

Table of Contents

Objective Handling and Problem Decomposition

The Maximin Fitness Function; Multi-objective City and Regional Planning	1
<i>Richard Balling</i>	
Conflict, Harmony, and Independence: Relationships in Evolutionary Multi-criterion Optimisation	16
<i>Robin C. Purshouse, Peter J. Fleming</i>	
Is Fitness Inheritance Useful for Real-World Applications?	31
<i>Els Ducheyne, Bernard De Baets, Robert De Wulf</i>	
Use of a Genetic Heritage for Solving the Assignment Problem with Two Objectives	43
<i>Xavier Gandibleux, Hiroyuki Morita, Naoki Katoh</i>	
Fuzzy Optimality and Evolutionary Multiobjective Optimization	58
<i>M. Farina, P. Amato</i>	
IS-PAES: A Constraint-Handling Technique Based on Multiobjective Optimization Concepts	73
<i>Arturo Hernández Aguirre, Salvador Botello Rionda, Giovanni Lizárraga Lizárraga, Carlos A. Coello Coello</i>	
A Population and Interval Constraint Propagation Algorithm	88
<i>Vincent Barichard, Jin-Kao Hao</i>	
Multi-objective Binary Search Optimisation	102
<i>Evan J. Hughes</i>	
Covering Pareto Sets by Multilevel Evolutionary Subdivision Techniques .	118
<i>Oliver Schütze, Sanaz Mostaghim, Michael Dellnitz, Jürgen Teich</i>	
An Adaptive Divide-and-Conquer Methodology for Evolutionary Multi-criterion Optimisation	133
<i>Robin C. Purshouse, Peter J. Fleming</i>	
Multi-level Multi-objective Genetic Algorithm Using Entropy to Preserve Diversity	148
<i>S. Gunawan, A. Farhang-Mehr, S. Azarm</i>	
Solving Hierarchical Optimization Problems Using MOEAs	162
<i>Christian Haubelt, Sanaz Mostaghim, Jürgen Teich, Ambrish Tyagi</i>	

Multiobjective Meta Level Optimization of a Load Balancing Evolutionary Algorithm	177
<i>David J. Caswell, Gary B. Lamont</i>	

Algorithm Improvements

Schemata-Driven Multi-objective Optimization	192
<i>Skander Kort</i>	
A Real-Coded Predator-Prey Genetic Algorithm for Multiobjective Optimization	207
<i>Xiaodong Li</i>	
Towards a Quick Computation of Well-Spread Pareto-Optimal Solutions .	222
<i>Kalyanmoy Deb, Manikanth Mohan, Shikhar Mishra</i>	
Trade-Off between Performance and Robustness: An Evolutionary Multiobjective Approach	237
<i>Yaochu Jin, Bernhard Sendhoff</i>	

Online Adaptation

The Micro Genetic Algorithm 2: Towards Online Adaptation in Evolutionary Multiobjective Optimization	252
<i>Gregorio Toscano Pulido, Carlos A. Coello Coello</i>	
Self-Adaptation for Multi-objective Evolutionary Algorithms	267
<i>Dirk Büche, Sibylle Müller, Petros Koumoutsakos</i>	
MOPED: A Multi-objective Parzen-Based Estimation of Distribution Algorithm for Continuous Problems	282
<i>Mario Costa, Edmondo Minisci</i>	

Test Problem Construction

Instance Generators and Test Suites for the Multiobjective Quadratic Assignment Problem	295
<i>Joshua D. Knowles, David W. Corne</i>	
Dynamic Multiobjective Optimization Problems: Test Cases, Approximation, and Applications	311
<i>M. Farina, Kalyanmoy Deb, P. Amato</i>	
No Free Lunch and Free Leftovers Theorems for Multiobjective Optimisation Problems	327
<i>David W. Corne, Joshua D. Knowles</i>	

Performance Analysis and Comparison

A New MOEA for Multi-objective TSP and Its Convergence Property Analysis	342
<i>Zhenyu Yan, Linghai Zhang, Lishan Kang, Guangming Lin</i>	
Convergence Time Analysis for the Multi-objective Counting Ones Problem	355
<i>Dirk Thierens</i>	
Niche Distributions on the Pareto Optimal Front.....	365
<i>Jeffrey Horn</i>	
Performance Scaling of Multi-objective Evolutionary Algorithms	376
<i>V. Khare, X. Yao, Kalyanmoy Deb</i>	
Searching under Multi-evolutionary Pressures	391
<i>Hussein A. Abbass, Kalyanmoy Deb</i>	
Minimal Sets of Quality Metrics	405
<i>A. Farhang-Mehr, S. Azarm</i>	
A Comparative Study of Selective Breeding Strategies in a Multiobjective Genetic Algorithm	418
<i>Andrew Wildman, Geoff Parks</i>	
An Empirical Study on the Effect of Mating Restriction on the Search Ability of EMO Algorithms	433
<i>Hisao Ishibuchi, Youhei Shibata</i>	

Alternative Methods

Using Simulated Annealing and Spatial Goal Programming for Solving a Multi Site Land Use Allocation Problem	448
<i>Jeroen C.J.H. Aerts, Marjan van Herwijnen, Theodor J. Stewart</i>	
Solving Multi-criteria Optimization Problems with Population-Based ACO	464
<i>Michael Guntsch, Martin Middendorf</i>	
A Two-Phase Local Search for the Biobjective Traveling Salesman Problem	479
<i>Luis Paquete, Thomas Stützle</i>	

Implementation

PISA — A Platform and Programming Language Independent Interface for Search Algorithms	494
<i>Stefan Bleuler, Marco Laumanns, Lothar Thiele, Eckart Zitzler</i>	

A New Data Structure for the Nondominance Problem in Multi-objective Optimization	509
<i>Oliver Schütze</i>	
The Measure of Pareto Optima	519
<i>M. Fleischer</i>	
Distributed Computing of Pareto-Optimal Solutions with Evolutionary Algorithms	534
<i>Kalyanmoy Deb, Pawan Zope, Abhishek Jain</i>	
Applications	
Multiobjective Capacitated Arc Routing Problem	550
<i>P. Lacomme, C. Prins, M. Sevaux</i>	
Multi-objective Rectangular Packing Problem and Its Applications	565
<i>Shinya Watanabe, Tomoyuki Hiroyasu, Mitsunori Miki</i>	
Experimental Genetic Operators Analysis for the Multi-objective Permutation Flowshop	578
<i>Carlos A. Brizuela, Rodrigo Aceves</i>	
Modification of Local Search Directions for Non-dominated Solutions in Cellular Multiobjective Genetic Algorithms for Pattern Classification Problems	593
<i>Tadahiko Murata, Hiroyuki Nozawa, Hisao Ishibuchi, Mitsuo Gen</i>	
Effects of Three-Objective Genetic Rule Selection on the Generalization Ability of Fuzzy Rule-Based Systems	608
<i>Hisao Ishibuchi, Takashi Yamamoto</i>	
Identification of Multiple Gene Subsets Using Multi-objective Evolutionary Algorithms	623
<i>A. Raji Reddy, Kalyanmoy Deb</i>	
Non-invasive Atrial Disease Diagnosis Using Decision Rules: A Multi-objective Optimization Approach	638
<i>Francisco de Toro, Eduardo Ros, Sonia Mota, Julio Ortega</i>	
Intensity Modulated Beam Radiation Therapy Dose Optimization with Multiobjective Evolutionary Algorithms	648
<i>Michael Lahanas, Eduard Schreibmann, Natasa Milickovic, Dimos Baltas</i>	
Multiobjective Evolutionary Algorithms Applied to the Rehabilitation of a Water Distribution System: A Comparative Study ...	662
<i>Peter B. Cheung, Luisa F.R. Reis, Klebber T.M. Formiga, Fazal H. Chaudhry, Waldo G.C. Ticona</i>	

Optimal Design of Water Distribution System by Multiobjective Evolutionary Methods	677
<i>Klebbber T.M. Formiga, Fazal H. Chaudhry, Peter B. Cheung, Luisa F.R. Reis</i>	
Evolutionary Multiobjective Optimization in Watershed Water Quality Management	692
<i>Jason L. Dorn, S. Ranji Ranjithan</i>	
Different Multi-objective Evolutionary Programming Approaches for Detecting Computer Network Attacks	707
<i>Kevin P. Anchor, Jesse B. Zydallis, Gregg H. Gunsch, Gary B. Lamont</i>	
Safety Systems Optimum Design by Multicriteria Evolutionary Algorithms	722
<i>David Greiner, Blas Galván, Gabriel Winter</i>	
Applications of a Multi-objective Genetic Algorithm to Engineering Design Problems	737
<i>Johan Andersson</i>	
A Real-World Test Problem for EMO Algorithms	752
<i>A. Gaspar-Cunha, J.A. Covas</i>	
Genetic Methods in Multi-objective Optimization of Structures with an Equality Constraint on Volume	767
<i>J.F. Aguilar Madeira, H. Rodrigues, Heitor Pina</i>	
Multi-criteria Airfoil Design with Evolution Strategies	782
<i>Lars Willmes, Thomas Bäck</i>	
Visualization and Data Mining of Pareto Solutions Using Self-Organizing Map	796
<i>Shigeru Obayashi, Daisuke Sasaki</i>	
Author Index	811