

ZHENGYANG LI

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The Hong Kong Polytechnic University, 11 Yuk Choi Rd, Hung Hom, Hong Kong, China

EDUCATION

The Hong Kong Polytechnic University	Hong Kong SAR, China
Ph.D. candidate, Department of Civil and Environmental Engineering	Sep. 2020-Present
• Thesis topic: <i>Advances in Multicriteria Traffic Assignment for Future Transportation System</i>	
• Advisor: Prof. Anthony Chen	

University of Washington	Seattle, USA
Visiting Ph.D. student, Department of Civil and Environmental Engineering	Mar. 2023-Aug. 2023
• Topic: <i>The potential of peer-to-peer resource sharing for community resilience</i>	
• Advisor: Prof. Cynthia Chen	

Southwest Jiaotong University	Chengdu, China
M.S. in Transportation Planning and Management	Sep.2017-Jul.2020
• Thesis topic: <i>Train Service Design in an Urban Rail Transit Line Incorporating Multiple Service Routes and Multiple Train Compositions</i>	
• Advisor: Prof. Qiyuan Peng	
B.S. in Railway Transportation	Sep. 2013-Jul. 2017
• Advisor: Prof. Qiyuan Peng	

ACADEMIC POSITION

Research assistant, The Hong Kong Polytechnic University	Sep. 2023-Aug. 2024
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RESEARCH INTEREST

Methodologies: Optimization, network modeling, algorithms

Topics: Transport planning and management, traffic assignment, public transport, reliable shortest path

SELECTED HONORS AND AWARDS

• Postgraduate Scholarships, Hong Kong Polytechnic University.	2020-2023
• Valedictorian of the School of Transportation and Logistics, Southwest Jiaotong University.	2020
• Outstanding master thesis, Southwest Jiaotong University.	2020
• Outstanding Graduates of Southwest Jiaotong University.	2020
• National Scholarship for Graduate Students, 20,000 CNY.	2019
• Second prize for 15th “HUAWEI Cup” China Post-Graduate Mathematical Contest in Modelling.	2018
• Outstanding winner of “ZHONGQING Cup” National College Students Mathematical Modeling Contest, 2,000 CNY.	2018
• Excellent students scholarship of Southwest Jiaotong University (each year)	2014-2017

PEER-REVIEWED JOURNAL PAPERS

1. Zhandong Xu, Anthony Chen*, Guoyuan Li, Zhengyang Li, and Xiaobo Liu. 2023. Elastic-demand bi-criteria traffic assignment under the continuously distributed value of time: A two-stage gradient projection algorithm with graphical interpretations. *Transportation Research Part E: Logistics and Transportation Review*, 183, 103425. <https://doi.org/10.1016/j.tre.2024.103425>
2. Guangming Xu, Yangyang Song, Yini Xiao, Zhengyang Li, Anthony Chen*. 2023. Capacity-constrained mean-excess equilibrium assignment method for railway networks. *Transportation Research Part C: Emerging Technologies*, 156, 104350. <https://doi.org/10.1016/j.trc.2023.104350>
3. Zhengyang Li, Guoyuan Li, Zhandong Xu, Anthony Chen*. 2023. Multiclass bi-criteria traffic assignment without class-specific variables: An alternative formulation and a subgradient projection algorithm. *Transportation Research Part E: Logistics and Transportation Review*, 176, 103210. <https://doi.org/10.1016/j.tre.2023.103210>
4. Zhengyang Li, Jun Zhao*, Qiyuan Peng. 2021. Train Service Design in an Urban Rail Transit Line Incorporating Multiple Service Routes and Multiple Train Compositions. *Transportation Research Part C: Emerging Technologies*, 123, 102959. <https://doi.org/10.1016/j.trc.2020.102959>
5. Tao Feng, Siyu Tao*, Zhengyang Li. 2020. Optimal Operation Scheme with Short-Turn, Express, and Local Services in an Urban Rail Transit Line. *Journal of Advanced Transportation*, 2020. <https://doi.org/10.1155/2020/5830593>
6. Zhengyang Li, Jun Zhao*, Qiyuan Peng. 2020. Optimizing the Train Service Route Plan in an Urban Rail Transit Line with Multiple Service Routes and Multiple Train Sizes. *Journal of the China Railway Society*, 42(6), 1-11.

PEER-REVIEWED CONFERENCE PRESENTATIONS

1. Zhengyang Li, Anthony Chen, Katherine Idziorek, Cynthia Chen*. 2023. Community resilience: the potential of peer-to-peer transportation sharing. *In the Transportation Research Board (TRB) 103rd Annual Meeting, Washington, D.C., January 7-11, 2024.*
2. Zhengyang Li, Cynthia Chen*, Anthony Chen*. 2023. Evaluating the community resilience: a community-based peer-to-peer resource-sharing framework. *In the International Symposium on Transport Network Resilience (INSTR), Hong Kong, December 13-14, 2023.*
3. Zhengyang Li, Guoyuan Li, Zhandong Xu, Anthony Chen*. 2023. Solving the multiclass bi-criteria traffic assignment problem: Discrete versus continuous method. *In the Transportation Research Board (TRB) 102nd Annual Meeting, Washington, D.C., January 8-12, 2023.*
4. Zhengyang Li, Guoyuan Li, Zhandong Xu, Anthony Chen*. 2022. An alternative formulation for multi-class bi-criteria traffic assignment problem without class-specific variables. *In the 26th HKSTS International Conference, Hong Kong, December 12nd-13rd, 2022.*
5. Umer Mansoor, Zhengyang Li, Guoyuan Li, Anthony Chen*. 2022. Modeling travelers' heterogeneous value of safety in the continuous multiclass traffic assignment problem. *In the 26th HKSTS International Conference, Hong Kong, December 12nd-13rd, 2022.*
6. Zhengyang Li, Umer Mansoor, Anthony Chen*. 2021. A Bi-Criteria Stochastic Pathfinding Problem with Consideration of Travel Time Variability and Safety. *In the 25th HKSTS International Conference, Hong Kong, December 9th-10th, 2021.*
7. Zhengyang Li, Jun Zhao*, Qiyuan Peng. 2019. Optimal Train Service Design in Urban Rail Transit Line with Considerations of Short-Turn Service and Train Size. *In RailNorrköping 2019. 8th International Conference on Railway Operations Modelling and Analysis (ICROMA), Norrköping, Sweden, June 17th-20th, 2019.*

UNDER REVIEW

1. Zhengyang Li, Zhong Zhou, Anthony Chen*. The α -reliable mean-excess shortest path in stochastic networks. Under review at *Transportation Research Part B: Methodological*
2. Zhengyang Li, Katherine Idziorek, Anthony Chen, Cynthia Chen*. Untapped Capacity of Place-based Peer-to-Peer (P2P) Resource Sharing for Community Resilience. Under review at *Nature Cities*.

WORKING PAPERS

1. Zhengyang Li, Anthony Chen*. Route and parking lot choice equilibrium of autonomous vehicles with the continuously distributed value of time.
2. Zhengyang Li, Anthony Chen*. A systematic review on multiclass, multicriteria traffic assignment: bibliometric analysis and methodological advances.
3. Zhengyang Li, Anthony Chen*. The role of user heterogeneity in traffic paradox.
4. Zhengyang Li, Zhou Zhong, Anthony Chen*. Adaptive alpha-reliable path problem.
5. Umer Mansoor, Zhengyang Li, Guoyuan Li, Anthony Chen*. A continuous bi-criteria traffic assignment model with safety consideration
6. Umer Mansoor, Zhengyang Li, Guoyuan Li, Anthony Chen*. A bi-criteria METT and MECC traffic assignment model
7. Zhandong Xu, Zhengyang Li, Jun Xie, Anthony Chen*, Xiaobo Liu. Mean-risk traffic assignment under the continuously distributed risk-aversion factor.
8. Jie Wang, Zhengyang Li, Cynthia Chen*. Last Mile Problem in Resource Allocation in a Disaster: The Role of Community-based Sharing Captains.
9. Mingxi Li, Zhengyang Li, Jinxiao Du, Wei Ma*. Predictive path planning with differentiable time-dependent shortest path.
10. Zhengyang Li, Cynthia Chen, Anthony Chen*. The potential of peer-to-peer resource sharing for community resilience: a case for transportation sharing.
11. Zhengyang Li, Anthony Chen*. Modeling the work-from-home arrangements on urban traffic congestion.
12. Zhengyang Li, Guoyuan Li, Zhandong Xu, Anthony Chen*. Solving the multiclass bi-criteria traffic assignment problem: Discrete versus continuous method.
13. Zhengyang Li, Anthony Chen*. Elastic demand bi-objective user equilibrium: a time-surplus maximization model.
14. Zhengyang Li, Anthony Chen*. Revisit the time-based and money-based bi-criterion user equilibrium models: Does it matter?

REFEREE

Journals

- International Journal of Rail Transportation (3)
- Transportation Safety and Environment (1)

Conferences

- Transportation Research Board (TRB) annual meeting (1)
- INSTR2023: The 9th International Symposium on Transport Network Resilience (3)

RESEARCH PROJECT

PI:

- Optimizing train connection and coordination at urban rail transit transfer stations. *National Innovation and Entrepreneurship Training Program for College Students*. 20,000 CNY. Apr. 2015 to Apr. 2016.

Co-PI: NA.

Participate:

- Considering multi-dimensional travel choice in transportation network vulnerability and optimization analysis. *National Natural Science Foundation of China (NSFC)*. Jan. 2021 to Dec. 2024.

STUDENT SUPERVISION

Undergraduate final year project:

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| • TANG, Tsz Yeung, Civil and Environmental Engineering, PolyU | 2021 Fall-2022 Spring |
| Thesis topic: Evaluating accessibility and vulnerability of the Hong Kong public transport network | |
| • LEE, Shing Chung, Civil and Environmental Engineering, PolyU | 2021 Fall-2022 Spring |
| Thesis topic: Vulnerability of tunnels and bridges in Hong Kong transport network | |
| • Lau, Hon Hei, Civil and Environmental Engineering, PolyU | 2020 Fall-2021 Spring |
| Thesis topic: Vulnerability analysis of multi-modal transit network in Hong Kong | |

TEACHING EXPERIENCE

The Hong Kong Polytechnic University

Research assistant 2023-2024

Teaching assistant

- CSE561 Public transport: Operations and Service Planning Fall 2022

Student evaluations of teaching: 5.0/5.0

Lecturer: Prof. Anthony Chen

- CSE562 Traffic engineering and control Spring 2022

Lecturer: Prof. Anthony Chen

- CSE516 Urban transport planning-theory and practice Fall 2021

Lecturer: Prof. Anthony Chen

- CSE6015 Transportation optimization and simulation Spring 2021

Lecturer: Prof. Anthony Chen

TECHNICAL SKILLS

Programming language: Python, Julia, MATLAB.

Optimization solver: GUROBI, CPLEX, CVXPY, LINGO.

Library (Data science): Pandas, GeoPandas, Networkx, igraph.

Transport planning software: CUBE.

Editing software: LaTeX, MS Word, MS Excel, PowerPoint, Visio.

Language: Chinese (native), English (professional).