CONTENTS

INVITED SPEAKERS

KEYNOTE SPEAKERS	
How Theoretical Analyses Can Impact Practical Applications of Evolutionary Computation <i>Pietro S. Oliveto</i>	5
Self-organizing Robot Swarms Marco Dorigo	7
Swarm Intelligence in Distributed Systems' Use-cases Vesna Šešum-Čavić	9
From Machine Learning to Explainable AI and Beyond Andreas Holzinger	16
11TH INTERNATIONAL CONFERENCE ON EVOLUTIONARY COMPUTATION THEORY AND APPLICATIONS	
FULL PAPERS	
Distributed Multi-objective Particle Swarm Optimization using Time-delayed Virtual Global Best Method <i>Yuji Sato, Shota Ueno and Toshio Hirotsu</i>	21
Evolutionary Techniques in Lattice Sieving Algorithms Thijs Laarhoven	31
A Regression-like Classification System for Geometric Semantic Genetic Programming Illya Bakurov, Mauro Castelli, Francesco Fontanella and Leonardo Vanneschi	40
A Winning Score-based Evolutionary Process for Multi-and Many-objective Peptide Optimization Susanne Rosenthal and Markus Borschbach	49
Using Population-based Metaheuristics and Trend Representative Testing to Compose Strategies for Market Timing <i>Ismail Mohamed and Fernando E. B. Otero</i>	59
Hybrid Kriging-assisted Level Set Method for Structural Topology Optimization Elena Raponi, Mariusz Bujny, Markus Olhofer, Simonetta Boria and Fabian Duddeck	70
Two New Mutation Techniques for Cartesian Genetic Programming Roman Kalkreuth	82
Generalized Lehmer Mean for Success History based Adaptive Differential Evolution Vladimir Stanovov, Shakhnaz Akhmedova, Eugene Semenkin and Mariia Semenkina	93
Fireworks Algorithm versus Plant Propagation Algorithm Wouter Vrielink and Daan van den Berg	101

SHORT PAPERS

Universal Learning Machine with Genetic Programming Alessandro Re, Leonardo Vanneschi and Mauro Castelli	115
New Designs of <i>k</i> -means Clustering and Crossover Operator for Solving Traveling Salesman Problems using Evolutionary Algorithms <i>Ismail M. Ali, Daryl Essam and Kathryn Kasmarik</i>	123
A Comparative Study of Evolutionary Methods for Feature Selection in Sentiment Analysis Shikhar Garg and Sukriti Verma	131
Applying Feature Selection to Rule Evolution for Dynamic Flexible Job Shop Scheduling Yahia Zakaria, Ahmed BahaaElDin and Mayada Hadhoud	139
A Decomposition-based Approach for Constrained Large-Scale Global Optimization Evgenii Sopov and Alexey Vakhnin	147
Enhanced Particle Swarm Optimisation and Multi Objective Optimization for the Orchestration of Edge Cloud Clusters Hafiz Faheem Shahid and Claus Pahl	155
Online Encoder-decoder Anomaly Detection using Encoder-decoder Architecture with Novel Self-configuring Neural Networks & Pure Linear Genetic Programming for Embedded Systems Gabrielė Kasparavičiūtė, Malin Thelin, Peter Nordin, Per Söderstam, Christian Magnusson and Mattias Almljung	163
On the Time Complexity of Simple Cartesian Genetic Programming Roman Kalkreuth and Andre Droschinsky	172
Genetic Algorithm with Success History based Parameter Adaptation Vladimir Stanovov, Shakhnaz Akhmedova and Eugene Semenkin	180
A Multiobjective Artificial Bee Colony Algorithm based on Decomposition Guang Peng, Zhihao Shang and Katinka Wolter	188
ME2: A Scalable Modular Meta-heuristic for Multi-modal Multi-dimension Optimization Mohiul Islam, Nawwaf Kharma, Vaibhav Sultan, Xiaojing Yang, Mohamed Mohamed and Kalpesh Sultan	196
Playing Iterated Rock-Paper-Scissors with an Evolutionary Algorithm Rémi Bédard-Couture and Nawwaf Kharma	205
Modified Differential Evolution in the Load Balancing Problem for the iFDAQ of the COMPASS Experiment at CERN Ondřej Šubrt, Martin Bodlák, Matouš Jandek, Vladimír Jarý, Antonín Květoň, Josef Nový, Jan Tomsa and Miroslav Virius	213
Hybrid Cuckoo Search and Harmony Search Algorithm and Its Modifications for the Calibration of Groundwater Flow Models D. K. Valetov, G. D. Neuvazhaev, V. S. Svitelman and E. A. Saveleva	221
An Intelligent Design Explorer for New Violin Shapes Hao Wang and Lutz Hamel	229

Speeding Up Evaluation of Structures for the Angry Birds Game Laura Calle, Juan-Julián Merelo-Guervós, Mario García-Valdez and Antonio Mora-García	237
Intellectual Execution Scheme of Iterative Computational Models based on Symbiotic Interaction with Application for Urban Mobility Modelling Mikhail Melnik, Denis Nasonov and Alexey Liniov	245
Restart Operator for Optimization Heuristics in Solving Linear Dynamical System Parameter Identification Problem Ivan Ryzhikov and Christina Brester	252
Tuning Parameters of Differential Evolution: Self-adaptation, Parallel Islands, or Co-operation <i>Christina Brester and Ivan Ryzhikov</i>	259
11TH INTERNATIONAL CONFERENCE ON FUZZY COMPUTATION THEORY AND APPLICATIONS	
FULL PAPERS	
Risk-sensitive Markov Decision Processes with Risk Constraints of Coherent Risk Measures in Fuzzy and Stochastic Environment <i>Yuji Yoshida</i>	269
Correlation Coefficient of Modal Level Operators: An Application to Medical Diagnosis <i>Alex Bertei, Renata H. S. Reiser and Luciana Foss</i>	278
Interpreting Xor Intuitionistic Fuzzy Connectives from Quantum Fuzzy Computing Anderson Avila, Renata Reiser, Maurício Pilla and Adenauer Yamin	288
Uncertainty and Fuzzy Modeling in Human-robot Navigation Rainer Palm and Achim J. Lilienthal	296
SHORT PAPERS	
A Novel Method for Evaluating Records from a Dataset using Interval Type-2 Fuzzy Sets <i>Miljan Vučetić and Aleksej Makarov</i>	309
Fuzzy-Based Recommendation System for University Major Selection Shaima Alghamdi, Nada Alzhrani and Haneen Algethami	317
A Synergistic Approach to Enhance the Accuracy-interpretability Trade-off of the NECLASS Classifier for Skewed Data Distribution Jamileh Yousefi, Andrew Hamilton-Wright and Charlie Obimbo	325
Fuzzy-rough Fuzzification in General FL Classifiers Janusz T. Starczewski, Robert K. Nowicki and Katarzyna Nieszporek	335
Extended Possibilistic Fuzzification for Classification Robert K. Nowicki, Janusz T. Starczewski and Rafał Grycuk	343
The Real Transform: Computing Positive Solutions of Fuzzy Polynomial Systems Philippe Aubry, Jérémy Marrez and Annick Valibouze	351
Evolutionary Fuzzy Logic-based Model Design in Predicting Coronary Heart Disease and Its Progression Christina Brester, Vladimir Stanovov, Ari Voutilainen, Tomi-Pekka Tuomainen, Eugene Semenkin and Mikko Kolehmainen	360

A Fuzzy Logic Programming Environment for Recycling Facility Selection Esra Çakir and H. Ziya Ulukan	367
11TH INTERNATIONAL CONFERENCE ON NEURAL COMPUTATION THEORY AND APPLICATIONS	
FULL PAPERS	
Neural Models for Benchmarking of Truck Driver Fuel Economy Performance Alwyn J. Hoffman	379
Stochastic Information Granules Extraction for Graph Embedding and Classification Luca Baldini, Alessio Martino and Antonello Rizzi	391
Vision based Indoor Obstacle Avoidance using a Deep Convolutional Neural Network <i>Mohammad O. Khan and Gary B. Parker</i>	403
Risk-averse Distributional Reinforcement Learning: A CVaR Optimization Approach Silvestr Stanko and Karel Macek	412
Exact and Approximate Rule Extraction from Neural Networks with Boolean Features Fawaz A. Mereani and Jacob M. Howe	424
Active Recall Networks for Multiperspectivity Learning through Shared Latent Space Optimization <i>Theus H. Aspiras, Ruixu Liu and Vijayan K. Asari</i>	434
Breast Cancer Automatic Diagnosis System using Faster Regional Convolutional Neural Networks Lourdes Duran-Lopez, Juan Pedro Dominguez-Morales, Isabel Amaya-Rodriguez, Francisco Luna-Perejon, Javier Civit-Masot, Saturnino Vicente-Diaz and Alejandro Linares-Barranco	444
A Sequential Heteroscedastic Probabilistic Neural Network for Online Classification Ali Mahmoudi, Reza Askari Moghadam and Kurosh Madani	449
SHORT PAPERS	
Semi-automatic Segmentation of MRI Brain Metastases Combining Support Vector Machine and Morphological Operators Gloria Gonella, Elisabetta Binaghi, Paola Nocera and Cinzia Mordacchini	457
Neural Sequence Modeling in Physical Language Understanding Avi Bleiweiss	464
On the Design of a Heuristic based on Artificial Neural Networks for the Near Optimal Solving of the (N^2-1) -puzzle Vojtěch Cahlík and Pavel Surynek	473
Learning Method of Recurrent Spiking Neural Networks to Realize Various Firing Patterns using Particle Swarm Optimization Yasuaki Kuroe, Hitoshi Iima and Yutaka Maeda	479
Calibration Techniques for Binary Classification Problems: A Comparative Analysis Alessio Martino, Enrico De Santis, Luca Baldini and Antonello Rizzi	487
Unsupervised Detection of Sub-pixel Objects in Hyper-spectral Images via Diffusion Bases Alon Scholar and Amir Averbuch	496

Demand Forecasting using Artificial Neuronal Networks and Time Series: Application to a French Furniture Manufacturer Case Study <i>Julie Bibaud-Alves, Philippe Thomas and Hind Bril El Haouzi</i>	502
Prediction and Classification of Heart Disease using AML and Power BI Debmalya Chatterjee and Saravanan Chandran	508
A Low-power, Reachable, Wearable and Intelligent IoT Device for Animal Activity Monitoring L. Duran-Lopez, D. Gutierrez-Galan, J. P. Dominguez-Morales, A. Rios-Navarro, R. Tapiador-Morales, A. Jimenez-Fernandez, D. Cascado-Caballero and A. Linares-Barranco	516
Challenging the Intuition about Memory and Computation in Theories of Cognition <i>Jochen Kerdels and Gabriele Peters</i>	522
Glioma Diagnosis Aid through CNNs and Fuzzy-C Means for MRI I. Amaya-Rodriguez, L. Duran-Lopez, F. Luna-Perejon, J. Civit-Masot, J. P. Dominguez-Morales, S. Vicente, A. Civit, D. Cascado and A. Linares-Barranco	528
Sampling Frequency Evaluation on Recurrent Neural Networks Architectures for IoT Real-time Fall Detection Devices F. Luna-Perejon, J. Civit-Masot, L. Muñoz-Saavedra, L. Duran-Lopez, I. Amaya-Rodriguez, J. P. Dominguez-Morales, S. Vicente-Diaz, A. Linares-Barranco, A. Civit-Balcells and M. J. Dominguez-Morales	536
Multi-dataset Training for Medical Image Segmentation as a Service Javier Civit-Masot, Francisco Luna-Perejón, Lourdes Duran-Lopez, J. P. Domínguez-Morales, Saturnino Vicente-Díaz, Alejandro Linares-Barranco and Anton Civit	542
Multitask Learning or Transfer Learning? Application to Cancer Detection Stephen Obonyo and Daniel Ruiru	548
Identify Theft Detection on e-Banking Account Opening Roxane Desrousseaux, Gilles Bernard and Jean-Jacques Mariage	556
AUTHOR INDEX	565