Contents

Invited Paper

AI Researchers, Video Games Are Your Friends! ............................ 3
Julian Togelius

Evolutionary Computation Theory and Applications

Evolution of Cellular Automata-Based Replicating Structures
Exhibiting Unconventional Features ........................................... 21
Michal Bidlo

Adaptive Differential Evolution Supports Automatic Model
Calibration in Furnace Optimized Control System ...................... 42
Miguel Leon, Magnus Evestedt and Ning Xiong

Self-configuring Ensemble of Multimodal Genetic Algorithms .......... 56
Evgenii Sopov

SPSO Parallelization Strategies for Electromagnetic Applications ...... 75
Anton Duca, Laurentiu Duca, Gabriela Ciuprina and Daniel Ioan

Bio-inspired Strategies for the Coordination of a Swarm of Robots
in an Unknown Area .............................................................. 96
Nunzia Palmieri, Floriano de Rango, Xin She Yang and Salvatore Marano

GEML: A Grammatical Evolution, Machine Learning Approach
to Multi-class Classification ...................................................... 113
Jeannie M. Fitzgerald, R. Muhammad Atif Azad and Conor Ryan

Adjudicated GP: A Behavioural Approach to Selective Breeding ....... 135
Jeannie M. Fitzgerald and Conor Ryan

Demand-Side Management: Optimising Through Differential
Evolution Plug-in Electric Vehicles to Partially Fulfil Load Demand . . 155
Edgar Galván-López, Marc Schoenauer, Constantinos Patsakis
and Leonardo Trujillo
Particle Convergence Time in the Deterministic Model of PSO
Krzysztof Trojanowski and Tomasz Kulpa

Fuzzy Computation Theory and Applications

Human Mortality Modeling with a Fuzzy Approach Based on Singular Value Decomposition Technique
Duygun Fatih Demirel and Melek Basak

Synchronization of Chaotic Systems with Unknown Parameters Using Predictive Fuzzy PID Control
Zakaria Driss and Noura Mansouri

Expanding Gödel Logic with Truth Constants and the Equality, Strict Order, Delta Operators
Dušan Guller

Improvement of LCC Prediction Modeling Based on Correlated Parameters and Model Structure Uncertainty Propagation
Ahlem Ferchichi, Wadii Boulila and Imed Riadh Farah

In a Quest for Suitable Similarity Measures to Compare Experience-Based Evaluations
Marcelo Loor and Guy De Tré

Implementing Adaptive Vectorial Centroid in Bayesian Logistic Regression for Interval Type-2 Fuzzy Sets
Ku Muhammad Naim Ku Khalif and Alexander Gegov

Neural Computation Theory and Applications

High Capacity Content Addressable Memory with Mixed Order Hyper Networks
Kevin Swingler

Preindication Mining for Predicting Pedestrian Action Change
Kenji Nishida, Takumi Kobayashi, Taro Iwamoto and Shinya Yamasaki

Weighted Nonlinear Line Attractor for Complex Manifold Learning
Theus H. Aspiras, Vijayan K. Asari and Wesam Sakla

Handling Selective Participation in Neuron Assembly Detection
Salatiel Ezennaya-Gomez, Christian Borgelt, Christian Braune, Kristian Loewe and Rudolf Kruse

A Modular Network Architecture Resolving Memory Interference Through Inhibition
Randa Kassab and Frédéric Alexandre
An Emotional Robot ............................................. 423
Masanao Obayashi, Shunsuke Uto, Takashi Kuremoto, Shingo Mabu and Kunikazu Kobayashi

Recognition of Arm-and-Hand Visual Signals by Means of SVM to Increase Aircraft Security ................................... 444
Giovanni Saggio, Francesco Cavrini and Carlo Alberto Pinto

Machine-Learning-Based Visual Objects’ Distances Evaluation: A Comparison of ANFIS, MLP, SVR and Bilinear Interpolation Models ................................................................. 462
Kurosh Madani, Hossam Fraihat and Christophe Sabourin

Author Index ................................................ 481
Computational Intelligence
International Joint Conference, IJCCI 2015 Lisbon, Portugal, November 12-14, 2015, Revised Selected Papers
Merelo, J.J.; Rosa, A.; Cadenas, J.M.; Correia, A.D.; Madani, K.; Ruano, A.; Filipe, J. (Eds.)
2017, XVII, 482 p. 228 illus., Hardcover
ISBN: 978-3-319-48504-1