Jiale Li

(IELTS: 7.5; GRE: V156 Q170)

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Education

Beijing University of Technology (BJUT), Beijing, China 2019 – 2023

B.Eng. in Traffic Engineering

【***GPA***】 88.8/100

【***Core Courses***】 Operations Research (94); Advanced Mathematics (98); Game Theory and its economic applications (99); Urban Passenger Transportation (94)

Beijing University of Technology (BJUT), Beijing, China 2020 – 2023

B.Eng. in Computer Science

【***GPA***】 —/100

【***Core Courses***】 Data Structures and Algorithms (94); Project of Computer Networks (95); Set Theory and Graph Theory (91); Introduction to Software Engineering (95)

Beijing Jiaotong University (BJTU), Beijing, China 2023 – Present

M.Eng. in Transportation Planning and Management

【***GPA***】 85.0/100

【***Core Courses***】 Transport Planning (91); Optimization (87); Traffic Flow Theory (92); Deep Learning (87)

Publications & Manuscripts

- **Improved Heuristic to Reduce Oscillations in Transit Assignment on Refined Networks.**
  Accepted, Transportmetrica A: Transport Science, 2026.
  Jiale Li, Yunchao Qu*, Xiao Liang, Jianjun Wu.
  Keywords: Transit assignment; Common line problem; Variational inequality; Oscillation detection.
  Docs: **Manuscript Introduction** **Code & Configs**
- **Designing Mobility-as-a-Service Subscription Bundles under a Joint Bundle-Path Equilibrium with Continuous Trip-Frequency Heterogeneity.**
  Under review, Transportation Research Part B, 2025. ***Preprint*** *available on SSRN.*
  Jiale Li, Yunchao Qu*, Ying Lv, Xiao Liang, Jianjun Wu.
  Keywords: Mobility-as-a-Service (MaaS); Heterogeneous user equilibrium; MaaS bundle; Bilevel optimization.
- **Dynamic Evolution of Mobility-as-a-Service Subscriptions: A Game-Theoretic Day-to-Day Framework for Multimodal Transport.**
  Abstract accepted, full paper under review, ASCE ICTD 2026.
  Jiale Li, Alireza Khani*.
  Keywords: Mobility-as-a-Service (MaaS); Bundle adoption; Day-to-day dynamics; Evolutionary game.

Conference

CTS 2025 —The 16th International Workshop on Computational Transportation Science 2025.07

【***Report***】 Bundle Design for Maas: A Bilevel Social-Welfare Framework With Multi-User Multimodal Network Equilibrium

Research Interests

【***Topics***】 Mobility-as-a-Service (MaaS); User equilibrium; Pricing & economics; Data-driven operations.

【***Methods***】 Variational inequalities; Bilevel optimization; Algorithmic assignment; Heuristics; Machine learning & reinforcement learning.

Research Projects

MaaS Bundle Pricing based on Network Equilibrium —Lead Researcher 2024.10 – Present

【***Problem***】 Authorities need bundle fees/discounts that steer travel choices while accounting for congestion and cross-bundle substitution; naïve fixed-point updates can oscillate and be non-unique.

【***Methods***】 Built a bilevel design with a joint bundle-path choice user equilibrium at lower level and a VI reformulation; stated a **sufficient uniqueness** condition via the symmetric Jacobian; implemented alternating price updates with **modified MSA** method.

【***Outcome***】 *Under review*, *TR Part B*.

Urban Bus Operations: Stabilizing Assignment —Lead Researcher 2024.3 – 2024.10

【***Problem***】 Common-line services on congested corridors cause oscillatory passenger allocation, slowing equilibrium computation and destabilizing vehicle dispatch.

【*Methods*】 Introduced a **pre-line-marked** passenger-allocation scheme cast as a VI mapping; added **oscillation detection & damping** with MSA transit assignment.

【*Outcome*】 Accepted by *Transportmetrica A*.

Inland Waterway Vessel Risk-Alert Platform (AIS + ML) —Co-Developer 2022.3 – 2022.9

【*Overview*】 Built an early-warning platform for risky behaviors (collision, grounding, fire, self-sinking) on inland waterways using AIS time-series and on-site IoT devices.

【*Methods*】 Designed an AIS–MQTT data pipeline; performed time-series preprocessing & feature engineering; applied GAN-based minority augmentation; trained a **TCN** classifier with class-weighted loss; deployed a Node-RED alert dashboard.

【*Outcome*】 National Competition of Transport Science and Technology for Students —**National Third Prize**.

On-demand Shuttle Scheduling for Beijing 2022 Winter Olympics —Core Member 2021.7 – 2021.11

【*Problem*】 Peak ingress at the Yanqing venue required robust, data-driven shuttle plans with verifiable operational performance.

【*Methods*】 **Wi-Fi probe** demand profiling → GA-based scheduling → **Vissim** microscopic validation and iteration.

【*Outcome*】 Spark Fund **Key Project**; **Second Prize** (11th Beijing Student Transport S&T Competition); published in *China Highway*.

AIoT Modular Parking System with AGVs —Core Member 2021.3 – 2022.12

【*Problem*】 Legacy facilities under-utilize footprint and suffer long retrieval delays.

【*Methods*】 Optimized **AGV layout & dispatch** across scales; MATLAB scenario simulations for throughput and retrieval time.

【*Outcome*】 "Internet+" (Beijing) **First Prize**; **Second Prize** (12th Beijing Student Transport S&T Competition).

Selected CS Projects

Multi-Objective Evolutionary Algorithms for EV Charging Station —Lead Researcher 2023.1 – 2023.4

【*Overview*】 Implemented **MOGA/MOPSO** (Python) with Pareto non-dominated sorting and constraint handling; performed complexity analysis and comparative evaluation; applied to EV-charger siting to explore cost–coverage trade-offs.

【*Outcome*】 Delivered a decision-support framework for urban EV-charging deployment.

Compiler-Style Calculator with Variables (C/C++) —Course Project 2021.9 – 2022.1

【*Overview*】 Built a lexer & recursive-descent parser (left-recursion elimination), AST; implemented n-ary tree & list structures from scratch; transpiled expressions to high-level code.

【*Outcome*】 Demonstrated solid foundations in data structures, parsing, and algorithm design.

Systems Engineering Practice (Linux/Nginx & DB) —Developer 2021 – 2023

【*Overview*】 Deployed and maintained a Linux-based web stack: Nginx reverse proxy (WordPress, Kodbox), basic firewall (UFW/firewalld), and MySQL administration.

【*Outcome*】 Automated backups and service recovery; documented deployment scripts; supported reproducible research artifacts.

Honors & Awards

"Internet+" Innovation and Entrepreneurship Competition	Beijing First Prize	2021-07
Beijing Student Transport Science & Technology Competition	Second Prize	2021-12
"Challenge Cup" Capital Student Entrepreneurship Plan	Silver Award	2022-05
17th National Transport S&T Competition	National Third Prize	2022-07
12th Beijing Student Transport S&T Competition	Second Prize	2022-11

Skills

- **Programming:** Proficient in Python, MATLAB, C++.
- **Software & Tools:** Vissim, Massmotion, EMME; LaTeX; Linux; Git/Version Control.
- **Methodologies:** Transportation network modeling; transit assignment; variational inequalities; bilevel optimization; algorithmic techniques; multi-objective metaheuristics.
- **Languages:** IELTS 7.5; strong academic reading & writing.