Jiayi He

Male | Age: 23 | Phone: +86 19820804118| Language: Chinese (native), English (CET-6)
Email: jiayi-he@foxmail.com (priority); hejy96@mail2.sysu.edu.cn

Education Background

School of Intelligent Systems Engineering, Sun Yat-sen University Shenzhen, China
Bachelor of Engineering in *Traffic Engineering (Intelligent Transportation)* 2020.9~2024.6

- **Relevant Coursework**: Traffic Data Analysis, Geographic Information Systems, Traffic Big Data, Machine Learning, Deep Learning, Principles of Network and Communication, Control Principles, Electrical and Electronic Technology, Microcontroller Programming, Fundamentals of Autonomous Driving.
- **Electives/Audited**: Principles of Economics, Transport Economics, Project Management, Hong Kong Economy, Taxation Theory.
- **Honors and Awards**: GPA: 4.1/5 (Ranked 2/58), National Scholarship (2021), Outstanding Graduate of SYSU (2024), Outstanding Cadre of SYSU Communist Youth League (2022).

School of Business, Sun Yat-sen University Guangzhou, China
Master Student in *Management Science and Engineering* 2024.9~present

- **Research Interests**: Fintech (including Web3), Finance Risk Management (payment field especially).
- **Relevant Coursework**: Advanced Microeconomics, Operations Research, Game Theory, Supply Chain Management, Operations Management, Computational Social Science.
- **Electives/Audited**: Macroeconomics, Fundamentals of Accounting, Principle of Finance, Investments.
- **Honors and Awards**: First Prize Scholarship for Graduate Students, "Best Rehearsal Award" in 100th Anniversary Gala Performance of SYSU.

Research Experience

- **Undergraduate Thesis**: *Slot Sharing and Service Competition Strategies for Liner Shipping Companies under Demand Uncertainty* (Game Theory) 2024.06

Constructed game-theoretic models for a two-tier maritime supply chain comprising two liner shipping companies (joint ship-sharing on a specific route), their affiliated logistics companies (responsible for slot sales), and a service-competitive market. Five scenarios were studied, including centralized control, non-sharing, transfer payments, profit-sharing, and cost-sharing. Solved for equilibrium service levels and profits under each scenario; conducted sensitivity analysis on key parameters and derived four managerial insights for operational optimization.

Journal Manuscript: "***Slot Sharing for Container Shipping Liners Under Service Competition and Demand Uncertainty***" (In Preparation).

- **Undergraduate Research Project**: *Multi-objective Optimization of Signalized Intersections under Mixed Traffic Flow* (Operations Research Application) 2021.12-2022.05

Led a university-funded research project on signal control optimization for intersections under human-nonmotorized mixed traffic environments, inspired by Shenzhen's pedestrian overpass features. Built a multi-objective optimization model to determine phase selection and signal timing plans. Responsible for project management and mathematical modeling.

- **Third author of SCI Zone II paper** (Deep Learning) 2022.08-2023.04

*Zhao S, Li X, **He J**, et al. Sequence based local–global information fusion framework for vertebrae detection under pathological and FOV variation challenges[J]. Computerized Medical Imaging and Graphics, 2023: 102244.*

Competitions and Awards

- **National Undergraduate Mathematics Competition** (Non-Mathematics Category) 2021.12
First Prize in Guangdong Province (Focus: Fundamental Mathematics)

- **National Undergraduate Mathematical Modeling Competition** 2022.10

First Prize in Guangdong Province (Focus: Mathematical Modeling)

Project: "*Component Analysis and Identification Model for Ancient Glass Artifacts*."

Applied hypothesis testing, CART decision trees, and logistic regression to explore the relationship between glass composition and weathering phenomena. Used K-means clustering for classification and ensemble learning for predictive modeling on incomplete data, with sensitivity analysis on classifier accuracy.

- **National Undergraduate Transport Science and Technology Competition** 2023.05

Second Prize (National Level) (Focus: Reinforcement Learning)

Project: "*Traffic Signal Control and Interpretability Analysis in Road Networks Based on Multi-Agent Reinforcement Learning*."

Developed traffic signal optimization models using the MADDPG algorithm. Conducted interpretability analysis through macro-micro visualization combined with traffic flow theory, and designed an interactive simulation interface for users to understand RL decision mechanisms and optimization effects.

- **National Undergraduate Intelligent Car Competition** 2022.08

Third Prize (Regional Level) (Focus: Automation and Control)

Project: Autonomous small-scale vehicle system with "Perception–Decision–Execution" architecture. *Perception*: Visual sensors (image), ultrasonic and magnetic sensing; *Decision*: Lenet convolutional neural network for action prediction; *Execution*: Hardware implementation through motors, lighting, and mechanical actuators.

Internship Experience

- **Chenqi Mobility Technology Co., Ltd. (Ruqi Mobility)** 2024.9~2024.11

An intern in Data Analysis & Algorithm Department

Work1: Conducted predictive analysis for operational performance indicators using data science techniques.

Work2: Designed a flow filtering mechanism based on the principle of "Marginal Revenue = Opportunity Cost" to improve platform resource allocation and revenue management.

Work3: Developed a semi-Markov Decision Process (semi-MDP) reinforcement learning model for order dispatching, enhancing driver income and platform efficiency.

Campus Leadership and Life

- **Class Committee Member: League Branch Secretary** 2021.9~2024.6
  - Organized and coordinated a variety of student events, including: "Red-themed Film Screenings," "Party History Quiz Competitions," "Mid-Autumn Festival Celebrations," and "Internship Sharing Sessions."
  - Helped the class league branch win the title of "Outstanding Youth League Branch" at the university level.

- **Teaching Assistant** in ***Course: Big Data and Technology Applications in Finance*** 2024.9~2025.1
  - Assisted the course instructor with attendance, grading, class records, and Q&A sessions.

Skills and Interests

- Languages: Chinese (Native), English (CET-6, Score: 551)
- Technical Skills:
  - Programming & Data Analysis: C, Python, MATLAB, SQL
  - Document Preparation: LaTeX, Microsoft Office (Word, Excel, PowerPoint)
- Interests:
  - Outdoor sports: Long-distance running, tennis, hiking
  - City exploration: Frequent visits to the "9+2" cities in the Greater Bay Area; familiar with local industry structures and cultural landscapes.
  - Enthusiastic about observing and analyzing economic and business phenomena in daily life.
  - Embracing the application of new technologies (IT, AI, Blockchain, etc.) in business and finance.