Ran Cheng

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Within the expansive realm of artificial intelligence (AI), my research delves into the intriguing study of **how evolution fosters complexity, diversity, and intelligence** through computational means. Specifically, my primary research interests lie at the intersection of evolutionary computation and pivotal AI domains such as representation learning and reinforcement learning. The ultimate goal is to deliver **high-performance computational solutions** that address optimization and modeling challenges in contemporary science and engineering.

I have published over **100** peer-reviewed papers, with over **10,000** Google Scholar citations. I am the recipient of several esteemed **IEEE awards**, including: the IEEE CIS Outstanding Ph.D. Dissertation Award (2019), IEEE TEVC Outstanding Paper Awards (2018, 2021), and the IEEE CIM Outstanding Paper Award (2020). I am the **Founding Chair** of the IEEE CIS Shenzhen Chapter and serve as an **Associate Editor** for renowned journals including IEEE TEVC, IEEE TAI, IEEE TCDS, IEEE TETCI, and ACM TELO. I have been featured as among the **Career-Long World's Top 2% Scientists** (2023).

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

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. Bernhard Sendhoff (IEEE Fellow)

Professional Services

Memberships

2021 – now: IEEE Senior Member

2015 – 2021: IEEE Member

Editorships

2023 – now: Associate Editor, *ACM Transactions on Evolutionary Learning and Optimization*

2023 – now: Associate Editor, *IEEE Transactions on Emerging Topics in Computational Intelligence*

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: 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

Conference Organizers

CISCE (2023): Publicity Chair, 2023 5th International Conference on Communications, Information System and Computer Engineering, Guangzhou, China

CSAI (2022): Program Co-Chair, 2022 6th International Conference on Computer Science and Artificial Intelligence, Beijing, China

EMO (2021): Organizing Chair, 2021 11th International Conference on Evolutionary Multi-Criterion Optimization, Shenzhen, China

IEEE CEC (2023, 2022): Co-Chair, IEEE CEC Special Session on Large-scale Multi-/Many-objective Optimization and Its Applications

IEEE MBEA (2023, 2022, 2021, 2020, 2019, 2018, 2017, 2016): Founding Chair, IEEE Symposium on Model-Based Evolutionary Algorithms

Research Grants

2023 – 2025: Performance Optimization of Sparse Computing and Scientific Computing, **Principal Investigator**, $1,905,880$ RMB, Huawei, China

2023 – 2026: Evolutionary Multiobjective Neural Achitecture Search towards Hardware-aware Real-time Semantic Segmentation, **Principal Investigator**, $740,740$ RMB, BOSCH, Germany

2021 – 2024: Government Funding for High-Level Research, **Principal Investigator**, $3,000,000$ RMB, Shenzhen, China

2020 – 2023: Deep Learning Based Aerofoil Design, **Principal Investigator**, $3,810,000$ RMB, Ministry of Industry and Information Technology, China

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

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

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

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

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

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

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

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

Honors and Awards

2023: Young Pioneer of Computing Power China, *China Computational Power Conference*, China

2022: Intelligent Computing Innovator China, *DeepTech*, China

2021, 2018: 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.

2017: Best Student Paper Award, *11th 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

Teaching Experiences

Teaching Software (Online Judge System)

`https://oj.cse.sustech.edu.cn/`

Developed by students under my supervision

Served over 3,000 students and teachers

Data Structure and Algorithm Analysis (Spring, 2023, Spring 2022, Spring 2021, Spring 2020, Fall 2019, Spring 2019, Fall 2018), Lecturer, Southern University of Science and Technology

Database Concepts (Fall 2023, Fall 2022, Fall 2021, Fall 2020), Lecturer, Southern University of Science and Technology

Awarded the High-Quality Teaching Project of Guangdong Province

Innovative Computer Science Projects (Spring 2023, Fall 2022, Spring 2022, Fall 2021, Spring 2021, Fall 2020, Spring 2020, Fall 2019, Spring 2019, Fall 2018), Lecturer, Southern University of Science and Technology

Supervised over 50 undergraduate students

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

Academic Supervisions

Postdoctoral Supervision

2020 – 2022: Zhichao Lu (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Neural Architecture Search*

SUSTech Presidential Outstanding Postdoctoral Award

2019 – 2021: Danial Yazdani (Main Supervisor), Southern University of Science and Technology.

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

SUSTech Presidential Outstanding Postdoctoral Award

2018 – 2020: Cheng He (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Evolutionary Large-Scale Optimization*

SUSTech Presidential Outstanding Postdoctoral Award

PhD Supervision

2023 – now: Leta Yobsan Bayisa (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Hardware-aware Semantic Segmentation*

2023 – now: Tao Jiang (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Evolutionary Optimization in Smart Manufacturing*

2021 – 2022: Shihua Huang (Co-supervisor), Hong Kong Polytechnic University.

Research Topic: *Robust Semantic Segmentation*

2021 – now: Hao Tan (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Evolutionary Neural Architecture Search*

2020 – now: Teng Wang (Co-supervisor), University of Hong Kong.

Research Topic: *Deep Learning for Video Captioning*

2020 – 2023: Yiming Chen (Co-supervisor), Nationgal University of Singapore.

Research Topic: *Deep Learning for Natural Language Processing*

2019 – now: Hui Bai (Main Supervisor), Southern University of Science and Technology.

Research Topic: *Evolutionary Deep Reinforcement Learning*

Other Supervision

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.

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.

Publications

Refereed Journal Articles (*: Corresponding Author)

1. Yansong Huang, Zherui Zhang, Ao Jiao, Yuxin Ma, and **Ran Cheng**. A Comparative Visual Analytics Framework for Exploring Evolutionary Processes in Multi-objective Optimization. *IEEE Transactions on Visualization and Computer Graphics*, in Press.

2. Kebin Sun, Weituo Wang, **Ran Cheng***, Yu Liang, Hairun Xie, Jing Wang, and Miao Zhang. Evolutionary Generative Design of Supercritical Airfoils: An Automated Approach Driven by Small Data. *Complex & Intelligent Systems*, in Press.

3. Jia Liu, **Ran Cheng**, and Yaochu Jin. Bi-fidelity Evolutionary Multiobjective Search for Adversarially Robust Deep Neural Architectures. *Neurocomputing*, in Press.

4. Cheng He, Lianghao Li, **Ran Cheng***, and Yaochu Jin. Evolutionary Multiobjective Optimization via Efficient Sampling-based Offspring Generation. *Complex & Intelligent Systems*, in Press.

5. Zhichao Lu, **Ran Cheng***, Yaochu Jin, Kay Chen Tan, and Kalyanmoy Deb. Neural Architecture Search as Multiobjective Optimization Benchmarks: Problem Formulation and Performance Assessment. *IEEE Transactions on Evolutionary Computation*, in Press.

6. Zhichao Lu, **Ran Cheng***, Shihua Huang, Haoming Zhang, Changxiao Qiu, and Fan Yang. Surrogate-assisted Multi-objective Neural Architecture Search for Real-time Semantic Segmentation. *IEEE Transactions on Artificial Intelligence*, in Press.

7. Cheng He, **Ran Cheng***, Lianghao Li, Kay Chen Tan, and Yaochu Jin. Evolutionary Large-scale Multiobjective Optimization via Reformulated Decision Variable Analysis. *IEEE Transactions on Evolutionary Computation*, in Press.

8. 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.

9. 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.

10. Yi Zhuang, Xiaojiang Liu, Xue Wang, Gaoqiang Niu, **Ran Cheng**, and Fei Wang. Pulse Heating Combined with Machine Learning for Enhanced Gas Identification and Concentration Detection with MOS Gas Sensors. *IEEE Sensors Letters*, 7(10), 6006304, 2023.

11. Hui Bai, Ruimin Shen, Yue Lin, Botian Xu, and **Ran Cheng***. Lamarckian Platform: Pushing the Boundaries of Evolutionary Reinforcement Learning towards Asynchronous Commercial Games. *IEEE Transactions on Games*, 53(11), 6937-6950, 2023.

12. Hui Bai, **Ran Cheng***, and Yaochu Jin. Evolutionary Reinforcement Learning: A Survey. *Intelligent Computing*, 2(0025), 1-27, 2023.

13. Shengran Hu, **Ran Cheng***, Cheng He, and Zhichao Lu. Accelerating Multi-Objective Neural Architecture Search by Random-Weight Evaluation. *Complex & Intelligent Systems*, 9, 1183–1192, 2023.

14. 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*, 34(1), 2162-2388, 2023.

15. Changwu Huang, Lianghao Li, Cheng He, **Ran Cheng**, and Xin Yao. Adaptive Multiobjective Evolutionary Algorithm for Large-Scale Transformer Ratio Error Estimation. *Memetic Computing*, 14, 237–251, 2022.

16. Shihua Huang, Cheng He, and **Ran Cheng***. SoloGAN: Multi-domain Multimodal Unpaired Image-to-Image Translation via a Single Generative Adversarial Network. *IEEE Transactions on Artificial Intelligence*, 3(5), 722 - 737, 2022.

17. 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*, 8, 2507–2525, 2022.

18. Xiaoshu Xiang, Ye Tian, **Ran Cheng**, Xingyi Zhang, Shengxiang Yang, and Yaochu Jin. A Benchmark Generator for Online Dynamic Single-objective and Multi-objective Optimization Problems. *Information Sciences*, 613, 591-608, 2022.

19. 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*, 52(12), 7760-7773, 2022

20. Lianghao Li, Cheng He, **Ran Cheng**, Hongbin Li, Linqiang Pan, and Yaochu Jin. A Fast Sampling Based Evolutionary Algorithm for Million-dimensional Multiobjective Optimization. *Swarm and Evolutionary Computation*, 75(101181), 1-15, 2022.

21. 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.

22. 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.

23. 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.

24. 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.

25. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

34. Jianqing Lin, Cheng He, and **Ran Cheng***. Adaptive Dropout for High-dimensional Expensive Multiobjective Optimization. *Complex & Intelligent Systems*, in Press.

35. 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.

36. 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.

37. 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.

38. 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.

39. 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.

40. 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.

41. 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.

42. Zhanglu Hou, Cheng He, and **Ran Cheng***. Reformulating Preferences into Constraints for Evolutionary Multi- and Many-Objective Optimization. *Information Sciences*, 541, 1-15, 2020.

43. 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.

44. 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.

45. 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.

46. 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.

47. 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.

48. Murillo G Carneiro, **Ran Cheng**, Liang Zhao, and Yaochu Jin. Particle Swarm Optimization for Network-based Data Classification. *Neural Networks*, 110:243-255, 2019.

49. **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.

50. 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.

51. **Ran Cheng**, Cheng He, Yaochu Jin, and Xin Yao. Model-based Evolutionary Algorithms: a Short Survey. *Complex & Intelligent Systems*, 4 (4), 283-292, 2018.

52. 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.

53. 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.

54. 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.

55. 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.

56. 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.

57. **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.

58. 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.

59. **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.

60. 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.

61. **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.

62. **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.

63. 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.

64. **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.

65. **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.

66. **Ran Cheng**, and Yaochu Jin. A Competitive Swarm Optimizer for Large scale Optimization. *IEEE Transactions on Cybernetics*, 45 (2), 191-204, 2015.

67. **Ran Cheng**, and Yaochu Jin. A Social Learning Particle Swarm Optimization Algorithm for Scalable Optimization. *Information Sciences*, 291, 43-60, 2015.

68. 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.

69. 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 (+: Student under My Supervision)

1. Zhichao Lu, Chuntao Ding, Shangguang Wang, **Ran Cheng**, Felix Juefei-Xu, Vishnu Boddeti. Seed Feature Maps-based CNN Models for LEO Satellite Remote Sensing Services. *International Conference on Web Services (ICWS'2023)*, Chicago, USA, July 2023.

2. Yansong Huang[+], Zherui Zhang, Ao Jiao, Yuxin Ma, and **Ran Cheng**. A Comparative Visual Analytics Framework for Exploring Evolutionary Processes in Multi-objective Optimization. *IEEE Visualization Conference (VIS'2023)*, Melbourne, Australia, October 2023.

3. Bowen Zheng[+] and **Ran Cheng**. Rethinking Population-assisted Off-policy Reinforcement Learning. *Genetic and Evolutionary Computation Conference (GECCO'2023)*, Lisbon, Portugal, July 2023.

4. Chuntao Ding, Zhichao Lu, Shangguang Wang, **Ran Cheng**, and Vishnu Boddeti. Towards Mitigating Task Interference in Multi-Task Learning via Task Branching with Non-Learnable Primitives. *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR'2023)*, Vancouver, Canada, June 2023.

5. Teng Wang[+], Yixiao Ge, Feng Zheng, **Ran Cheng**, Ying Shan, Xiaohu Qie, and Ping Luo. Accelerating Vision-Language Pretraining with Free Language Modeling. *IEEE/CVF Computer Vision and Pattern Recognition Conference (CVPR'2023)*, Vancouver, Canada, June 2023.

6. Teng Wang[+], Wenhao Jiang, Zhichao Lu, Feng Zheng, **Ran Cheng**, Chengguo Yin, and Ping Luo. VLMixer: Unpaired Vision-Language Pre-training via Cross-Modal CutMix. *International Conference on Machine Learning (ICML'2022)*, Online, November, 2022.

7. Yiming Chen[+], Yan Zhang, Chen Zhang, Grandee Lee, **Ran Cheng**, and 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.

8. Teng Wang[+], Ruimao Zhang, Zhichao Lu, Feng Zheng, **Ran Cheng**, and Ping Luo. End-to-End Dense Video Captioning with Parallel Decoding. *IEEE International Conference on Computer Vision (ICCV'2021)*, Online, November, 2021.

9. Shihua Huang[+], Zhichao Lu, **Ran Cheng**, and Cheng He. FaPN: Feature-aligned Pyramid Network for Dense Image Prediction. *IEEE International Conference on Computer Vision (ICCV'2021)*, Online, November, 2021.

10. Lianghao Li[+], Cheng He, **Ran Cheng**, and Linqiang Pan. Large-Scale Multiobjective Optimization via Problem Decomposition and Reformulation. *IEEE Congress on Evolutionary Computation (CEC'2021)*, Krakow, Poland, July, 2021.

11. 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.

12. 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.

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