Zimin Liang

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SUMMARY

I am a PhD student at the University of Birmingham, UK, in the School of Computer Science. My research interests focus on multi-objective combinatorial optimisation. This includes optimising problems with conflicting objectives such as subset selection, route planning, resource allocation and scheduling. I lead the academic department of the Doctorate Associate, promoting global interdisciplinary communication among young scholars. We organise online academic salons on "Sustainable Development".

EDUCATION

2021 – Expect 2025 **University of Birmingham, UK** **Ph.D Computer Science**
Research: Multi-objective optimisation, Multi-objective Combinatorial Optimisation, Non-elitist Evolutionary Algorithm, Visualisation of optimisation problems.

2019 – 2021 **University of Birmingham, UK** **MRes Natural Computation**
Research: Artificial life, Agent-based model, Evolutionary Computation, Pseudo Random Number Generator.

2015 – 2019 **University of Birmingham, UK** **MSci Computer Science**
(MSci: Integrated Bachelor with Master)

RESEARCH PROJECTS

1. Comparison between evolutionary and local search methods in multi-objective combinatorial optimisation
2. Non-Elitism in multi-objective evolutionary algorithm
3. Landscape visualisation of multi-objective problems
4. New benchmarks in runtime analysis
5. Solving complex combinatorial problems

PUBLICATIONS

1. Z. Liang, M. Li, “On the Problem Characteristics of Multi-objective Pseudo-Boolean Functions in Runtime Analysis”, In Foundations of Genetic Algorithms (FOGA), 2025.
2. S. Ren, Z. Liang, M. Li, C. Qian, “A Theoretical Perspective on Why Stochastic Population Update Needs an Archive in Evolutionary Multi-objective Optimization”, In International Joint Conference on Artificial Intelligence (IJCAI), 2025.
3. Z. Cui, Z. Liang, L.M. Pang, H. Ishibuchi, M. Li, “When to Truncate the Archive? On the Effect of the Truncation Frequency in Multi-Objective Optimisation”, In Genetic and Evolutionary Computation Conference Companion (GECCO), 2025.
4. Z. Liang, Z. Cui, M. Li, “Pareto Landscape: Visualising the Landscape of Multi-Objective Optimisation Problems”, In Parallel Problem Solving from Nature (PPSN), pp. 299–315, 2024.
5. M. Li, X. Han, X. Chu, Z. Liang, “Empirical Comparison between MOEAs and Local Search on Multi-Objective Combinatorial Optimisation Problems”, In Genetic and Evolutionary Computation Conference (GECCO), pp. 547–556, 2024.
6. Z. Liang, M. Li, P.K. Lehre, “Non-elitist Evolutionary Multi-objective Optimisation: Proof of Principle Results”, In Genetic and Evolutionary Computation Conference Companion (GECCO), pp. 383–386, 2023.
7. Z. Liang, M. Li, “Some Multi-Objective Local Search Algorithms Are Better than Others”, (Under Review by AAAI).
8. S. Ren, Z. Liang, M. Li, C. Qian, “Not Just for Archiving: Provable Benefits of Reusing the Archive in Evolutionary Multi-objective Optimisation”, (Under Review by AAAI).
9. C. Jiang, Z. Liang, M. Li, “When to Use Which? An Investigation of Search Methods on Expensive Black-box Optimisation Problems”, (Under Review by JOGO).
10. Q. Liu, J. Dong, Z. Liang, J. Luo, N. Cui, “Strategic Allocation of Medical Resources in Disaster Response: A Multi-objective Nonlinear Dynamic Model with Risk and Cost Considerations”, (Under Review by CAIE)

EXPERIENCE

2024 - **Doctorate Association** **Director of Academic Department**
Organising academic events and promoting global interdisciplinary communication among young scholars. (e.g., Online academic salons series on “Sustainable Development”, Birmingham Early-Career Researchers Forum)

2022 – 2024 **University of Birmingham** **Teaching Assistant**
Modules: Computer Aided Verification (Formal Methods), Evolutionary Computation, Artificial Intelligence 2, MSc Final year project, Algorithms for Data Science.

2021 – 2024 **University of Jinan** **Teaching Assistant**
Assisted Dr. Cui Na's research group at the School of Civil Engineering, University of Jinan.