filling Radars in Adaptive Distributed Sensor Networks ... 1998
Brendan Hogan, Ellen Bass

Session T.SYS.C03: Nonlinear Control Systems

A Class of Under-Actuated and Uncertain Nonlinear Dynamic Systems by Hybrid Neural-Based Variable Structure Control ................................................................. 2004
Chih-Lyang Hwang, Hsiu-Ming Wu

Observer-Based Adaptive Control for a Class of Nonlinear Chaotic Systems ..................................... 2011
Yan-Jun Liu, C.L. Philip Chen, Dong-Juan Li

Fault Tolerant Control of Satellite Formation Flying using Second Order Sliding Mode Control ..... 2015
Mehrdad Saïf, Behrouz Ebrahimi, Mehdi Vali

Sliding-Mode-Based Filtered Feedback Control Design for Active Suspension System ..................... 2021
Wen-Yen Hsiao, Hsin-Han Chiang, Tsu-Tian Lee
Stabilization of Large-Scale Fuzzy Systems with Time-Varying Interconnection .......................... 2027
Wei Chang, Wen-June Wang, Wen-Jer Chang

Self-Organizing Interval Type-2 Fuzzy Q-Learning for Reinforcement Fuzzy Control ....................... 2033
Chia-Hung Hsu, Chia-Feng Juang

Session T.HMS.C04: Gesture-Based Interaction and Semiotics

A Gesture Driven Robotic Scrub Nurse .......................................................................................................... 2039
Mithun George Jacob, Yu-Ting Li, Juan P. Wachs

How Important are Hand Images for Conveying Gestures in Virtual Design Tasks? ...................... 2045
Caroline J. Cornelius, Caroline C. Hayes

Haptic and Gesture-Based Interactions for Manipulating Geological Datasets ......................................................... 2051
Bob Menelas, Yaoping Hu, Herve Lahamy, Derek Lichti

The Command Control by Hand Gesture with Hu and Contour Sequence
Moments and Probability Neural Network ........................................................................................................... 2056
Chih-Lyang Hwang, Hai-Wu Lee

An Information Delivery System for Visually Impaired People in Dynamic Environment .................. 2062
Donghun Kim, Yudaya Sivathanu

Designing Interfaces for Robot Control based on Semiotic Engineering .................................................... 2068
Luis Felipe Hussin Bento, Raquel Oliveira Prates, Luiz Chaimowicz

Session T.HMS.C05: Human-Centered Transportation Systems Applications II

Aircraft States and their Impact on Pilot Gaze Behavior ................................................................................. 2076
Meike Jipp, Uwe Teegen, Kazuhiro Hazama, Tetsuo Sawaragi

A Task-Based Reach-Zone Analysis of the Orion Crew Exploration Vehicle Controls ....................... 2082
Michael C. Dorneich, Christopher Hamblin, Robert DeMers, Olu Olofinboba

A Large-Scale LED Array to Support Anticipatory Driving .......................................................................... 2087
Florian Laquai, Fabian Chowanetz, Gerhard Rigoll

A Review of Visual Driver Models for System Identification Purposes ......................................................... 2093
Jelmer Steen, Herman J. Damveld, Riender Happee, Marinus M. van Paassen, Max Mulder

Ecological Interface Design and its Application to Total Airport Management ......................................... 2101
Meike Jipp, Meilin Schaper, Yves Guenther, Anne Papenfuss

Analysis of Influencing Factors in the Model of Erroneous Action:
Computer-Based Method and Algorithms ........................................................................................................ 2107
Alexander M. Yemelyanov
Session T.CYB.C06: Evolving Intelligent Systems and Learning

A Novel Method for Solving Min-Max Problems by using a Modified Particle Swarm Optimization .......................... 2113
Kazuaki Masuda, Kenzo Kurihara, Eitaro Aiyoshi

Neuro-Fuzzy Inference System (ASuPFuNIS) Model for Intervention Time Series Prediction of Electricity Prices ................................................................. 2121
Apurva Narayan, Keith Hipel, Kumarswamy Ponnambalam, Sandeep Paul

Feature and Instances Selection via Cooperative PSO .............................................................. 2127
S. Sharifah S. Sakinah, Witold Pedrycz

Improved Group Search Optimizer based on Cooperation Among Groups for Feedforward Networks Training with Weight Decay .................................................. 2133
Danielle N.G. Silva, Luaino D.S. Pacifico, Teresa B. Ludermir

An Overview over Recent Advances and Future Directions of the Theory of Structured Intelligence ................................................................. 2139
Martin Wolf, Meike Jipp, Sebastian Kloess, Essameddin Badreddin

Reinforcement Learning with Nonstationary Reward Depending on the Episode ................................................... 2145
Takeshi Shibuya, Seiji Yasunobu

Session T.CYB.C07: Advances in Machine Learning II

The use of Artificial Neural Networks in the Analysis and Prediction of Stock Prices ........................................... 2151
Fagner Andrade de Oliveira, Luis Enrique Zárate,, Cristiane Neri Nobre, Marcos de Azevedo Reis

A Study of Crossover Operators and Reference Set Sizes for Scatter Search in Unconstrained Function Optimization .............................................................. 2156
Ticiano Torres Peralta, Ferat Sahin

An Improved Random Walk based Clustering Algorithm for Community Detection in Complex Networks ................................................................. 2162
Bingjing Cai, Haiying Wang, Huiru Zheng, Hui Wang

Detection of Internet Scam using Logistic Regression .............................................................. 2168
Mehrbod Sharifi, Eugene Fink, Jaime G. Carbonell

Swarm Reinforcement Learning Methods for Problems with Continuous State-Action Space ............... 2173
Hitoshi Iima, Yasuaki Kuroe, Kazuo Emoto

A Note on the Degrees of Freedom in an Experimental Design Model based on an Orthonormal System ................................................................. 2181
Yoshifumi Ukita, Toshiyasu Matsushima, Shigeichi Hirasawa

Session T.CYB.08: Intelligent Vehicle Systems

Suspicious Event Recognition using Infrared Imagery ........................................................................... 2186
Henrique C. Fernandes, Xavier Maldague, Marcos A. Batista, Celia A.Z. Barcelos
Blob Extraction based Character Segmentation Method for Automatic License Plate Recognition System ................................................................. 2192
Youngwoo Yoon, Kyu-Dae Ban, Hosub Yoon, Jaehong Kim

Dynamic Traffic Management Model for Real World Road Networks ................................................................. 2197
Shanqing Yu, Shingo Mabu, Manoj Kanta Mainali, Kaoru Shimada, Kotaro Hirasawa

Traffic Prediction using Time Related Association Rules and Vehicle Routing ................................................................. 2203
Huiyu Zhou, Shingo Mabu, Kaoru Shimada, Kotaro Hirasawa

Sensor Fusion Design for Navigation and Control of an Autonomous Vehicle ................................................................. 2209
Ming-Han Lee, Yu-Jen Chen, Tuzz-Hseng S. Li

A Bayesian Regularized Neural Network Approach to Short-Term Traffic Speed Prediction ................................................................. 2215
Chenye Qiu, Chunlu Wang, Xingquan Zuo, Binxing Fang

Session T.SPS.C09: Nature-Inspired Algorithm Applications and Evolving Systems

An Algorithm for Detecting Overlapping Community Structure in Complex Networks ................................................................. 2221
Sen Wu, Yue Huang, Deying Xiong, Guiying Wei, Xuedong Gao

Lecture Concepts based Item Classification for Remedial ................................................................................................. 2227
Po-Jen Chuang, Ming-Cho Chang, Chun-Wei Tsai, Chu-Sing Yang

Diversity Improvement of Solutions in Multiobjective Genetic Algorithms using Pseudo Function Inverses ................................................................. 2232
Awhan Patnaik, Laxmidhar Behera

GA-Based Item Partition for Data Mining ................................................................................................................................. 2238
Tzung-Pei Hong, Jheng-Nan Huang, Wen-Yang Lin, Ming-Chao Chiang

Fuzzy Genetic Network Programming with Reinforcement Learning for Mobile Robot Navigation ................................................................. 2243
Siti Sendari, Shingo Mabu, Kotaro Hirasawa

Simpl_eClass: Simplified Potential-Free Evolving Fuzzy Rule-Based Classifiers ................................................................................................. 2249
Rashmi Dutta Baruah, Plamen Angelov, Javier Andreu

Session T.SPS.C10: Intelligent Learning in Control Systems

Intelligent Adaptive Trajectory Tracking Control using Fuzzy Basis Function Networks for an Autonomous Small-Scale Helicopter ................................................................. 2255
Ching-Chih Tsai, Chi-Tai Lee

Adaptive Fourier Compensator Design for a Sliding Decoupling Control System ................................................................. 2261
Yao-Chu Hsueh, Shun-Feng Su, Yi-Sheng Huang

Intelligent Motion Controller Design for Four-Wheeled Omnidirectional Mobile Robots using Hybrid GA-PSO Algorithm ................................................................. 2267
Hsu-Chih Huang
Self-Organizing Fuzzy Neural Network Controller Design ................................................................. 2273
Ming-Hung Chang, Hung-Ching Lu

CMAC Neural Network Application for Induction Motor Drives ......................................................... 2279
Cheng-Hung Tsai, Hung-Ching Lu

Genetic Fuzzy System for Servo Motors with a Buck Converter ......................................................... 2285

Session T.SPS.C11: Innovations in Computation and Application

An Automatic System for ECG Arrhythmias Classification ................................................................. 2290
Shing-Hong Liu, Kang-Ming Chang, Jia-Jung Wang

Indoor Position Location based on Cascade Correlation Networks .................................................... 2295
Rung-Ching Chen, Yu-Cheng Lin, Yu-Shuang Lin

A New Method for Fuzzy Forecasting based on Two-Factors High-Order Fuzzy-Trend Logical Relationship Groups and Particle Swarm Optimization Techniques .............................................. 2301
Shyi-Ming Chen, Gandhi Maruli Tua Manalu

A New Method for Fuzzy Risk Analysis based on Ranking Generalized Fuzzy Numbers with Different Left Heights and Right Heights ............................................................... 2307
Shyi-Ming Chen, Abdul Munif

An Efficient Algorithm for Static Task Scheduling in Parallel Applications ....................................... 2313
Renata Carvalho, Ricardo Lima, Adriano Oliveira

Reversible Digital Image Hiding based on Multilevel Histogram Modification and Halftoning Technique ........................................................................................................... 2319
Ching-Tang Hsieh, Kuo-Ming Hung, Cheng-Hsiang Yeh, Li-Ming Chen

Session T.SPS.C12: Granular Computing

A Lattice-Based Data Sanitization Approach ......................................................................................... 2325
Tzung-Pei Hong, Chun-Wei Lin, Kuo-Tung Yang, Shyue-Liang Wang

Processing Interval Sensor Data in the Presence of Outliers, with Potential Applications to Localizing Underwater Robots ................................................................. 2330
Jan Sliwka, Luc Jaulin, Martine Ceberio, Vladik Kreinovich

Improving Forecast Accuracy by Granular Computing Method .......................................................... 2338
Fengming Chang

An OpenCL Candidate Slicing Frequent Pattern Mining Algorithm on Graphic Processing Units .... 2344
Che-Yu Lin, Jiayi Zhou, Kun-Ming Yu

Temporal Data Mining in History Data of Hospital Information Systems ............................................ 2350
Shusaku Tsumoto
A Knowledge-Based Decision System for Healthcare Diagnosis and Advisory ........................................... 2357
Ping-Tsai Chung, Bing-Xing Chen

Session W.SYS.A01: Robot and Unmanned Vehicle Localization and Control

Urban Localization Method for Mobile Robots based on Dead Reckoning Sensors, GPS, and Map Matching .......................................................................................................................... 2363
Yu-Cheol Lee, Christiand Christiand, Wonpil Yu, Sungmoon Kim

Selection of Polygon Sets for 6DOF Localisation of Autonomous Vehicles ................................................................. 2369
Simon Thompson, Satoshi Kagami, Masafumi Okajima

Hierarchical Localization using Compact Hybrid Mapping for Large-Scale Unstructured Environments ......................................................................................................................... 2375
Sherine Rady, Achim Wagner, Essameddin Badreddin

Agile Unmanned Vehicle Navigation in Highly Confined Environments .............................................................. 2381
Frank Jansen, Alejandro Ramirez-Serrano

A Simulation Study of a Helicopter in Hover Subjected to Air Blasts ........................................................................ 2387
Dariusz Krol, Jaroslaw Golaszewski

Session W.SYS.A02: Multi-Agent and Distributed Systems

A Model for Estimating the Performance of a Team of Agents ......................................................................................... 2393
Farzad Kamrani, Rassul Ayani, Farshad Moradi

Using Rendezvous to Overcome Communication Limitations in Multirobot Exploration ........................................... 2401
Briana Wellman, Shameka Dawson, Julian deHoog, Monica Anderson

Detecting Emergent Behavior in Distributed Systems using an Ontology based Methodology .................................. 2407
Mohammad Moshinpour, Reda Alhajj, Mahmood Moussavi, Behrouz Far

FRIEND: A Human-Aware BDI Agent Architecture ....................................................................................................... 2413
Alexis Morris, Mihaela Ulieru

Session W.SYS.A03: Computer Systems and Software Engineering

Multicore Memory Subsystem Aspects and its Influence on the Performance of Modern VMMs ........................................... 2419
Diego Pagliarini Vivencio, Luis Carlos Trevelin

An IFTr Approach to Approximate XML Query Matching ........................................................................................... 2425
Mohammedsharaf Alzebdi, Panagiotis Chountas, Krassimir Atanassov

An Experimental Study on User-Level Memory Allocators in Middleware Applications .............................................. 2431
Rivalino Matias, Jr., Tais Borges Ferreira, Autran Macedo

Disk Allocation Methods for Cartesian Product Files using Unequal Error Protection Codes ........................................... 2437
Tomohiko Saito, Hiroshige Inazumi, Tosiyasu Matsushima, Shigeichi Hirasawa
System Evaluation of Disk Allocation Methods for Cartesian Product Files by using Error Correcting Codes .......................................................... 2443
Shigeichi Hirasawa, Tomohiko Saito, Hiroshige Inazumi, Toshiyasu Matsushima

Session W.HMS.A04: Cognitive Computing

Human Action Recognition based on Pyramid Histogram of Oriented Gradients ........................................... 2449
Jin Wang, Ping Liu, Mary F.H. She, Abbas Kouzani, Saeid Nahavandi

Interface Design of a Central Monitoring Device taking Cognitive Aging into Account ............................. 2455
Keiji Ogata, Satoru Suto, Takatsune Kumada, Katsumi Watanabe, Toru Ifukube

Behavior Selection Method for Intelligent Artificial Creatures using the Degree of Consideration-Based Mechanism of Thought .......................................................... 2461
Woo-Ri Ko, Hye-Sun Hyun, Hyun-Jin Kim, Seung-Hwan Choi, Jong-Hwan Kim

Learning by Multiple Human Agents to Perform a Cooperative Control Task ........................................ 2468
Won-jun Hong, Sung-Phil Kim

An Investigation of Spatial Behavior in Agile Guidance Tasks ................................................................. 2473
Zhaodan Kong, Bernie Mettler

Session W.HMS.A05: Social Robotics and Robot Learning

I’ll keep an Eye on You: Home Robot Companion for Elderly People with Cognitive Impairment .... 2481
Horst-Michael Gross, Christof Schroeter, Steffen Mueller, Michael Volkhardt, Erik Einhorn, Andreas Bley,
Tim Langner, Christian Martin, Matthias Merten

Secret-Sharing: Interactions Between a Child, Robot, and Adult ................................................................. 2489
Cindy L. Bethel, Matthew R. Stevenson, Brian Scassellati

A Comparison of Two Algorithms for Robot Learning from Demonstration ........................................... 2495
Halit Bener Suay, Sonia Chernova

A Computational Framework for Integrating Robotic Exploration and Human Demonstration in Imitation Learning ................................................................. 2501
Huan Tan, Kazuhiko Kawamura

A Fast Learning Neural Network for Oriented Visual Place Map based Robot Navigation .............. 2507
Abhik Datta, Kin-Choong Yow

Session W.CYB.A06: Pattern Recognition III

Predicting Software Defects: A Cost-Sensitive Approach ................................................................. 2515
Miguel E.R. Bezerra, Adriano L.I. Oliveira, Paulo J.L. Adeodato

A Multi-Layer Perceptron Approach to Threshold Documents with Complex Background ............ 2523
Juliano C.B. Rabelo, Byron L.D. Bezerra, Cleber Zanchettin, Carlos A.B. Mello
Correlation Cluster Validity ................................................................. 2531
Mihail Popescu, James M. Keller, James C. Bezdek, Timothy Havens

Depth Image based Analysis of Facial Expressions and Head Orientation ........................................... 2537
Takashi Isezaki, Kenji Suzuki

Adaptive Tiled Neural Networks .......................................................... 2543
Mohammad Nokhbeh-Zaeem, Daniel Khashabi, Heidar Ali Talebi, Shiva Navabi, Faramarz Vaziri

Session W.CYB.A07: Evolving Intelligent Systems

Handwriting Prediction based Character Recognition using Recurrent Neural Network .............................. 2549
Shun Nishide, Jun Tani, Hiroshi G. Okuno, Tetsuya Ogata

Identification of Discrete Reverse-Action Pairs using Reversibility of Continuous Actions ....................... 2555
Yuri Gavshin, Maarja Kruusmaa

Investigating the Effects of Learning Speeds on Xpilot Agent Evolution .............................................. 2561
Gary Parker, Phil Fritzsche

Reinforcement Field .............................................................................. 2567
Po-Hsiang Chiu, Manfred Huber

Generalized Reinforcement Learning with Concept-Driven Abstract Actions ....................................... 2575
Po-Hsiang Chiu, Manfred Huber

Session W.CYB.A08: Natural Language Processing and Awareness Computing

Document Sentences as a Small World .................................................. 2583
Helen Balinsky, Alexander Balinsky, Steven Simske

Determining Negation Scope and Strength in Sentiment Analysis ...................................................... 2589
Alexander Hogenboom, Paul van Iterson, Bas Heerschop, Flavius Frasincar, Uzay Kaymak

Linguistic Summarization of Sensor Data for Eldercare ................................................................. 2595
Anna Wilbik, James M. Keller, Gregory Lynn Alexander

A Framework for Designing Flexible Systems ........................................................................... 2600
Vanía P. Almeida Neris, M. Cecília C. Baranauskas

On the Monitoring of System-Level Energy Consumption of Battery-Powered Embedded Systems ... 2608
Arliones Hoeller, Jr., Antônio Augusto Fröhlich

Session W.SPS.A09: Collaborative Wireless Sensor Networks I

Collaborative Wireless Sensor Networks: A Survey ........................................................................ 2614
Wenfeng Li, Junrong Bao, Weiming Shen
Consensus Algorithm for Energy Consumption of Wireless Sensor Networks ........................................ 2620
Dong Wentao, Li Wenfeng, Zhang Fan

A Service-Oriented System Integration Framework for Community-Based Independent Living Spaces ................................................................. 2626
Weiming Shen, Yunjiao Xue, Qi Hao, Henry Xue, Fujun Yang

J. Guadalupe Olascuaga-Cabrera, Ernesto Lopez-Mellado, Andres Mendez-Vazquez

WSN-Based Real Time Data Collection in Independent Living Spaces .................................................. 2640
Fujun Yang, Henry Xue, Weiming Shen, Yunjiao Xue, Qi Hao

Session W.SPS.A10: System Safety and Security

A New Identity-Based Threshold Ring Signature Scheme ............................................................................. 2646
Feng Xu, Xin Lv

A Secure and Distributed Control Network for the Communications in Smart Grid ........................................ 2652
Ziyuan Cai, Yizhou Dong, Ming Yu, Mischa Steurer

Modeling and Simulation of the Communication Networks in Smart Grid ........................................ 2658
Yizhou Dong, Ziyuan Cai, Ming Yu, Mischa Steurer

A Practical Strategy for Securing Automated Traffic Control Systems ................................................. 2664
Tim Walton, Ming Yu

An Efficient Strategy to Detect Outlier Transactions for Knowledge Mining ........................................ 2670
Li-Jen Kao, Yo-Ping Huang

Session W.SPS.A11: Information Technologies for Anti-Terrorism Applications I

A Novel Information Entropy based Randomness Test for Image Encryption ........................................... 2676
Yue Wu, Joseph Noonan, Sos Agaian

An Enhanced Empirical Mode Decomposition based Method for Image Enhancement ......................... 2681
Somayeh Bakhtiari, Sos Agaian, Mo Jamshidi

Human Visual System-Based Image Fusion for Surveillance Applications ........................................... 2687
Shahan Nercessian, Karen Panetta, Sos Agaian

Improved Local Binary Patterns for Classification of Mass in Mammography .................................... 2692
J. Liu, X Liu, J Tang, J. Chen

Gleason Grade-Based Automatic Classification of Prostate Cancer Pathological Images .................... 2696
Ali Almuntashri, Sos Agaian, Ian Thompson, Danny Rabah, Osman Zeinalabdeen, Marlo Nicolas
Session W.SPS.A12: Conflict Resolution I

Majority Decision Making and the Graph Model for Conflict Resolution .................................................. 2702
Takehiro Inohara

GIS-Based Multiple Criteria Classification for Emergency Management Assessment .................................. 2708
Ye Chen, Kevin W. Li, Shengbin Liu

Analyses on Duopoly Vendors in a Small-Open City ........................................................................... 2714
Kei Fukuyama, Yusuke Sunano, Jun Kimura, Yuki Ikeda

Decision Support System based on Matrix Representation for Conflict Resolution .................................. 2720
Ju Jiang, Yazhuo Fan, Junjie Xin, Haiyan Xu

An Algebraic Approach to Conflict Resolution with Hybrid Preference in Two Decision Maker Graph Models .............................................................. 2725
Haiyan Xu, Nan Li, Xueshan Han, Ping Zhang

Session W.SYS.B01: Cyber-Physical Social and Security Systems

Toward Identification of Key Breakers in Social Cyber Physical Networks .............................................. 2731
Rattikorn Hewett

Cyber-Physical Systems based Modeling of Adaptation Intelligence in Network Systems .......................... 2737
Kaliappa Ravindran, Mohammad Rabby

An Active DES Framework to Intrusion Detection System for ARP Spoofing .......................................... 2743
Ferdous Barbhuiya, Santosh Biswas, Sukumar Nandi

Gaze-Based Password Authentication through Automatic Clustering of Gaze Points .............................. 2749
Justin Weaver, Kenrick Mock, Bogdan Hoanca

Calculating the Strength of Ties of a Social Network in a Semantic Search System using Hidden Markov Models ........................................................................................................... 2755
Shimaa El-Sherif, Armin Eberlein, Behrouz Far

Ensemble Creation and Reconfiguration for Activity Recognition: An Information Theoretic Approach ................................................................................................................................. 2761
Ricardo Chavarriaga, Hesam Sagha, José del R. Millán

Session W.SYS.B02: Intelligent Transportation Systems

Intelligent Urban Traffic: A Guide through Micro Modelling Approaches ............................................ 2767
Ana Luísa Ramos, José Vasconcelos Ferreira, Jaume Barceló

A Fast Path Planning Algorithm for Route Guidance System .......................................................... 2773
Mortaza Zolfpour Arokhlo, Ali Selamat, Siti Zaiton Hashim, Md Hafiz Selamat

Hierarchical Efficient Route Planning in Road Networks ........................................................................ 2779
Manoj Kanta Mainali, Shingo Mabu, Kotaro Hirasawa
Computing Optimal Snowplow Route Plans using Genetic Algorithms .............................................. 2785
T.M. Rao, Sandeep Mitra, James Zollweg, Ferat Sahin

Snow-Plow Route Planning using AI Search .................................................................................. 2791
T.M. Rao, Sandeep Mitra, James Zollweg

Distributed Architecture for a Co-Modal Transport System ....................................................... 2797
Karama Jeribi, Hayfa Zgaya, Nesrine Zoghlami, Slim Hammadi

Session W.HMS.B03: Human-Automation Interaction

Computing Observable and Predictable Subspaces to Evaluate User-Interfaces of LTI Systems under Shared Control .......................................................... 2803
Neda Eskandari, Meeko M.K. Oishi

A Method for Investigating Real-time Distributed Weather Forecaster-Emergency Manager Interaction ................................................................. 2809
Ellen J. Bass, Brendan Hogan, Don Rude, Brenda Philips, David Westbrook, Cedar League,
Jerry Brotzge, Patrick Marsh, Rachel Riley, Les Lemon

Automated WIMP-UI Behavior Generation: Parallelism and Granularity of Communication Units ................................................................. 2816
David Raneburger, Roman Popp, Hermann Kaindl, Jürgen Falb

A Model for Mobile Content Filtering on Non-Interactive Recommendation Systems .................... 2822
Worapat Paireekreng, Kok Wai Wong, Chun Che Fung

Monitoring Principles in Aviation and the Importance of Operator-Redundancy ................................. 2828
Christoph Moehlenbrink, Matthias Wies, Meike Jipp

Cumulative vs. Local Models of Operator Utilization describing an Air Traffic Control Task .......... 2836
Pei-Ju Lee, Andreas Kolling, Huadong Wang, Shih-Yi Chien, Michael Lewis

Session W.HMS.B04: Haptics and Human-Robot Interaction

A Comparative Study of Supervised Learning Techniques for Data-Driven Haptic Simulation .......... 2842
Wael Abdelrahman, Sara Farag, Saeid Nahavandi, Douglas Creighton

Distinguishability of Periodic Haptic Stimuli in the Frequency Domain ............................................. 2847
Christopher G. Millette, Yaoping Hu

Comparing Input Error for Mouse and Touch Input ....................................................................... 2853
Eli R. Hooten, Julie A. Adams

Toward Human Interaction with Bio-Inspired Robot Teams .......................................................... 2859
Michael A. Goodrich, P.B. Sujit, Brian Pendelton, Jose Pinto

SUAVE: Integrating UAV Video using a 3D Model ......................................................................... 2865
Shafiq Abedin, Michael Lewis, Nathan Brooks, Sean Owens, Paul Scerri, Huadong Wang, Katia Sycara
Human Exploration Patterns in Unknown, Time-Sensitive Environments .................................................. 2870
Phillip M. Walker, Andreas Kolling, Michael Lewis

Session W.HMS.B05: Smart Prosthetics for Rehabilitation and Teleoperation

Revolutionizing Prosthetics Software Technology .................................................................................................. 2877
Andrew Harris, Kapil Katyal, Matthew Para, Justin Thomas

Extension Motion Assistance for Upper Limb using Proxy-Based Sliding Mode Control .......................... 2885
Tatsuya Watanabe, Ken'ichi Yano, Takaaki Aoki, Yutaka Nishimoto

A Novel EMG-Driven State Space Model for the Estimation of Continuous Joint Movements .......... 2891
Qichuan Ding, Anbin Xiong, Xingang Zhao, Jianda Han

Modelling and Simulations of a Central Pattern Generator Controlled, Antagonistically Actuated Limb Joint ................................................................. 2898
Frazer K. Noble, Johan Potgieter, W.L. Xu

A Proposal of EMG-Based Teleoperation Interface for Distance Mobility ............................................ 2904
Yuma Sasaki, Toshiyuki Kondo

Active Surface Shaping for Artificial Skins ........................................................................................................ 2910
Hamid Abdi, Marzieh Asgari, Saeid Nahavandi

Session W.CYB.B06: Machine Vision and Image Processing II

Towards an Automatic Vehicle Access Control System: License Plate Location ................................. 2916
Pedro Ribeiro Mendes-Júnior, José Maria Ribeiro Neves, Andréa Iabrudi Tavares, David Menotti

Automatic Moving Object Detection using Motion and Color Features and Bi-Modal Gaussian Approximation ........................................................................ 2922
Victor Mejia, Eun-Young Kang

Quaternion Based Segmentation for Vanilla Recognition .............................................................................. 2928
Ted Shaneyfelt, Sos Agaian, Mo Jamshidi

A Local Thresholding Algorithm for Images of Handwritten Historical Documents .................................. 2934
Renata F.P. Neves, Carlos A.B. Mello

Improved CRT-Based DCT Domain Watermarking Technique with Robustness against JPEG Compression for Digital Media Authentication ........................................ 2940
Jagdish C. Patra, A. Krishna Kishore, Cedric Bornand

Efficient Contrast Enhancement using Adaptive Gamma Correction and Cumulative Intensity Distribution ........................................................................ 2946
Yi-Sheng Chiu, Fan-Chieh Cheng, Shih-Chia Huang
Session W.CYB.B07: Medical Informatics

Knowledge-Based Medical System Integration to Foster Knowledge Transfer and Network Building ................................................................. 2951
Fabian Merges, Alexander Holland, Sascha Schneider, Madjid Fathi

Applying MLP As a Predictor and ANFIS as a Classifier in Ischemia Detection via ECG ......................... 2958
Ali Emam, Hoda Tonekabonipour, Mohammad Teshnehlab

A Methodology for Empirical Analysis of Brain Connectivity through Graph Mining ......................... 2963
Jiang Bian, Josh M. Cisler, Mengjun Xie, George Andrew James, Remzi Seker, Clinton D. Kilts

Reproducibility and Variability of Default-Mode Networks from functional MRI: Comparison between Random- and Mixed-Effect Group Statistics .............................................. 2970
Yong-Hwan Kim, Jong-Hwan Lee

Reconstructing Anatomical Structures with Growing Self-Reconstruction Maps ........................................ 2976
Renata L.M.E. do Rego, Paulo H.M. Ferreira, Aluizio F.R. Araujo

A Simple Automatic Facial Aging/Rejuvenating Synthesis Method ......................................................... 2982
Ching-Tang Hsieh, Chia-Shing Hu, Chun-Wei Pan

Session W.CYB.B08: Knowledge-Based Systems

Incomplete Information and Bayesian Knowledge-Bases ........................................................................ 2989
Eugene Santos, Jr., Qi Gu, Eunice E. Santos

Integrated Engineering Processes in Virtual Product Definition ............................................................. 2996
László Horváth, Imre J. Rudas

Building Bayesian Network based Expert Systems from Rules .......................................................... 3002
Saravanan Thirumuruganathan, Manfred Huber

Modeling Complex Social Scenarios using Culturally Infused Social Networks ........................................ 3009
Eunice E. Santos, Eugene Santos, Jr., John T. Wilkinson, John Korah, Keunjoo Kim, Deqing Li, Fei Yu

Interval Belief Structure Rule-Based System using Extended Fuzzy Dempster-Shafer Inference ........ 3017
Farzad Aminravan, Mina Hoorfar, Rehan Sadiq, Manuel Rodriguez, Alex Fransicque, Homayoun Najjaran

Recognizing and Understanding Time-Terms in Communication ......................................................... 3023
Nathan Leach, Kam-Hoi Cheng

Session W.SPS.B09: Conflict Resolution II

Finding the Best Legal Governance Regime for the Caspian Sea through Multi-Criteria Decision-Making Methods ................................................................. 3029
Majid Sheikhmohammady, Kaveh Madani, Mojtaba Moradi, Iman Behmanesh

Integrating Web and Mobile Knowledge Management Tools to Improve Negotiations .......................... 3035
Sergio Assis Rodrigues, Tiago Santos Silva, Carlos Pivotto, Allan Girao, Jano Moreira de Souza, Evandro Rocha
Behavioral Aspects about Information Technology Negotiators .......................................................... 3041
Sergio Assis Rodrigues, Jano Souza

Modeling and Analysis of the Conflict over the Triple Islands in the Persian Gulf ................................. 3046
Majid Sheikhmohammady, Kaveh Madani, Aram Bahrini, Abbas Tahmasebi, Iman Behmanesh

Strategy, Attitudes and the Current Korean Conflict – Operations Research and Modern Warfare ..... 3051
Sean Bernath Walker, Keith Hipel

Analysis of Self-Evacuation to Rescuing Process under Survivability-Critical States in Underground Flooding by Vitae System based Agent Modeling and Simulation ........................................ 3056
Eishiro Higo, Norio Okada, Michinori Hatayama, Yuling Liu

Session W.SPS.B10: Computational Intelligence I

Correlated Structural Features and Their Applications to Exon Recognition in DNA Sequences ...... 3064
Yu Song, Hong Yan

Dilation-Erosion Perceptrons with Evolutionary Learning for Weather Forecasting ............................ 3070
Ricardo Araujo

Analysis of Nucleosome Structures based on Molecular Dynamics ..................................................... 3078
Debby Wang, Hong Yan

DoE applied to Two-Level Memory Hierarchies for Energy Consumption Reduction ........................ 3084
Abel Silva-Filho, Filipe Cordeiro

Clonal Selection based Artificial Immune System for Generalized Pattern Recognition ..................... 3090
Terry Huntsberger

How to Organize Data with Measurement Errors? .................................................................................. 3096
Yuhua Qian, Jiye Liang

Session W.SPS.B11: Recent Advances in Robotics I

An Experimental Study of Environmental Complexity as Seen by Robots ............................................. 3102
Gary Anderson, Gang Yang

Exploiting SLAM to Improve Feature Matching .................................................................................... 3107
Kiana Hajebi, Hong Zhang

A Geometric Approach to Visual Servo Control in the Absence of Reference Image .......................... 3113
Siddhartha Mehta, Jess Curtis

A Recursive Planar Feature Extraction Method for 3D Range Data Segmentation ............................... 3119
Guruprasad Hegde, Cang Ye

A Spatial-Spectral Classification Approach of Multispectral Data for Ground Perspective Materials .......................................................... 3125
Edmond DuPont, David Chambers, Joseph Alexander, Kevin Alley
Architecture and Applications of Language-Centered Intelligence for Unmanned Underwater Vehicles
Nicodemus Hallin, Hossein Taheri, Justin Horn, Michael O'Rourke, Dean Edwards

Session W.SPS.B12: Innovative Soft Computing Methodologies and Applications I

Recommendation System with Multi-Dimensional and Parallel-Case Four-Term Analogy
Takatoshi Sakaguchi, Yuya Akaho, Kazuhiro Okada, Torahiko Date, Tomohiro Takagi, Naoki Kamimaeda, Masanori Miyahara, Tomohiro Tsunoda

Interactive Multiobjective Random Fuzzy Programming Problems through the Possibility-Based Fractile Model
Hideki Katagiri, Masatoshi Sakawa, Takeshi Matsui

A Proposal of Interactive Growing Hierarchical SOM
Takumi Ichimura, Takashi Yamaguchi

Classification of EGC Output and Mental State Transition Network using Self Organizing Map
Kazuya Mera, Takumi Ichimura

Cartesian Ant Programming
Akira Hara, Manabu Watanabe, Tetsuyuki Takahama

New Edge Detection Algorithms using Alpha Weighted Quadratic Filter
Chen Gao, Karen Panetta, Sos Agaian

Session W.SYS.C01: Decision Making and Decision Support Systems

A Proposal for Structuring and Evaluating Problems for Participatory Decision Making in Sanitation Context
Natallya Levino, Danielle Morais

Selecting a Portfolio of Alternatives in Participatory Budgeting based on Multicriteria Method
Marcele Elisa Fontana, Danielle Costa Morais

A New Voting Procedure to Support Participatory Budgeting: An Approach based on the Fuzzy Social Choice
Vanessa Silva, Danielle Morais

Studies on an Effective Algorithm to Reduce the Decision Matrix – A Technique on a Rule Extraction by Rough Sets Theory
Tetsuro Saeki, Takurou Nishimura, Yuichi Kato

A Combination of Ranking Veto Concept and Distance Measures to Minimize Conflicts in a Group Decision Problem
Suzana Daher, Adiel Almeida

A Bilateral Negotiation Model for Supply Chain
José Leão, Danielle Morais
Session W.HMS.C02: Assistive Technology

A Medication Support System for an Elderly Person based on Intelligent Environment Technologies ................................................................. 3207
Takuo Suzuki, Yuta Jose, Yasushi Nakauchi

Context-Aware Reminder System to Support Medication Compliance ................................................................. 3213
Daisuke Asai, Jarrod Orszulak, Richard Myrick, Chaiwoo Lee, Joseph F. Coughlin, Olivier L. de Weck

Pelvic Motion Analysis for Gait Phase Estimation during Gait Training with Body Weight Support ................................................................. 3219
Takao Watanabe, Yo Kobayashi, Masakatsu G. Fujie

Connecting Visually-Impaired People to Friends through Wireless Sensor Networks ................................................................. 3224
Patricia Gilfeather-Crowley, Christopher Smith, Samuel Youtsey

Proficiency Evaluation of Three Japanese Input Methods using an Eye-Controlled Communication Device for Users with Disabilities ................................................................. 3230
Shinji Kotani, Hiromi Watanabe, Tetsu Komasaaki, Tsutomu Tanzawa, Kazuhiro Ohgi, Takahide Kenmotsu

Considerations on How Visualizing Biological Rhythm Entrainment Affects Children’s Listening Attitude ................................................................. 3236
Kosuke Omori, Kyoko Ito, Nobuchika Sakata, Satoshi Ohnishi, Shogo Nishida

Session W.HMS.C03: Human-Centered Design

Reinforcing Conceptual Engineering Design with a Hybrid Computer Vision, Machine Learning and Knowledge based System Framework ................................................................. 3242
Ioannis Kaloskampis, Yulia A. Hicks, David Marshall

Acquiring Cognition: Adding Human-Centered Design to Navy System Development ................................................................. 3250
Christopher Nemeth, Robert Strouse, Michelle TerMaath, C. Matthew O'Connor

Preferred Illuminance and Color Temperature in Creative Works ................................................................. 3255
Yuka Taniguchi, Mitsunori Miki, Tomoyuki Hiroyasu, Masato Yoshimi

Effect of Music and Induced Mental Load in Word Processing Task ................................................................. 3261
Xiaopeng Jiang, Arijit K. Sengupta

Task-Model based Assessment of Automation Levels: Application to Space Ground Segments ................................................................. 3267
Célia Martinie, Philippe Palanque, Martina Ragosta, Eric Barboni

Approximating Process Knowledge and Process Thinking: Acquiring Workflow Data by Domain Experts ................................................................. 3274
Daniel Ley

Session W.HMS.C04: Kansei Engineering and Affective Computing

Development of Kansei Estimation Models for the Sense of Presence in Audio-Visual Content ................................................................. 3280
Yuichiro Kinoshita, Kazutomo Fukue, Kenji Ozawa
Emotion Recognition in Polygons and Curved Shapes ................................................................. 3286
Rumi Hiraga

Feelings of Animacy and Pleasantness from Tactile Stimulation: Effect of Stimulus Frequency and Stimulated Body Part .............................................................................................................. 3292
Kohske Takahashi, Hideo Mitsuhashi, Kazuhiro Murata, Shin Norieda, Katsumi Watanabe

Basic Research on Facial Expression Recognition Model with Adaptive Learning Capability .......... 3298
Masaki Ishii

Early Facial Expression Recognition with High-Frame Rate 3D Sensing ....................................... 3304
Lu Mei Su, Shiro Kumano, Kazuhiro Otsuka, Dan Mikami, Junji Yamato, Yoichi Sato

Development of Automatic Filtering System for Individually Unpleasant Data Detected by Pupil-Size Change .......................................................................................................................... 3311
Koji Kashihara, Momoyo Ito, Minoru Fukumi

Session W.CYB.C05: Image and Signal Processing

A Geometrical Analysis of Buried Flat-Plates on Ground Penetrating Radar Images .................. 3317
Yoshihiko Nomura, Norihiko Kato, Yoichi Naganuma, Yoshikazu Sudo

Hideshi Tsubota, Satoshi Kagami, Hiroshi Mizoguchi

Wavelet Decomposition and Singular Spectrum Analysis for Electrical Signal Denoising ............ 3329
Marisa Figueiredo, Ana de Almeida, Bernardete Ribeiro

Compressive Sensing for Gauss-Gauss Detection ........................................................................ 3335
James Tucker, Nick Klausner

Autocorrelation Features for Synthetic Aperture Sonar Image Seabed Segmentation .................... 3341
James Cobb, Jose Principe

Metrics of the Laplace-Beltrami Eigenfunctions for 2D Shape Matching .................................... 3347
Jason Isaacs, Rodney Roberts

Session W.SPS.C06: Information Technologies for Anti-Terrorism Applications II

Suspicious User Tracking based on Web Data Analysis ............................................................... 3353
Zhaohong Qin, Xiaolong Zhang, Zong Huang, Na Zeng

Dynamic and Implicit Latin Square Doubly Stochastic S-Boxes with Reversibility .................... 3358
Yue Wu, Joseph Noonan, Sos Agaian

Human Body Pose Estimation based on Histograms of Oriented Gradients and Relevance Vector Machine ....................................................................................................................... 3365
Lin Deng, Min Jiang, Jinshan Tang
Cipherstream Covering for Secure Data Compression .......................................................... 3370
Richard Metzler, Sos Agaian

Latency Information Theory: Novel Lingerdynamics Ectropies are Revealed as Time Duals of Themodynamics Entropies .......................................................... 3378
Erlan H. Feria

A Multi-Stage Approach for Non-Cooperative Iris Recognition ........................................... 3386
Kai Yang, Eliza Du

Session W.SPS.C07: Knowledge Acquisition and Mining

Using Margin Information to Detect Regions of Interest in Images ........................................ 3392
Shang-Lin Hsieh, Yu-Jen Hsiao, Yi-Rung Huang

Applying Ontology to Geographical Scientific Data Extraction ............................................. 3397
Yue-Shan Chang, Hsiang-Tai Cheng

A Preliminary Study on Semi-Automatic Construction of Vietnamese Ontology ..................... 3403
Bao An Nguyen, Don-Lin Yang

A Study of Motion Recognition System using a Smart Phone .................................................. 3409
Hung-Chi Chu, Yuan-Chin Cheng

Investigate Partial CRC Characteristic and Performance for Real-Time Multimedia Streamings in 802.11 Wireless Mesh Networks ......................................................... 3415
Yue-Ru Chuang, Je-Wei Chen, Chia-Sheng Sheu

A Framework for the Expansion of Spatial Features based on Semantic Footprints .................. 3421
Raimundo Dos Santos, Arnold Boedihardjo, Chang-Tien Lu

Session W.SPS.C08: Collaborative Wireless Sensor Networks II

Collaborative Body Sensor Networks ....................................................................................... 3427
Antonio Augimeri, Giancarlo Fortino, Stefano Galzarano, Raffaele Gravina

Performance Analysis of Direct Data Domain Least Squares Approach for Beamforming .......... 3433
Nuri Yilmazer, Teniola Elufiede, Mayank Dobriyal

Collaborative Sensor Network Algorithm for Predicting the Spatiotemporal Evolution of Hazardous Phenomena ................................................................. 3439
Dimitris V. Manatakis, Elias S. Manolakos

Disseminating Shared Information in Disaster Relief Efforts: A Communication Computable Model ................................................................. 3446
Rodrigo Santos, Sergio F. Ochoa

Interference Impacts on ZigBee-Based Wireless Mesh Networks for Building Automation and Control ................................................................. 3452
Wenqi Guo, William M. Healy, MengChu Zhou
## Session W.SPS.C09: Conflict Resolution III

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disclosure Strategy for Critical Infrastructure under Common Knowledge of 'Naive Government'</td>
<td>3463</td>
</tr>
<tr>
<td>Mamoru Yoshida, Kiyoshi Kobayashi</td>
<td></td>
</tr>
<tr>
<td>A Method for Comparison of Coalition Influence on Social Choice Function</td>
<td>3471</td>
</tr>
<tr>
<td>Kentaro Kojima, Takehiro Inohara</td>
<td></td>
</tr>
<tr>
<td>A Support System for Multilateral Negotiations</td>
<td>3476</td>
</tr>
<tr>
<td>Majid Sheikhmohammady, D. Marc Kilgour, Keith W. Hipel</td>
<td></td>
</tr>
<tr>
<td>Fuzzy Preferences in the Sustainable Development Conflict</td>
<td>3483</td>
</tr>
<tr>
<td>M. Abul Bashar, Marc Kilgour, Keith Hipel</td>
<td></td>
</tr>
<tr>
<td>Consistent Measurement of Economic Losses of a Natural Disaster</td>
<td>3489</td>
</tr>
<tr>
<td>Considering the Effect of Change in Price</td>
<td></td>
</tr>
<tr>
<td>Kazuyoshi Nakano, Yoshio Kajitani, Hirokazu Tatano</td>
<td></td>
</tr>
<tr>
<td>Strategic Insights into the Bahrain Conflict</td>
<td>3495</td>
</tr>
<tr>
<td>Rami Kinsara, Keith Hipel, D. Marc Kilgour, Abdullah Aldamak, Liping Fang</td>
<td></td>
</tr>
</tbody>
</table>

## Session W.SPS.C10: Computational Intelligence II

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Comparative Experimental Study of Feature-Weight Learning Approaches</td>
<td>3500</td>
</tr>
<tr>
<td>Hong-Jie Xing, Xi-Zhao Wang, Ming-Hu Ha</td>
<td></td>
</tr>
<tr>
<td>A Modified AdaBoost Method for One-Class SVM and its Application to Novelty Detection</td>
<td>3506</td>
</tr>
<tr>
<td>Xue-Fang Chen, Hong-Jie Xing, Xi-Zhao Wang</td>
<td></td>
</tr>
<tr>
<td>Rough Set Model and its Eight Extensions</td>
<td>3512</td>
</tr>
<tr>
<td>Junhai Zhai, Yuanyuan GAO, Xizhao WANG, Mengyao Zhai</td>
<td></td>
</tr>
<tr>
<td>Patterned Growth Algorithm using Hub-Averaging without Pre-Assigned Weights</td>
<td>3518</td>
</tr>
<tr>
<td>Chandra B, Shalini Bhaskar</td>
<td></td>
</tr>
<tr>
<td>Learning Method of Fuzzy Functional Inference Model</td>
<td>3524</td>
</tr>
<tr>
<td>Hirosato Seki, Masaharu Mizumo</td>
<td></td>
</tr>
<tr>
<td>Reinforcement Learning and the Effects of Parameter Settings in the Game of Chung Toi</td>
<td>3530</td>
</tr>
<tr>
<td>Christopher J. Gatti, Mark J. Embrechts, Jonathan D. Linton</td>
<td></td>
</tr>
</tbody>
</table>

## Session W.SPS.C11: Recent Advances in Robotics II

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Conversion of GIS Contour Maps into Surface Digital Elevation Models for Robotic Surveying</td>
<td>3536</td>
</tr>
<tr>
<td>Henry (Heqing) Mei, Lonnie T. Parker, Ayanna M. Howard</td>
<td></td>
</tr>
</tbody>
</table>
Lonnie Parker, Ayanna Howard

Development of a Multi-Modal Haptic Feedback System for Dexterous Robotic Telemanipulation .... 3548
Jenna Graham, Steven Manuel, Matthew Johannes, Robert Armiger

OzTug Mobile Robot for Manufacturing Transportation ................................................................. 3554
Ben Horan, Zoran Najdovski, Tim Black, Saeid Nahavandi, Phil Crothers

Categorizing Interference in Real Robot Experiments ........................................................................ 3561
Shameka Dawson, Briana Wellman, Monica Anderson

Using Floating-Gate based Programmable Analog Arrays for Real-Time Control of a Game-Playing Robot .............................................................................................................. 3566
Scott Koziol, David Lenz, Sebastian Hilsenbeck, Smriti Chopra, Paul Hasler, Ayanna Howard

Session W.SPS.C12: Innovative Soft Computing Methodologies and Applications II

Extraction of Community Transition Rules from Social Bookmark Data as Graph Sequence .......... 3572
Takehiro Yamaguchi, Ayahiko Niimi

Visualization using Multi-Layered U-Matrix in Growing Tree-Structured Self-Organizing Feature Map ........................................................................................................................................ 3580
Takashi Yamaguchi, Takumi Ichimura

Reader Centric Real-Time Electric Magazine Article Generator ......................................................... 3586
Tomoki Takada, Yuri Taira, Nobuhito Maruyama, Mizuki Arai, Tomohiro Takagi, Shinya Akatsuka

Applying Visual Programming for Fuzzy Controller Modeling .......................................................... 3592
Kenneth Mackin

Extracting Sentences Recommended to Annotate for Understanding Writer’s Opinions in a Document .......................................................................................................................... 3597
Yoko Nishihara, Aya Ito, Yukio Ohsawa

Finding Latent Groups of Customers via the Poisson Mixture Regression Model .......................... 3603
Keiji Takai, Katsutoshi Yada