Contents

Evolutionary Optimisation

Maximum Likelihood Estimation Based on Random Subspace EDA:
Application to Extrasolar Planet Detection ............................ 3
  Bin Liu and Ke-Jia Chen

Evolutionary Game Network Reconstruction by Memetic Algorithm
with $l_{1/2}$ Regularization .............................................. 15
  Kai Wu and Jing Liu

A Simple Brain Storm Optimization Algorithm via Visualizing
Confidence Intervals ....................................................... 27
  Yingying Cao, Wei Chen, Shi Cheng, Yifei Sun, Qunfeng Liu, Yun Li,
  and Yuhui Shi

Simulated Annealing with a Time-Slot Heuristic for Ready-Mix
Concrete Delivery .......................................................... 39
  Muhammad Sulaman, Xinye Cai, Mustafa Misir, and Zhun Fan

A Sequential Learnable Evolutionary Algorithm with a Novel Knowledge
Base Generation Method ................................................. 51
  Yang Lou and Shiu Yin Yuen

Using Parallel Strategies to Speed up Pareto Local Search ............ 62
  Jialong Shi, Qingfu Zhang, Bilel Derbel, Arnaud Lefooghe,
  and Sébastien Verel

Differential Evolution Based Hyper-heuristic for the Flexible Job-Shop
Scheduling Problem with Fuzzy Processing Time ....................... 75
  Jian Lin, Dike Luo, Xiaodong Li, Kaizhou Gao, and Yanan Liu

ACO-iRBA: A Hybrid Approach to TSPN
with Overlapping Neighborhoods ...................................... 87
  Yuanlong Qin and Bo Yuan

An Evolutionary Algorithm with a New Coding Scheme for Multi-objective
Portfolio Optimization ...................................................... 97
  Yi Chen, Aimin Zhou, Rongfang Zhou, Peng He, Yong Zhao,
  and Lihua Dong

Exact Approaches for the Travelling Thief Problem ................... 110
  Junhua Wu, Markus Wagner, Sergey Polyakovskiy, and Frank Neumann
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>On the Use of Dynamic Reference Points in HypE</td>
<td>122</td>
</tr>
<tr>
<td>Jingda Deng, Qingfu Zhang, and Hui Li</td>
<td></td>
</tr>
<tr>
<td>Multi-Factorial Evolutionary Algorithm Based on M2M Decomposition</td>
<td>134</td>
</tr>
<tr>
<td>Jiajie Mo, Zhun Fan, Wenji Li, Yi Fang, Yugen You, and Xinye Cai</td>
<td></td>
</tr>
<tr>
<td>An Efficient Local Search Algorithm for Minimum Weighted Vertex Cover</td>
<td>145</td>
</tr>
<tr>
<td>on Massive Graphs</td>
<td></td>
</tr>
<tr>
<td>Yuanjie Li, Shaowei Cai, and Wenying Hou</td>
<td></td>
</tr>
<tr>
<td>Interactive Genetic Algorithm with Group Intelligence Articulated</td>
<td>158</td>
</tr>
<tr>
<td>Possibilistic Condition Preference Model</td>
<td></td>
</tr>
<tr>
<td>Xiaoyan Sun, Lixia Zhu, Lin Bao, Lian Liu, and Xin Nie</td>
<td></td>
</tr>
<tr>
<td>GP-Based Approach to Comprehensive Quality-Aware Automated Semantic</td>
<td>170</td>
</tr>
<tr>
<td>Web Service Composition</td>
<td></td>
</tr>
<tr>
<td>Chen Wang, Hui Ma, Aaron Chen, and Sven Hartmann</td>
<td></td>
</tr>
<tr>
<td>Matrix Factorization Based Benchmark Set Analysis:</td>
<td>184</td>
</tr>
<tr>
<td>A Case Study on HyFlex</td>
<td></td>
</tr>
<tr>
<td>Mustafa Mısır</td>
<td></td>
</tr>
<tr>
<td>Learning to Describe Collective Search Behavior of Evolutionary</td>
<td>196</td>
</tr>
<tr>
<td>Algorithms in Solution Space</td>
<td></td>
</tr>
<tr>
<td>Lei Liu, Chengshan Pang, Weiming Liu, and Bin Li</td>
<td></td>
</tr>
<tr>
<td><strong>Evolutionary Multiobjective Optimisation</strong></td>
<td></td>
</tr>
<tr>
<td>A Hierarchical Decomposition-Based Evolutionary Many-Objective</td>
<td>211</td>
</tr>
<tr>
<td>Algorithm</td>
<td></td>
</tr>
<tr>
<td>Fangqing Gu and Hai-Lin Liu</td>
<td></td>
</tr>
<tr>
<td>Adjusting Parallel Coordinates for Investigating Multi-objective</td>
<td>224</td>
</tr>
<tr>
<td>Search</td>
<td></td>
</tr>
<tr>
<td>Liangli Zhen, Miqing Li, Ran Cheng, Dezhong Peng, and Xin Yao</td>
<td></td>
</tr>
<tr>
<td>An Elite Archive-Based MOEA/D Algorithm</td>
<td>236</td>
</tr>
<tr>
<td>Qingling Zhu, Qiuzhen Lin, and Jianyong Chen</td>
<td></td>
</tr>
<tr>
<td>A Constraint Partitioning Method Based on Minimax Strategy</td>
<td>248</td>
</tr>
<tr>
<td>for Constrained Multiobjective Optimization Problems</td>
<td></td>
</tr>
<tr>
<td>Xueqiang Li, Shen Fu, and Han Huang</td>
<td></td>
</tr>
<tr>
<td>A Fast Objective Reduction Algorithm Based on Dominance Structure</td>
<td>260</td>
</tr>
<tr>
<td>for Many Objective Optimization</td>
<td></td>
</tr>
<tr>
<td>Fangqing Gu, Hai-Lin Liu, and Yiu-ting Cheung</td>
<td></td>
</tr>
</tbody>
</table>
A Memetic Algorithm Based on Decomposition and Extended Search for Multi-Objective Capacitated Arc Routing Problem .......................... 272
   Ronghua Shang, Yijing Yuan, Bingqi Du, and Licheng Jiao

Improvement of Reference Points for Decomposition Based Multi-objective Evolutionary Algorithms ...................................................... 284
   Hemant Kumar Singh and Xin Yao

Multi-Objective Evolutionary Optimization for Autonomous Intersection Management ................................................................. 297
   Kazi Shah Nawaz Ripon, Jostein Solaas, and Håkon Dissen

Study of an Adaptive Control of Aggregate Functions in MOEA/D .......... 309
   Shinya Watanabe and Takanori Sato

Use of Inverted Triangular Weight Vectors in Decomposition-Based Many-Objective Algorithms ............................................................ 321
   Ken Doi, Ryo Imada, Yusuke Nojima, and Hisao Ishibuchi

Surrogate Model Assisted Multi-objective Differential Evolution Algorithm for Performance Optimization at Software Architecture Level* ........................................ 334
   Du Xin, Ni Youcong, Wu Xiaobin, Ye Peng, and Xin Yao

Normalized Ranking Based Particle Swarm Optimizer for Many Objective Optimization ................................................................. 347
   Shi Cheng, Xiujuan Lei, Junfeng Chen, Jiqiang Feng, and Yuhui Shi

Evolutionary Machine Learning

A Study on Pre-training Deep Neural Networks Using Particle Swarm Optimisation .............................................................. 361
   Angus Kenny and Xiaodong Li

Simple Linkage Identification Using Genetic Clustering ......................... 373
   Kei Ohnishi and Chang Wook Ahn

Learning of Sparse Fuzzy Cognitive Maps Using Evolutionary Algorithm with Lasso Initialization .................................................. 385
   Kai Wu and Jing Liu

A Bayesian Restarting Approach to Algorithm Selection ....................... 397
   Yaodong He, Shiu Yin Yuen, and Yang Lou

Evolutionary Learning Based Iterated Local Search for Google Machine Reassignment Problems .................................................... 409
   Ayad Turky, Nasser R. Sabar, Abdul Sattar, and Andy Song
Qi Chen, Mengjie Zhang, and Bing Xue  
422

Constrained Dimensionally Aware Genetic Programming for Evolving Interpretable Dispatching Rules in Dynamic Job Shop Scheduling.  
Yi Mei, Su Nguyen, and Mengjie Zhang  
435

Visualisation and Optimisation of Learning Classifier Systems for Multiple Domain Learning  
Yi Liu, Bing Xue, and Will N. Browne  
448

Adaptive Memetic Algorithm Based Evolutionary Multi-tasking Single-Objective Optimization  
Qunjian Chen, Xiaoliang Ma, Yiwen Sun, and Zexuan Zhu  
462

Effective Policy Gradient Search for Reinforcement Learning Through NEAT Based Feature Extraction  
Yiming Peng, Gang Chen, Mengjie Zhang, and Yi Mei  
473

Generalized Hybrid Evolutionary Algorithm Framework with a Mutation Operator Requiring no Adaptation  
Yong Wee Foo, Cindy Goh, Lipton Chan, Lin Li, and Yun Li  
486

A Multitree Genetic Programming Representation for Automatically Evolving Texture Image Descriptors  
Harith Al-Sahaf, Bing Xue, and Mengjie Zhang  
499

Theoretical Developments

Running-Time Analysis of Particle Swarm Optimization with a Single Particle Based on Average Gain  
Wu Hongyue, Huang Han, Yang Shuling, and Zhang Yushan  
515

Evolutionary Computation Theory for Remote Sensing Image Clustering: A Survey  
Yuting Wan, Yanfei Zhong, Ailong Ma, and Liangpei Zhang  
528

Feature Selection and Dimensionality Reduction

New Representations in Genetic Programming for Feature Construction in \( k \)-Means Clustering  
Andrew Lensen, Bing Xue, and Mengjie Zhang  
543

Transductive Transfer Learning in Genetic Programming for Document Classification  
Wenlong Fu, Bing Xue, Mengjie Zhang, and Xiaoying Gao  
556
Automatic Feature Construction for Network Intrusion Detection . . . . . . . . . . 569
Binh Tran, Stjepan Picek, and Bing Xue

A Feature Subset Evaluation Method Based
on Multi-objective Optimization . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 581
Mengmeng Li, Zhigang Shang, and Caitong Yue

A Hybrid GA-GP Method for Feature Reduction in Classification . . . . . . . . . . 591
Hoai Bach Nguyen, Bing Xue, and Peter Andreae

Kernel Construction and Feature Subset Selection in Support
Vector Machines . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 605
Shinichi Yamada and Kourosh Neshatian

KW-Race and Fast KW-Race: Racing-Based Frameworks for Tuning
Parameters of Evolutionary Algorithms on Black-Box
Optimization Problems . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 617
Mang Wang, Xin Tong, and Bin Li

Dynamic and Uncertain Environments

A Probabilistic Learning Algorithm for the Shortest Path Problem . . . . . . . . 631
Yiya Diao, Changhe Li, Yebin Ma, Junchen Wang, and Xingang Zhou

A First-Order Difference Model-Based Evolutionary Dynamic
Multiobjective Optimization . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 644
Leilei Cao, Lihong Xu, Erik D. Goodman, and Hui Li

A Construction Graph-Based Evolutionary Algorithm for Traveling
Salesman Problem . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 656
Gang Li, Zhi feng Hao, Hang Wei, and Han Huang

Real-world Applications

Bi-objective Water Cycle Algorithm for Solving Remanufacturing
Rescheduling Problem . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 671
Kaizhou Gao, Petyong Duan, Rong Su, and Junqing Li

A New Method for Constructing Ensemble Classifier in Privacy-Preserving
Distributed Environment . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 684
Yan Shao, Zhanjun Li, and Ming Li

Greedy Based Pareto Local Search for Bi-objective Robust Airport Gate
Assignment Problem . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . . 694
Wenxue Sun, Xinye Cai, Chao Xia, Muhammad Sulaman, Mustafa Misir, and Zhun Fan
Multi-neighbourhood Great Deluge for Google Machine Reassignment Problem .......................................................... 706
Ayad Turky, Nasser R. Sabar, Abdul Sattar, and Andy Song

Evolutionary Optimization of Airport Security Inspection Allocation ............ 716
Zheng-Jie Fan and Yu-Jun Zheng

Evolving Directional Changes Trading Strategies with a New Event-Based Indicator ......................................................... 727
Michael Kampouridis, Adesola Adegboye, and Colin Johnson

Constrained Differential Evolution for Cost and Energy Efficiency Optimization in 5G Wireless Networks ................................. 739
Rawaa Dawoud AL-Dabbagh and Ahmed Jasim Jabur

Evolutionary Computation to Determine Product Builds in Open Pit Mining ................................................................. 751
Adam Ghandar

An Evolutionary Vulnerability Detection Method for HFSWR Ship Tracking Algorithm ........................................................... 763
Pengju Zhang, Kun Wang, Ling Zhang, Zexiao Xie, and Liqin Zhou

Genetic Programming for Lifetime Maximization in Wireless Sensor Networks with a Mobile Sink ........................................... 774
Ying Li, Zhixing Huang, Jinghui Zhong, and Liang Feng

Unsupervised Change Detection for Remote Sensing Images Based on Principal Component Analysis and Differential Evolution ................. 786
Mi Song, Yanfei Zhong, Ailong Ma, and Liangpei Zhang

Parallel Particle Swarm Optimization for Community Detection in Large-Scale Networks ....................................................... 797
Shanfeng Wang, Maoguo Gong, Yue Wu, and Xiaolei Qin

Multi-objective Memetic Algorithm Based on Three-Dimensional Request Prediction for Dynamic Pickup-and-Delivery Problem with Time Windows .......................................................... 810
Yanming Yang, Xiaoliang Ma, Yiwen Sun, and Zexuan Zhu

Optimization of Spectrum-Energy Efficiency in Heterogeneous Communication Network ..................................................... 821
Fangqing Gu, Ziquan Liu, Yiu-ming Cheung, and Hai-Lin Liu

Large Scale WSN Deployment Based on an Improved Cooperative Co-evolution PSO with Global Differential Grouping .................... 833
Yazhen Zhang and Wei Fang
## Adaptive Systems

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning Fuzzy Cognitive Maps Using a Genetic Algorithm with Decision-Making Trial and Evaluation</td>
<td>845</td>
</tr>
<tr>
<td>Xumiao Zou and Jing Liu</td>
<td></td>
</tr>
<tr>
<td>Dynamic and Adaptive Threshold for DNN Compression from Scratch</td>
<td>858</td>
</tr>
<tr>
<td>Chunhui Jiang, Guiying Li, and Chao Qian</td>
<td></td>
</tr>
<tr>
<td>Cooperative Design of Two Level Fuzzy Logic Controllers for Medium Access Control in Wireless Body Area Networks</td>
<td>870</td>
</tr>
<tr>
<td>Seyed Mohammad Nekooei, Gang Chen, and Ramesh Rayudu</td>
<td></td>
</tr>
<tr>
<td>Statistical Analysis of Social Coding in GitHub Hypernetwork</td>
<td>883</td>
</tr>
<tr>
<td>Li Kuang, Feng Wang, Heng Zhang, and Yuanxiang Li</td>
<td></td>
</tr>
</tbody>
</table>

## Swarm Intelligence

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sparse Restricted Boltzmann Machine Based on Multiobjective Optimization</td>
<td>899</td>
</tr>
<tr>
<td>Yangyang Li, Xiaoyu Bai, Xiaoxu Liang, and Licheng Jiao</td>
<td></td>
</tr>
<tr>
<td>A Knee Point Driven Particle Swarm Optimization Algorithm for Sparse Reconstruction</td>
<td>911</td>
</tr>
<tr>
<td>Caitong Yue, Jing Liang, Boyang Qu, Hui Song, Guang Li, and Yuhong Han</td>
<td></td>
</tr>
<tr>
<td>Multivariant Optimization Algorithm with Bimodal-Gauss</td>
<td>920</td>
</tr>
<tr>
<td>Baolei Li, Jing Liang, Caitong Yue, and Boyang Qu</td>
<td></td>
</tr>
<tr>
<td>Enhanced Comprehensive Learning Particle Swarm Optimization with Exemplar Evolution</td>
<td>929</td>
</tr>
<tr>
<td>Xiang Yu, Yunan Liu, Xiangsheng Feng, and Genhua Chen</td>
<td></td>
</tr>
<tr>
<td>Recommending PSO Variants Using Meta-Learning Framework for Global Optimization</td>
<td>939</td>
</tr>
<tr>
<td>Xianghua Chu, Fulin Cai, Jiansheng Chen, and Li Li</td>
<td></td>
</tr>
<tr>
<td>Augmented Brain Storm Optimization with Mutation Strategies</td>
<td>949</td>
</tr>
<tr>
<td>Xianghua Chu, Jiansheng Chen, Fulin Cai, Chen Chen, and Ben Niu</td>
<td></td>
</tr>
<tr>
<td>A New Precedence-Based Ant Colony Optimization for Permutation Problems</td>
<td>960</td>
</tr>
<tr>
<td>Marco Baiotti, Alfredo Milani, and Valentino Santucci</td>
<td></td>
</tr>
<tr>
<td>A General Swarm Intelligence Model for Continuous Function Optimization</td>
<td>972</td>
</tr>
<tr>
<td>Satoru Iwasaki, Heng Xiao, Toshiharu Hatanaka, and Takeshi Uchitane</td>
<td></td>
</tr>
</tbody>
</table>
A Hybrid Particle Swarm Optimization for High-Dimensional Dynamic Optimization ......................................................... 981
    Wenjian Luo, Bin Yang, Chenyang Bu, and Xin Lin

Visualizing the Search Dynamics in a High-Dimensional Space for a Particle Swarm Optimizer ......................................................... 994
    Qiqi Duan, Chang Shao, Xiaodong Li, and Yuhui Shi

Particle Swarm Optimization with Winning Score Assignment for Multi-objective Portfolio Optimization ......................................................... 1003
    Karoon Suksonghong and Kittipong Boonlong

Conservatism and Adventurism in Particle Swarm Optimization Algorithm ......................................................... 1016
    Guangzhi Xu, Rui Li, Xinchao Zhao, and Xingquan Zuo

A Competitive Social Spider Optimization with Learning Strategy for PID Controller Optimization ......................................................... 1026
    Zhaolin Lai, Xiang Feng, and Huiqun Yu

Author Index ......................................................... 1039
Simulated Evolution and Learning
11th International Conference, SEAL 2017, Shenzhen, China, November 10-13, 2017, Proceedings
2017, XXII, 1041 p, 317 illus., Softcover
ISBN: 978-3-319-68758-2