Enming Liang

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Google Scholar | Personal Webpage | LinkedIn

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Research Interests

Machine Learning, Optimization Theory, and Generative Models,
Applications in Sustainable Energy and Transportation Systems.

Education

City University of Hong Kong — Hong Kong
Ph.D. | Department of Data Science — 2021/09 – 2024/11
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

Employment

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

Selected Awards & Honors

Outstanding Short Paper Award | ICLR 2025 DeLTa workshop — 2025

Top Reviewer Award | NeurIPS — 2024 & 2025

Outstanding Academic Performance Award | CityU HK — 2023

Research Tuition Scholarship | CityU HK — 2022 & 2023

Excellence Award in *Star of Tomorrow Internship Program* | Microsoft Research Asia — 2022

Outstanding Undergraduate Thesis Award (Top 5%) | SYSU — 2020

National Scholarship (Top 1%) | Ministry of Education, China — 2020

ACM KDD Cup: Learning to Dispatch and Reposition on a MoD Platform — 2020
▷ Top 2 Winner (0.1%)

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%)

Working Manuscripts

⋆: Co-first; †: Co-corresponding

▷ **Enming Liang**, Minghua Chen, Srinivasan Keshav. *European Electricity Grids May Exhibit Heatwave-induced Capacity Bottlenecks*. **Under submission**. 2025.

▷ Xinpeng Li, **Enming Liang**†, Minghua Chen†. *Gauge Flow Matching: Efficient Constrained Generative Modeling over General Convex Set and Beyond*. **Under review**. 2026.

▷ Ruizhe Li, **Enming Liang**†, Minghua Chen†. *On the Expressiveness and Complexity of Graph Neural Network for Solving Second-Order Cone Programs*. **Under review**. 2026.

▷ Chenghao Liu, **Enming Liang**†, Minghua Chen†. *Hom-PGD$^+$: Homeomorphic Reformulation for Efficient Optimization over Non-convex Set*. **Under review**. 2026.

▷ Jiawei Zhao, Min Zhou, **Enming Liang**, Minghua Chen. *DeepPF: Learning to Generate High-Voltage AC-PF Solution with Equality Guarantee at Internal Buses*. **Under review**. 2026.

Conference Papers

⋆: Co-first; †: Co-corresponding

▷ Chenghao Liu, **Enming Liang**†, Minghua Chen†. *Fast Projection-Free Approach (without Optimization Oracles) for Optimization over Compact Convex Set*. In Proceedings of The Thirty-Ninth Annual Conference on Neural Information Processing Systems (**NeurIPS 2025**) | **Spotlight** (Top 3.2% of 21,575 submitted papers).

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

▷ Jiaqi Yang⋆, **Enming Liang**⋆, Zicheng Su, Zhichao Zou, Zhen Peng, Jiecheng Guo, Kun An, Wanjing Ma. *DFF: Decision-Focused Fine-tuning for Smarter Predict-then-Optimize with Limited Data*. In Proceedings of the AAAI Conference on Artificial Intelligence (**AAAI'2025**) | **Oral** (Top 4.6% of 12,957 submitted papers).

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

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

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

▷ **Enming Liang**, Zicheng Su, Chilin Fang, Renxin Zhong. *OAM: an Option-Action Reinforcement Learning Framework for Universal Multi-Intersection Control*. In Proceedings of the AAAI Conference on Artificial Intelligence (**AAAI'2022**) | **Oral** (Top 5.5% from 9020 submitted papers).

Workshop Papers

⋆: Co-first; †: Co-corresponding

▷ Ruizhe Li, **Enming Liang**†, Minghua Chen†. *On the Expressiveness of Graph Neural Network for Solving Second-Order Cone Programming.* **NeurIPS 2025 Workshop** on GPU-Accelerated and Scalable Optimization (ScaleOpt).

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

▷ Xinpeng Li⋆, **Enming Liang**⋆, Minghua Chen. *Gauge Flow Matching for Efficient Constrained Generative Modeling over General Convex Set.* **ICLR 2025 Workshop** on Deep Generative Model in Machine Learning: Theory, Principle and Efficacy (DeLTa) | **Outstanding Short Paper Award**.

Journal Articles

⋆: Co-first; †: Co-corresponding

▷ Min Zhou, **Enming Liang**†, Minghua Chen†, Steven Low. *Partially Permutation-Invariant Neural Network for Solving Two-Stage Stochastic AC-OPF Problem.* IEEE Transactions on Power Systems (**TPWRS**). 2025.

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

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

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

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

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

Talks & Presentations

►: Invited

► Reframing Constraints: Levearing Topological Homomorphism for Decision Optimization
Starry Academic (5K+ online audience) | Huawei | Shenzhen, Dec. 2025

► Homeomorphism Methods for Efficient Decision-Making with Hard Constraints
TongLuRen Academic Forum | Tongji University | Shanghai, Dec. 2025

► Homeomorphic Projection to Ensure NN Solution Feasibility for Constrained Optimization.
The 3rd HK-SIAM Biennial Conference | Hong Kong, July 2025

▶ Solving Chance-Constrained ACOPF with Neural Networks and Bisection-based Projection.
EnergySP Workshop | ACM e-Energy 2025 | Rotterdam, June 2025

▷ Gauge Flow Matching for Efficient Constrained Generative Modeling.
ICLR 2025 DeLTa Workshop | Singapore, April 2025

Student Mentorship

Xinpeng Li | Phd Student | City University of Hong Kong 2024 - Present

- Xinpeng Li*, Enming Liang*, Minghua Chen. *Gauge Flow Matching for Efficient Constrained Generative Modeling over General Convex Set.* **ICLR 2025 DeLTa workshop** | **Outstanding Short Paper Award**.
- Xinpeng Li, Enming Liang†, Minghua Chen†. *Gauge Flow Matching: Efficient Constrained Generative Modeling over General Convex Set and Beyond.* **Under review**. 2026.

Ruizhe Li | Undergraduate RA | Southern University of Science and Technology 2025 - Present

- Ruizhe Li, Enming Liang†, Minghua Chen†. *On the Expressiveness of Graph Neural Network for Solving Second-Order Cone Programming.* **NeurIPS 2025 ScaleOPT workshop**.
- Ruizhe Li, Enming Liang†, Minghua Chen†. *On the Expressiveness and Complexity of Graph Neural Network for Solving Second-Order Cone Programs.* **Under review**. 2026.

Jiaqi Yang | PhD Student | Tongji University 2024 - 2025

- Jiaqi Yang*, Enming Liang*, Zicheng Su, Zhichao Zou, Zhen Peng, Jiecheng Guo, Kun An, Wanjing Ma. *Decision-Focused Fine-tuning for Smarter Predict-then-Optimize with Limited Data.* **AAAI 2025** | **Oral**.

Hongruifeng Xiong | Incoming Phd Student | University of Hong Kong 2025 - Present

- Survey on Machine Learning with Hard Constraints.

Professional Experience

Cambridge University Cambridge
Visiting Student | 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

Teaching Activities

Instructor | City University of Hong Kong 2025 - Present

- 2025/26 Semester B | SDSC3060 Operations Research

Teaching Assistant | City University of Hong Kong 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

Grants & Funds

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

- Decision-Focused Learning for Subsidy Design under Uncertainty

CCF-DiDi GAIA Collaborative Research Funds 2024
Co-PI | (PI: Dr. Zicheng Su from Tongji University)

- Decision-Focused Learning for Optimal Subsidy Design

CCF-DiDi GAIA Collaborative Research Funds 2023
Co-PI | (PI: Dr. Zicheng Su from Tongji University)

- Decision-Focused Learning for Ride-Sourcing Platform

Academic Activities

Program Committee Member 2025

- ACM International Conference on Future Energy Systems (ACM e-Energy) 2026 | TPC Member

Tutorial Contributor 2024

- **AI for Optimal Power Flow Tutorial** (2024 Version).
  Enming Liang (Advising comments form Prof. Priya L. Donti (MIT) and Prof. Minghua Chen (CityU, HK).)
  Climate Change AI Summer School 2024.

Conference Reviewer 2023-2025

- Conference on Parsimony and Learning (CPAL) 2026
- International Conference on Machine Learning (ICML) 2025/2026
- International Conference on Learning Representations (ICLR) 2025/2026
- Conference on Neural Information Processing Systems (NeurIPS) 2024/2025
- Annual AAAI Conference on Artificial Intelligence (AAAI) 2023/2024/2025/2026
- International Conference on Artificial Intelligence and Statistics (AISTATS) 2025

Journal Reviewer 2023-2025

- IEEE Transactions on Smart Grid
- IEEE Power Engineering Letters
- Transportation Research Part E
- Transportmetrica B: Transport Dynamics
- Neural Computing
- Transaction on Machine Learning Research