Enming Liang

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Google Scholar | Personal Webpage | LinkedIn

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Research Interests

AI for Optimization, Generative Models, with Applications in Mobility, Energy, and Climate.

Employment

Research Assistant Professor — Hong Kong
City University of Hong Kong | College of Computing — 2025/01 – Present

Education

City University of Hong Kong — Hong Kong
Ph.D. | Department of Data Science — 2021/09 – 2024/10
Advisor: Prof. Minghua Chen

- Thesis: ML for Constrained Optimization: Solution Feasibility and Multi-valued Mapping

Sun Yat-sen University — Guangzhou
B.Eng. | School of Intelligent Systems Engineering — 2016/09 – 2020/07
Advisor: Prof. Renxin Zhong

- GPA: 91/100, Rank: 1/47
- Thesis: Optimal Supply and Demand Management in Ride-sourcing Platform

Research Experience

Cambridge University — Cambridge
Visiting Researcher | Advisor: Prof. Srinivasan Keshav — 2024/05 – 2024/06

- Resilience of European Transimission Grid under Extreme Weather

Microsoft Research Asia — Beijing
Research Intern | Advisor: Dr. Li Zhao & Dr. Lei Song — 2022/05 – 2022/09

- Data-Driven Optimization for Vehicle Routing Problem
- Multi-Agent Resource Optimization (MARO) platform

Huawei Noah's Ark Lab — Shenzhen
Research Intern | Advisor: Dr. Zhitang Chen & Dr. Jie Chuai — 2020/10 – 2021/04

- Collaborative Optimization for Large-scale 4G LTE Cell Networks
- Scenario-based Optimization for High-Dimension 5G RF Parameters

Didi Chuxing & SYSU Research Cooperation Program — Guangzhou
Research Assistant | Advisor: Prof. Renxin Zhong — 2018/11 – 2020/05

- A Multi-Agent Reinforcement Learning Approach for Online Vehicle Dispatching
- Dynamic Spatial-Temporal Pricing for Supply-demand Regulations of Ride-sourcing Market

Guangdong Key Laboratory of Intelligent Transportation Systems — Guangzhou
Research Assistant | Advisor: Prof. Renxin Zhong — 2018/04 – 2018/10

- The Calibration of First-Order Macroscopic Traffic Models Using MF-CEM

Conference Proceedings

⋆: Co-first; †: Co-corresponding

▷ Fast Projection-Free Approach (without Optimization Oracles) for Optimization over Compact Convex Set
Chenghao Liu, **Enming Liang**†, Minghua Chen†.
In Proceedings of The Thirty-Ninth Annual Conference on Neural Information Processing Systems (**NeurIPS 2025**). **Spotlight**.

▷ Efficient Bisection Projection to Ensure NN Solution Feasibility for Optimization over General Set.
Enming Liang, Minghua Chen.
In Proceedings of the Forty-second International Conference on Machine Learning (**ICML'2025**).

▷ DFF: Decision-Focused Fine-tuning for Smarter Predict-then-Optimize with Limited Data.
Jiaqi Yang⋆, **Enming Liang**⋆, Zicheng Su, Zhichao Zou, Zhen Peng, Jiecheng Guo, Kun An, Wanjing Ma.
In Proceedings of the AAAI Conference on Artificial Intelligence (**AAAI'2025**). **Oral**.

▷ Characterizing ResNet's Universal Approximation Capability.
Chenghao Liu, **Enming Liang**, Minghua Chen.
In Proceedings of the Forty-first International Conference on Machine Learning (**ICML'2024**).

▷ Generative Learning for Solving Non-Convex Problem with Multi-Valued Input-Solution Mapping.
Enming Liang, Minghua Chen.
In Proceedings of the Twelfth International Conference on Learning Representations (**ICLR'2024**).

▷ Low Complexity Homeomorphic Projection to Ensure NN Solution Feasibility for Optimization over (Non-)Convex Set.
Enming Liang, Minghua Chen, Steven H. Low.
In Proceedings of the Fortieth International Conference on Machine Learning (**ICML'2023**).

▷ OAM: an Option-Action Reinforcement Learning Framework for Universal Multi-Intersection Control.
Enming Liang, Zicheng Su, Chilin Fang, Renxin Zhong.
In Proceedings of the AAAI Conference on Artificial Intelligence (**AAAI'2022**). **Oral**.

Workshop Papers

▷ On the Expressiveness of Graph Neural Network for Solving Second-Order Cone Programming.
Ruizhe Li, **Enming Liang**†, Minghua Chen†.
NeurIPS 2025 | ScaleOPT workshop.

▷ Gauge Flow Matching for Efficient Constrained Generative Modeling over General Convex Set.
Xinpeng Li⋆, **Enming Liang**⋆, Minghua Chen.
ICLR 2025 | DeLTa workshop | **Outstanding Short Paper Award**.

▷ Solving Chance-Constrained AC-OPF Problems by Neural Network with Bisection-based Projection.
Enming Liang*, Min Zhou*, Jiawei Zhao, Minghua Chen.
ACM E-energy 2025 | EnergySP workshop.

Journal Publications

▷ Partially Permutation-Invariant Neural Network for Solving Two-Stage Stochastic AC-OPF Problem.
Min Zhou, **Enming Liang**†, Minghua Chen†, Steven Low.

IEEE Transactions on Power Systems (**TPWRS**). 2025.

▷ Homeomorphic Projection to Ensure Neural-Network Solution Feasibility for Constrained Optimization.
Enming Liang, Minghua Chen, Steven H. Low.
Journal of Machine Learning Research (**JMLR**). 2024

▷ Hierarchical Control for Stochastic Network Traffic with Reinforcement Learning.
Zicheng Su, Andy H.F. Chow, Chilin Fang, **Enming Liang**, Renxin Zhong.
Transportation Research Part B: Methodological (**TRB**). 2023.

▷ An Integrated Reinforcement Learning and Centralized Programming Approach for Online Taxi Dispatching.
Enming Liang, Kexin Wen, William H.K. Lam, Agachai Sumalee, Renxin Zhong.
IEEE Transactions on Neural Networks and Learning Systems (**IEEE TNNLS**). 2021.

▷ Adaptive Signal Control for Bus Service Reliability with Connected Vehicle Technology via Reinforcement Learning.
Andy H.F. Chow, Zicheng Su, **Enming Liang**, Renxin Zhong.
Transportation Research Part C: Emerging Technologies (**TRC**). 2021.

▷ Neuro-Dynamic Programming for Optimal Control of Macroscopic Fundamental Diagram Systems.
Zicheng Su, Andy H.F. Chow, Nan Zheng, Yunping Huang, **Enming Liang**, Renxin Zhong.
Transportation Research Part C: Emerging Technologies (**TRC**). 2020.

Tutorials

▷AI for Optimal Power Flow Tutorial.
Enming Liang, Priya L. Donti, and Minghua Chen.
Climate Change AI Summer School. 2024.

Grants & Funds

CCF-DiDi GAIA Collaborative Research Funds 2025
Co-PI | (PI: Dr. Zicheng Su from Tongji University)
- Optimal Subsidy Design under Uncertainty

CCF-DiDi GAIA Collaborative Research Funds 2024
Co-PI | (PI: Dr. Zicheng Su from Tongji University)
- Optimal Subsidy Design for Ride-Sourcing Platform

CCF-DiDi GAIA Collaborative Research Funds 2023
Co-PI | (PI: Dr. Zicheng Su from Tongji University)
- Decision-Focused Learning for Ride-Sourcing Platform

Competition Prizes

KDD CUP: Learning to Dispatch and Reposition on a Mobility-on-Demand Platform 2020
Top 2 (0.1%) | Solo winner

Huawei & ICAPS: Dynamic Pickup and Delivery Problem Competition 2021
Silver Prize (0.2%)

MeiTuan 1st Low-Altitude Economy Flight Management Challenge 2024
Silver Prize (1%)

Awards & Honors

Top Reviewer Award in NeurIPS 2024 2024

Outstanding Academic Performance Award | CityU HK 2023

Excellence Award in *Star of Tomorrow Internship Program*, MSRA 2022

Research Tuition Scholarship | CityU HK 2022 & 2023

Outstanding Undergraduate Thesis | SYSU 2020

National Scholarship | China 2020

Tutorial & Teaching

Teacher at CityU, HK 2025-2027

- 2025/26 Semester B | SDSC3060 Operations Research

Teaching Assistant at CityU, HK 2021-2024

- 2021/22 Semester B | SDSC3060 Operations Research
- 2022/23 Semester A | SDSC3019 Intro to Networked Life & DS
- 2022/23 Semester B | SDSC6014 Networked Life & Data Science
- 2023/24 Semester B | SDSC6014 Networked Life & Data Science

Professional Services

Conference Reviewer 2023-2025

- International Conference on Machine Learning (ICML) 2025
- International Conference on Learning Representations (ICLR) 2025
- Conference on Neural Information Processing Systems (NeurIPS) 2024
- Annual AAAI Conference on Artificial Intelligence (AAAI) 2023/2024/2025
- International Conference on Artificial Intelligence and Statistics (AISTATS) 2025

Journal Reviewer 2023-2025

- Transcation on Machine Learning Research (TMLR)
- Transportation Research Part E
- Transportmetrica B
- Neural Computing
- IEEE Power Engineering Letters