Zimin Liang

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SUMMARY

I am a PhD student at the University of Birmingham, UK. My research interests focus on **multi-objective combinatorial optimisation** (e.g., route planning, subset selection, resource allocation and scheduling), particularly on **problem characteristics** and **what algorithms** to use under different production or optimisation scenarios. I lead the academic department of the Doctorate Associate, promoting global interdisciplinary communication among young scholars (e.g., online academic salons on "Sustainable Development").

EDUCATION

2021 – 2026.1 University of Birmingham, UK **Ph.D Computer Science**

Research: Multi-objective optimisation, Multi-objective Combinatorial Optimisation, Evolutionary Computation, Visualisation of optimisation problems.

2015 – 2021 University of Birmingham, UK **MSci Computer Science & MRes Natural Computation**
(MSci: Integrated Bachelor with Master)

Research: Multi-agent system, Artificial life, Evolutionary Computation, Neural Computation, Computer-aided verification, Pseudo Random Number Generator, Robot programming.

PUBLICATIONS

1. Z. Liang, M. Li, "Random is Faster than Systematic in Multi-objective Local Search", In AAAI, 2026. CCF A CORE A+
2. R. Ren, Z. Liang, M. Li, C. Qian, "Not Just for Archiving: Provable Benefits of Reusing the Archive in Evolutionary Multi-objective Optimization", In AAAI, 2026. CCF A CORE A+
3. Z. Liang, M. Li, "On the Problem Characteristics of Multi-objective Pseudo-Boolean Functions in Runtime Analysis", In Foundations of Genetic Algorithms (FOGA), 2025. CORE A+
4. Q. Liu, J. Dong, N. Cui, Z. Liang, J. Luo, "Strategic Allocation of Medical Resources in Disaster Response: A Multi-objective Nonlinear Dynamic Model with Risk and Cost Considerations", In CAIE, 2025. JCR Q1 CAS Q2
5. 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 IJCAI, 2025. CCF A CORE A+
6. 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 GECCO, 2025. CCF C CORE A
7. Z. Liang, Z. Cui, M. Li, "Pareto Landscape: Visualising the Landscape of Multi-Objective Optimisation Problems", In Parallel Problem Solving from Nature (PPSN), 2024. CCF B CORE A
8. M. Li, X. Han, X. Chu, Z. Liang, "Empirical Comparison between MOEAs and Local Search on Multi-Objective Combinatorial Optimisation Problems", In GECCO, 2024. CCF C CORE A
9. Z. Liang, M. Li, P.K. Lehre, "Non-elitist Evolutionary Multi-objective Optimisation: Proof of Principle Results", In GECCO, 2023. CCF C CORE A

EXPERIENCE

2024 - Doctorate Associate Director of Academic Department

Organising academic events: 13 Online academic salons, MSCA Application Workshop, Birmingham Early-Career Researchers Forum AI Sub-Forum 2024 and 2025. Participate in Shenzhen Bao'an Innovation and Entrepreneurship Competition for Overseas Doctorate Entrepreneurs

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.

2018 – 2018 Ark St Alban's Teaching Assistant

Assisted Mr. Rye's Computing course at year 8 and year 11; Host Scratch coding club for year 4 and year 5.

SKILLS

- **Programming**: Python, Java; C/C++, CUDA, Haskell, Pascal/Delphi, Visual Basic, Scratch
- **Optimisation & Algorithms**: Multi-objective optimisation, evolutionary computation, heuristics, local search, etc
- **Libraries & Tools**: NumPy, PyTorch, BoTorch, jMetal, pymoo, OpenAI API, SLURM/sbatch,
- **Languages**: Mandarin Chinese, Cantonese Chinese, English (IELTS 8)