# Ran Cheng

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## Research Interest

In the broad context of AI, the **evolving machine intelligence** (as indicated by the name of my research group) is a branch studying **how evolution generates complexity, diversity and intelligence** via computational simulations. Specifically, my research interests mainly fall into the **interdisciplinary fields across evolutionary computation and other major AI branches such as statistical learning and deep learning**, to provide end-to-end solutions to optimization & modeling in scientific research and engineering related applications, including but not limited to: advanced material design, hybrid electric vehicle design, airfoil design, smart grid, self-driving, etc.

## Education

2013 – 2016: PhD in Computer Science, University of Surrey, UK

Thesis: *Nature Inspired Optimization of Large Problems*

Supervisor: Prof. Yaochu Jin (IEEE Fellow)

2010 - 2012: Postgraduate Student in Computer Science and Technology, Zhejiang University, China

Exempt from Admission Exam

2006 - 2010: B.Eng. in Computer Science and Technology, Northeastern University, China

## Work

11/2020 - present: Associate Professor (Tenured with Early Promotion), Department of Computer Science and Engineering, Southern University of Science and Technology, China

09/2018 - 10/2020: Assistant Professor, Department of Computer Science and Engineering, Southern University of Science and Technology, China

04/2016 - 08/2018: Research Fellow, School of Computer Science, University of Birmingham, UK

PI: Prof. Xin Yao (IEEE Fellow)

01/2013 - 12/2015: Visiting Scholar, Honda Research Institute Europe (HRI-EU), Germany

PI: Prof. Markus Olhofer (Chief Scientist)

## Professional Services

### *Memberships*

2021 – now: **IEEE Senior Member**

2015 – 2021: IEEE Member

## *Editorships*

2022 – now: **Associate Editor**, *IEEE Transactions on Evolutionary Computation*

2021 – now: **Associate Editor**, *IEEE Transactions on Cognitive and Developmental Systems*

2020 – now: **Associate Editor**, *IEEE Transactions on Artificial Intelligence*

2018 – now: **Associate Editor**, *IEEE Access*

2018 – now: Editorial Board Member, *Applied Soft Computing*

2017 – now: Editorial Board Member, *Complex & Intelligent Systems*

## *Committee Services*

2021 – now: **Founding Chair**, IEEE CIS Shenzhen Chapter

2020 – now: Chair, IEEE CIS Task Force on Data-Driven Evolutionary Optimization of Expensive Problems

2020 – now: Committee Member, IEEE CIS Evolutionary Computation Technical Committee

2018 – 2019: Committee Member, IEEE CIS Data Mining and Big Data Analytics Technical Committee

2018 – 2019: Committee Member, IEEE CIS Emergent Technologies Technical Committee

2017 – 2018: Founding Vice-Chair, IEEE CIS Task Force on Many-Objective Optimisation

## *Organizer of Academic Events*

EMO (2021): **Organizing Chair**, 2021 International Conference on Evolutionary Multi-Criterion Optimization, Shenzhen, China

IEEE MBEA (2021, 2020, 2019, 2018, 2017, 2016): Founding Co-chair, IEEE Symposium on Model-Based Evolutionary Algorithms

IEEE CEC (2021): **Founding Co-Chair**, IEEE CEC Special Session on Large-scale Multi-/Many-objective Optimization and Its Applications

IEEE CEC (2021): Co-Chair, IEEE CEC Special Session on Data-Driven Evolutionary Optimization of Computationally Expensive Problems

## *Program Committee Membership*

AAAI (2021, 2020, 2019): PC Member, The AAAI Conference on Artificial Intelligence

ACM GECCO (2021, 2020, 2019, 2018): PC Member, The ACM Genetic and Evolutionary Computation Conference

IEEE CEC (2021, 2020, 2019, 2018, 2017, 2016): PC Member, The IEEE Congress on Evolutionary Computation

## Research Grants

2020 – 2024: Deep Learning Based Aerofoil Design, **Principal Investigator**, RMB 3,810,000, Ministry of Industry and Information Technology, China

2020 – 2022: Evolutionary Computation Based Deep Neural Architecture Search for Microchips, **Principal Investigator**, RMB 1,280,000, Huawei Hisilicon, China

2020 – 2023: Cell-Based Deep Neural Networks Architecture Search Using Evolutionary Multiobjective Optimization, **Principal Investigator**, RMB 230,000, National Science Foundation, China

2017 – 2022: Research and Development of Next-Generation Intelligent Logistics Platform, **Co-Investigator**, RMB 20,000,000, Shenzhen Peacock Plan, China

2018 – 2023: Research and Development of Restructurable Brain-like Computing System, **Co-Investigator**, RMB 20,000,000, Guangdong Innovation Grant, China

2017 – 2019: Adaptive Tools for Electromagnetics and Materials Modelling to Bridge the Gap between Design and Manufacturing (AOTOMAT), Key Member, GBP 935,611, EPSRC, UK

2012 – 2018: DAASE: Dynamic Adaptive Automated Software Engineering, Key Member, GBP 6,834,903, EPSRC, UK

2013 – 2017: Evolutionary Computation for Dynamic Optimisation in Network Environments, Key Member, GBP 512,325, EPSRC, UK

2013 – 2015: Surrogate-assisted Evolutionary Many-objective Optimisation, Key Member, GBP 116,733, Honda Research Institute Europe, UK

## Honors and Awards

2021: Outstanding Paper Award, *IEEE Transactions on Evolutionary Computation*, IEEE, USA

2020: Outstanding Paper Award, *IEEE Computational Intelligence Magazine*, IEEE, USA

2019: Outstanding PhD Dissertation Award, *IEEE Computational Intelligence Society (CIS)*, IEEE, USA

2019: Best Paper Award, *The 14th International Conference on Bio-inspired Computing: Theories and Applications (BIC-TA 2019)*, China.

2018: Outstanding Paper Award, *IEEE Transactions on Evolutionary Computation*, IEEE, USA

2017: Best Student Paper Award, *$11^{th}$ International Conference on Simulated Evolution and Learning (SEAL'2017)*, Shenzhen, China

2016: Chinese Government Award for Outstanding Self-financed Students Abroad, China

2016: Valued Contribution Award, *2016 IEEE Symposium Series on Computational Intelligence (SSCI'2016)*, Greece

2015: Vice-Chancellor's Award, *University of Surrey*, UK

2015: First Prize of Doctoral Researcher Award, *Association of British Turkish Academics (ABTA)*, UK

# Teaching Experiences

Database Concepts (Fall 2021, Fall 2020), Lecturer, Southern University of Science and Technology

Data Structure and Algorithm Analysis (Spring 2021, Spring 2020, Fall 2019, Spring 2019, Fall 2018), Lecturer, Southern University of Science and Technology

Rated 92/100 by the university teaching instructor

Awarded the High-Quality Teaching Project of Guangdong Province

Advanced Computer Science Experiments (Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019, Spring 2019, Fall 2018 ), Lecturer, Southern University of Science and Technology

More than 40 undergraduate students under supervision

Computational Intelligence (Fall 2014, Spring 2015, Fall 2015), Demonstrator, University of Surrey

# Academic Supervisions

## *Postdoctoral Supervision*

2020 – 2022: Zhichao Lu (Postdoctoral Research Fellow). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Neural Architecture Search*

SUSTech Presidential Outstanding Postdoctoral Award

2019 – 2021: Danial Yazdani (Postdoctoral Research Fellow). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Evolutionary Dynamic Optimization Considering Robustness and Scalability*

SUSTech Presidential Outstanding Postdoctoral Award

2018 – 2020: Cheng He (Postdoctoral Research Fellow), Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Evolutionary Large-Scale Optimization*

SUSTech Presidential Outstanding Postdoctoral Award

## *PhD Supervision*

2021 – now: Hao Tan (PhD Student). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Neural Architecture Search*

2020 – now: Teng Wang (PhD Student). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Deep Learning for Video Captioning*

2020 – now: Yiming Chen (PhD Student). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Deep Learning for Natural Language Processing*

2019 – now: Hui Bai (PhD Student). Department of Computer Science and Engineering, Southern University of Science and Technology.

Research Topic: *Evolutionary Deep Reinforcement Learning*

### *Other Supervision*

Research Assistants: Minyang Chen (2022 - now), Jia Liu (2021 – 2022), Ziyu Zong (2021 – 2022), Shengran Hu (2021 – 2022), Lei Cao (2020 – 2022), Shihua Huang (2018 – 2021), Zhanglu Hou (2019 – 2020), Yuli Zhang (2018 – 2019), Jianqing Lin (2020 – 2021), Hao Tan (2020 – 2021), Qiangqiang Jiang (2020 – 2021). Department of Computer Science and Engineering, Southern University of Science and Technology.

MPhil Stduents: Zhenyu Liang (2022 – 2025), Zhehui Zhang (2022 – 2025), Kebin Sun (2022 – 2025), Yifang Zhao (2022 - 2025), Yanchen Li (2021 – 2024), Haoming Zhang (2021 – 2024), Weituo Wang (2020 – 2023), Hanlin Long (2020 – 2023), Hu Zhang (2020 – 2023), Rui Zhang (2020 – 2023), Gengze Li (2018 – 2020). Department of Computer Science and Engineering, Southern University of Science and Technology.

## Publications

### *Refereed Journal Articles (*: Corresponding Author)*

1. Shihua Huang, Cheng He, and **Ran Cheng***. Multi-domain Multimodal Unpaired Image-to-Image Translation via a Single Generative Adversarial Network. ***IEEE Transactions on Artificial Intelligence***, in Press.
2. Changwu Huang, Lianghao Li, Cheng He, **Ran Cheng**, and Xin Yao. Adaptive Multiobjective Evolutionary Algorithm for Large-Scale Transformer Ratio Error Estimation. *Memetic Computing*, in Press.
3. Qiqi Liu, **Ran Cheng**, Yaochu Jin, Martin Heiderich, and Tobias Rodemann. Reference Vector Assisted Adaptive Model Management for Surrogate-Assisted Many-objective Optimization. ***IEEE Transactions on Systems, Man and Cybernetics: Systems***, in Press.
4. Hui Bai, **Ran Cheng***, Danial Yazdani, Kay Chen Tan, and Yaochu Jin. Evolutionary Large-scale Dynamic Optimization Using Bi-level Variable Grouping. ***IEEE Transactions on Cybernetics***, in Press.
5. Lei Cao, Chun-ming Ye, **Ran Cheng***, and Zhenkun Wang. Memory-based Variable Neighborhood Search for Green Vehicle Routing Problem with Passing-by Drivers: A Comprehensive Perspective. *Complex & Intelligent Systems*, in Press.
6. Zhongju Yuan, Genghui Li, Zhenkun Wang, Jianyong Sun, and **Ran Cheng**. RL-CSL: A Combinatorial Optimization Method Using Reinforcement Learning and Contrastive Self-supervised Learning. ***IEEE Transactions on Emerging Topics in Computational Intelligence***, in Press.
7. Shengran Hu, **Ran Cheng***, Cheng He, and Zhichao Lu. Accelerating Multi-Objective Neural Architecture Search by Random-Weight Evaluation. *Complex & Intelligent Systems*, in Press.
8. Hao Tan, **Ran Cheng***, Shihua Huang, Cheng He, Changxiao Qiu, Fan Yang, and Ping Luo. RelativeNAS: Relative Neural Architecture Search via Slow-Fast Learning. ***IEEE Transactions on Neural Networks and Learning Systems***, in Press.
9. Danial Yazdani, **Ran Cheng***, Cheng He, and Jurgen Branke. Adaptive Control of Subpopulations in Evolutionary Dynamic Optimization. ***IEEE Transactions on Cybernetics***, 52(7), 6476-6489, 2022.

10. Danial Yazdani, Nabi Omidvar, **Ran Cheng***, Juergen Branke, Trung Thanh Nguyen, and Xin Yao. Benchmarking Continuous Dynamic Optimization: Survey and Generalized Test Suite. ***IEEE Transactions on Cybernetics***, 52(5), 3380-3393, 2022.
11. Jinjin Xu, Wenli Du, Yaochu Jin, Wangli He, and **Ran Cheng**. Ternary Compression for Communication-Efficient Federated Learning. ***IEEE Transactions on Neural Networks and Learning Systems***, 33(3), 1162-1176, 2022.
12. Ye Tian, Langchun Si, Xingyi Zhang, **Ran Cheng**, Cheng He, Kay Chen Tan, and Yaochu Jin. Evolutionary Large-Scale Multi-Objective Optimization: A Survey. ***ACM Computing Surveys***, 54(8), 1-34, 2022.
13. Cheng He, **Ran Cheng***, and Danial Yazdani. Adaptive Offspring Generation for Evolutionary Large-Scale Multiobjective Optimization. ***IEEE Transactions on Systems, Man and Cybernetics: Systems***, 52(2), 786-798, 2022.
14. Yan Xiao, Yaochu Jin, **Ran Cheng**, and Kuangrong Hao. Hybrid Attention-Based Transformer Block Model for Distant Supervision Relation Extraction. *Neurocomputing*, 470, 29-39, 2022.
15. Ye Tian, Cheng He, **Ran Cheng**, and Xingyi Zhang. A Multistage Evolutionary Algorithm for Better Diversity Preservation in Multi-Objective Optimization. ***IEEE Transactions on Systems, Man and Cybernetics: Systems***, 51(9), 5880-5894, 2021.
16. Cheng He, **Ran Cheng***, Ye Tian, Xingyi Zhang, Kay Chen Tan, and Yaochu Jin. Paired Offspring Generation for Constrained Large-Scale Multiobjective Optimization. ***IEEE Transactions on Evolutionary Computation***, 25(3), 448-462, 2021.
17. Linqiang Pan, Lianghao Li, **Ran Cheng**, Cheng He, and Kay Chen Tan. Manifold Learning Inspired Mating Restriction for Evolutionary Multiobjective Optimization with Complicated Pareto Sets. ***IEEE Transactions on Cybernetics***, 51(6), 3325-3337, 2021.
18. Cheng He, Shihua Huang, **Ran Cheng***, Kay Chen Tan, and Yaochu Jin. Evolutionary Multiobjective Optimization Driven by Generative Adversarial Networks (GANs). ***IEEE Transactions on Cybernetics***, 51(6), 3129-3142, 2021.
19. Huangke Chen, **Ran Cheng***, Witold Pedrycz, and Yaochu Jin. Solving Many-objective Optimization Problems via Multistage Evolutionary Search. ***IEEE Transactions on Systems, Man and Cybernetics: Systems***, 51(6), 3552-3564, 2021.
20. Yansen Su, Kefei Zhou, Xingyi Zhang, **Ran Cheng**, and Chunhou Zheng. A Parallel Multi-objective Evolutionary Algorithm for Community Detection in Large-scale Complex Networks. *Information Sciences*, 576, 374-392, 2021.
21. Cheng He, Hao Tan, Shihua Huang, and **Ran Cheng***. Efficient Evolutionary Neural Architecture Search by Modular Inheritable Crossover. *Swarm and Evolutionary Computation*, 64, 100894, 2021.
22. Jianqing Lin, Cheng He, and **Ran Cheng***. Adaptive Dropout for High-dimensional Expensive Multiobjective Optimization. *Complex & Intelligent Systems*, in Press.
23. Jing Wang, Runze Li, Cheng He, Haixin Chen, **Ran Cheng**, Chen Zhai, and Miao Zhang. An Inverse Design Method for Supercritical Airfoil based on Conditional Generative Models. *Chinese Journal of Aeronautics*, in Press.
24. Danial Yazdani, **Ran Cheng***, Donya Yazdani, Jurgen Branke, Yaochu Jin, and Xin Yao. A Survey of Evolutionary Continuous Dynamic Optimization Over Two Decades - Part A. ***IEEE Transactions on Evolutionary Computation***, 25(4), 609-629, 2021.

25. Danial Yazdani, **Ran Cheng***, Donya Yazdani, Jurgen Branke, Yaochu Jin, and Xin Yao. A Survey of Evolutionary Continuous Dynamic Optimization Over Two Decades - Part B. ***IEEE Transactions on Evolutionary Computation***, 25(4), 630-650, 2021.
26. Haiping Ma, Haoyu Wei, Ye Tian, **Ran Cheng**, and Xingyi Zhang. A Multi-stage Evolutionary Algorithm for Multi-objective Optimization with Complex Constraints. *Information Sciences*, 25(2), 371-385, 2021.
27. Haoyu Zhang, Yaochu Jin, **Ran Cheng**, and Kuangrong Hao. Efficient Evolutionary Search of Attention Convolutional Networks via Sampled Training and Node Inheritance. ***IEEE Transactions on Evolutionary Computation***, in Press.
28. Yanguo Kong*, Xiangyi Kong*, Cheng He, Changsong Liu, Liting Wang, Lijuan Su, Jun Gao, Qi Guo, and **Ran Cheng**. Constructing an Automatic Diagnosis and Severity-Classification Model for Acromegaly Using Facial Photographs by Deep Learning. *Journal of Hematology & Oncology*, 13(1), 88, 2020.
29. Linqiang Pan, Wenting Xu, Lianghao Li, Cheng He*, and **Ran Cheng***. Adaptive Simulated Binary Crossover for Rotated Multi-Objective Optimization. *Swarm and Evolutionary Computation*, 60: 100759, 2021.
30. Zhanglu Hou, Cheng He, and **Ran Cheng***. Reformulating Preferences into Constraints for Evolutionary Multi- and Many-Objective Optimization. *Information Sciences*, 541, 1-15, 2020.
31. Cheng He, **Ran Cheng***, Chuanji Zhang, Ye Tian, Qin Chen, and Xin Yao. Evolutionary Large-Scale Multiobjective Optimization for Ratio Error Estimation of Voltage Transformers. ***IEEE Transactions on Evolutionary Computation***, 24(5), 868-881, 2020.
32. Ye Tian, **Xingyi Zhang***, **Ran Cheng***, Cheng He, and Yaochu Jin. Guiding Evolutionary Multiobjective Optimization with Generic Front Modeling. ***IEEE Transactions on Cybernetics***, 50 (3), 1106-1119, 2020.
33. Huangke Chen, **Ran Cheng***, Jinming Wen, Haifeng Li, and Jian Weng. Solving Large-Scale Many-objective Optimization Problems by Covariance Matrix Adaptation Evolution Strategy with Scalable Small Subpopulations. *Information Sciences*, 509, 457-469, 2020.
34. Ye Tian, **Ran Cheng**, Xingyi Zhang, Miqing Li, and Yaochu Jin. Diversity Assessment of Multi-Objective Evolutionary Algorithms: Performance Metric and Benchmark Problems [Research Frontier]. *IEEE Computational Intelligence Magazine*, 14 (3), 61-74, 2019.
35. Cheng He, Lianghao Li, Ye Tian, Xingyi Zhang, **Ran Cheng***, Yaochu Jin, and Xin Yao. Accelerating Large-scale Multiobjective Optimization via Problem Reformulation. ***IEEE Transactions on Evolutionary Computation***, 23 (6), 949-961, 2019.
36. Murillo G Carneiro, **Ran Cheng**, Liang Zhao, and Yaochu Jin. Particle Swarm Optimization for Network-based Data Classification. *Neural Networks*, 110:243-255, 2019.
37. **Ran Cheng**, MN Omidvar, AH Gandomi, B Sendhoff, S Menzel, and Xin Yao. Solving Incremental Optimization Problems via Cooperative Coevolution. ***IEEE Transactions on Evolutionary Computation***, 23 (5), 762-775, 2018.
38. Ye Tian, **Ran Cheng**, Xingyi Zhang, Yansen Su, and Yaochu Jin. A Strengthened Dominance Relation Considering Convergence and Diversity for Evolutionary Many-objective Optimization. ***IEEE Transactions on Evolutionary Computation***, 23 (2), 331-345, 2018.
39. **Ran Cheng**, Cheng He, Yaochu Jin, and Xin Yao. Model-based Evolutionary Algorithms: a Short Survey. *Complex & Intelligent Systems*, 4 (4), 283-292, 2018.

40. Xingyi Zhang, Xiutao Zheng, **Ran Cheng***, Jianfeng Qiu, and Yaochu Jin. A Competitive Mechanism Based Multi-objective Particle Swarm Optimizer with Fast Convergence. *Information Sciences*, 427, 63-76, 2018.
41. Fei Li, **Ran Cheng***, Jianchang Liu, and Yaochu Jin. A Two-Stage R2 Indicator Based Evolutionary Algorithm for Many-Objective Optimization. *Applied Soft Computing*, 67, 245-260, 2018.
42. Xia Zhang, Bei Ding, **Ran Cheng***, Sebastian C. Dixon, and Yao Lu*. Computational Intelligence-Assisted Understanding of Nature-Inspired Superhydrophobic Behavior. *Advanced Science*, 5 (1), 1700520, 2018.
43. Shenkai Gu, **Ran Cheng**, and Yaochu Jin. Feature Selection for High-dimensional Classification Using a Competitive Swarm Optimizer. *Soft Computing*, 22 (3), 811-822, 2018.
44. Ye Tian, **Ran Cheng**, Xingyi Zhang, and Yaochu Jin. PlatEMO: A MATLAB Platform for Evolutionary Multi-objective Optimization [Educational Forum]. *IEEE Computational Intelligence Magazine*, 12 (4), 73-87, 2017.
45. **Ran Cheng**, Tobias Rodemann, Michael Fischer, Maikus Olhofer, and Yaochu Jin. Evolutionary Many-objective Ooptimization of Hybrid Electric Vehicle Control: from General Optimization to Preference Articulation. ***IEEE Transactions on Emerging Topics in Computational Intelligence***, 1 (2), 97-111, 2017.
46. Chaoli Sun, Yaochu Jin, **Ran Cheng**, Jinliang Ding, and Jianchao Zeng. Surrogate-assisted Cooperative Swarm Optimization of High-dimensional Expensive Problems. ***IEEE Transactions on Evolutionary Computation***, 21 (4), 644-660, 2017.
47. **Ran Cheng**, Miqing Li, Ye Tian, Xingyi Zhang, Shengxiang Yang, Yaochu Jin, and Xin Yao. A Benchmark Test Suite for Evolutionary Many-objective Optimization. *Complex & Intelligent Systems*, 3 (1), 67-81, 2017.
48. Ye Tian, **Ran Cheng**, Xingyi Zhang, Fan Cheng, and Yaochu Jin. An Indicator Based Multiobjective Evolutionary Algorithm with Reference Point Adaptation for Better Versatility. ***IEEE Transactions on Evolutionary Computation***, 22 (4), 609-622, 2017.
49. **Ran Cheng**, Miqing Li, Ke Li, and Xin Yao. Evolutionary Multiobjective Optimization Based Multimodal Optimization: Fitness Landscape Approximation and Peak Detection. ***IEEE Transactions on Evolutionary Computation***, 22 (5), 692-706, 2017.
50. **Ran Cheng**, Yaochu Jin, Markus Olhofer, and Bernhard Sendhoff. Test Problems for Large-Scale Multiobjective and Many-Objective Optimization. ***IEEE Transactions on Cybernetics***, 47 (12), 4108-4121, 2017.
51. Xingyi Zhang, Ye Tian, **Ran Cheng***, and Yaochu Jin. A Decision Variable Clustering-Based Evolutionary Algorithm for Large-scale Many-objective Optimization. ***IEEE Transactions on Evolutionary Computation***, 22 (1), 97-112, 2016.
52. **Ran Cheng**, Yaochu Jin, Markus Olhofer, and Bernhard Sendhoff. A Reference Vector Guided Evolutionary Algorithm for Many-Objective Optimization. ***IEEE Transactions on Evolutionary Computation***, 20 (5), 773-791, 2016.
53. **Ran Cheng**, Yaochu Jin, Kaname Narukawa, and Bernhard Sendhoff. A Multiobjective Evolutionary Algorithm using Gaussian Process based Inverse Modeling. ***IEEE Transactions on Evolutionary Computation***, 19 (6), 838-856, 2015.
54. **Ran Cheng**, and Yaochu Jin. A Competitive Swarm Optimizer for Large scale Optimization. ***IEEE Transactions on Cybernetics***, 45 (2), 191-204, 2015.

55. **Ran Cheng**, and Yaochu Jin. A Social Learning Particle Swarm Optimization Algorithm for Scalable Optimization. *Information Sciences*, 291, 43-60, 2015.
56. Xingyi Zhang, Ye Tian, **Ran Cheng**, and Yaochu Jin. An Efficient Approach to Nondominated Sorting for Evolutionary Multiobjective Optimization. ***IEEE Transactions on Evolutionary Computation***, 19 (2), 201-213, 2015.
57. Shenkai Gu, **Ran Cheng**, and Yaochu Jin. Multi-objective Ensemble Generation. *Wiley Interdisciplinary Reviews: Data Mining and Knowledge Discovery*, 5(5), 234-245, 2015.

## *Conference Proceedings*

1. Teng Wang, Wenhao Jiang, Zhichao Lu, Feng Zheng, **Ran Cheng**, Chengguo Yin, Ping Luo. VLMixer: Unpaired Vision-Language Pre-training via Cross-Modal CutMix. ***International Conference on Machine Learning (ICML'2022)***, Online, November, 2022.
2. Yiming Chen, Yan Zhang, Chen Zhang, Grandee Lee, **Ran Cheng***, Haizhou Li. Revisting Self-Training for Few-Shot Learning of Language Model. ***Conference on Empirical Methods in Natural Language Processing (EMNLP'2021)***, Online, November, 2021.
3. Teng Wang, Ruimao Zhang, Zhichao Lu, Feng Zheng, **Ran Cheng**, Ping Luo. End-to-End Dense Video Captioning with Parallel Decoding. . ***IEEE International Conference on Computer Vision (ICCV'2021)***, Online, November, 2021.
4. Shihua Huang, Zhichao Lu, **Ran Cheng***, Cheng He. FaPN: Feature-aligned Pyramid Network for Dense Image Prediction. ***IEEE International Conference on Computer Vision (ICCV'2021)***, Online, November, 2021.
5. Lianghao Li, Cheng He, **Ran Cheng***, Linqiang Pan. Large-Scale Multiobjective Optimization via Problem Decomposition and Reformulation. *IEEE Congress on Evolutionary Computation (CEC'2021)*, Krakow, Poland, July, 2021.
6. Cheng He and **Ran Cheng***. Population Sizing of Evolutionary Large-Scale Multiobjective Optimization. *International Conference Series on Evolutionary Multi-Criterion Optimization (EMO'2021)*, Shenzhen, China, March 2021.
7. Jianqing Lin, Cheng He, and **Ran Cheng***. Dimension Dropout for Evolutionary High-Dimensional Expensive Multiobjective Optimization. *International Conference Evolutionary Multi-Criterion Optimization (EMO'2021*), Shenzhen, China, March 2021.
8. Shengran Hu, **Ran Cheng***, Cheng He, and Zhichao Lu. Multi-objective Neural Architecture Search with Almost No Training. *International Conference Series on Evolutionary Multi-Criterion Optimization (EMO'2021)*, Shenzhen, China, March 2021.
9. Lianghao Li, Cheng He, **Ran Cheng**, and Linqiang Pan. Manifold Learning Inspired Mating Restriction for Evolutionary Constrained Multiobjective Optimization. *International Conference Series on Evolutionary Multi-Criterion Optimization (EMO'2021)*, Shenzhen, China, March 2021.
10. Changwu Huang, Lianghao Li, Cheng He, **Ran Cheng**, and Xin Yao. Operator-Adapted Evolutionary Large-Scale Multiobjective Optimization for Voltage Transformer Ratio Error Estimation. *International Conference Series on Evolutionary Multi-Criterion Optimization (EMO'2021)*, Shenzhen, China, March 2021.
11. Cheng He, **Ran Cheng***, Ye Tian, and Xingyi Zhang. Iterated Problem Reformulation for Evolutionary Large-Scale Multiobjective Optimization. *IEEE Congress on Evolutionary Computation (CEC'2020)*, Glasgow, UK, June 2020.

12. Yiming Chen, Tianci Pan, Cheng He, and **Ran Cheng***. Efficient Evolutionary Deep Neural Architecture Search (NAS) by Noisy Network Morphism Mutation. *The 14th International Conference on Bio-inspired Computing: Theories and Applications (BIC-TA)*, Zhengzhou, China, December 2019.
13. Kanzhen Wan, Cheng He, Auraham Camacho, Ke Shang, **Ran Cheng**, and Hisao Ishibuchi. A Hybrid Surrogate-Assisted Evolutionary Algorithm for Computationally Expensive Many-Objective Optimization. *IEEE Congress on Evolutionary Computation (CEC'2019)*, Wellington, New Zealand, June 2019.
14. Cheng He, **Ran Cheng***, Yaochu Jin, and Xin Yao. Surrogate-Assisted Expensive Many-Objective Optimization by Model Fusion. *IEEE Congress on Evolutionary Computation (CEC'2019)*, Wellington, New Zealand, June 2019.
15. Ye Tian, Xiaoshu Xiang, Xingyi Zhang, **Ran Cheng** and Yaochu Jin. Sampling Reference Points on the Pareto Fronts of Benchmark Multi-Objective Optimization Problems. *IEEE Congress on Evolutionary Computation (CEC'2018)* ,Rio de Janeiro, Brazil, July 2018.
16. Murillo Carneiro, Thiago Cupertino, **Ran Cheng**, Yaochu Jin, and Liang Zhao. Nature-Inspired Graph Optimization for Dimensionality Reduction. *International Conference on Tools with Artificial Intelligence(ICTAI'2017)*, Boston, Massachusetts, USA, November 2017.
17. Liangli Zhen, Miqing Li, **Ran Cheng**, Dezhong Peng, and Xin Yao, Adjusting Parallel Coordinates for Investigating Multi-objective Search. *Proceedings of the 11th International Conference on Simulated Evolution and Learning (SEAL'2017)*, Shenzhen, China, November 2017.
18. **Ran Cheng**, Miqing Li, and Xin Yao. Parallel Peaks: A Visualization Method for Benchmark Studies of Mulitmodal Optimization. *IEEE Congress on Evolutionary Computation (CEC'2017)*, Donostia-San Sebastian, Spain, July 2017.
19. Chengzhi Wang, Jinliang Ding, **Ran Cheng**, Changxin Liu, and Tianyou Chai. Data-Driven Surrogate-Assisted Multi-Objective Optimization of Complex Beneficiation Operational Process. *World Congress of the International Federation of Automatic Control (IFAC'2017)*, Toulouse, France, July 2017.
20. Ye Tian, Xingyi Zhang, **Ran Cheng**, and Yaochu Jin. Empirical Analysis of Non-Dominated Sorting Approach T-ENS for Many-objective Optimization. *IEEE Symposium Series on Computational Intelligence (SSCI'2016)*, Athens, Greece, December 2016.
21. Ye Tian, Xingyi Zhang, **Ran Cheng**, and Yaochu Jin. A Multi-objective Evolutionary Algorithm Based on an Enhanced Inverted Generational Distance Metric. *IEEE Congress on Evolutionary Computation (CEC'2016)*, Vancouver, Canada, July 2016.
22. Murillo Carneiro, Liang Zhao, **Ran Cheng**, and Yaochu Jin. Network Structural Optimization Based on Swarm Intelligence for Highlevel Classification. International Joint Conference on Neural Networks (CEC'2016), Vancouver, Canada, July 2016.
23. **Ran Cheng**, Markus Olhofer, and Yaochu Jin. Reference Vector Based a posteriori Preference Articulation for Evolutionary Multiobjective Optimization. *IEEE Congress on Evolutionary Computation (CEC'2015)*, Sendai, Japan, 2015.
24. **Ran Cheng**, Yaochu Jin, and Kaname Narukawa. Adaptive Reference Vector Generation for Inverse Model based Evolutionary Multiobjective Optimization with Degenerate and Disconnected Pareto Fronts. *Evolutionary Multi-Criterion Optimization (EMO'2015)*, Guimaraes, Portugal, 2015.
25. **Ran Cheng**, and Yaochu Jin. Demonstrator Selection in a Social Learning Particle Swarm Optimizer. *IEEE Congress on Evolutionary Computation (CEC'2014)*, Beijing, China, 2014.
26. **Ran Cheng**, and Yaochu Jin, Simulating Swarm Behaviuors for Optimisation by Learning from Neighbours. *UK Workshop on Computational Intelligence (UKCI'2013)*, Guildford, UK, 2013.

27. **Ran Cheng**, Chaoli Sun, and Yaochu Jin, A Multi-swarm Evolutionary Framework based on a Feedback Mechanism. *IEEE Congress on Evolutionary Computation (CEC'2013)*, Cancun, Mexico, 2013.
28. **Ran Cheng**, Min Yao, Xiaowei Xue and Bin Shen, Bisexual Evolution: A Novel Bisexual Evolutionary Framework based on the Fisher's Runaway Process. *IEEE Congress on Evolutionary Computation (CEC'2012)*, Brisbane, Australia, 2012.

# Referees

**Yaochu Jin**
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