

# Shiyao Tang

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## Education

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### M.S., Transportation Engineering

University of California, Los Angeles

GPA: 4.0/4.0 Advisor: Youngseo Kim

Los Angeles, CA

Sept. 2025 – Present

### B.Eng., Traffic and Transportation

Beijing Jiaotong University (BJTU)

WES GPA: 3.83/4.0

Beijing, China

Sept. 2021 – June 2025

### Exchange Student, Transportation and Operations

University of California, Irvine

GPA: 4.0/4.0

Irvine, CA

Mar. 2024 – Aug. 2024

### Exchange Student, Industrial and Systems Engineering

The Hong Kong Polytechnic University

GPA: 4.0/4.0

Hong Kong

Sept. 2024 – Jan. 2025

## Research Interests

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- **Topics:** Transportation demand modeling, travel behavior, network optimization, smart mobility systems
- **Methods:** Discrete choice modeling, convex optimization, graph-based learning, reinforcement learning

## Publications

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### Selected Publications / Preprints

- **Tang, S., & Kim, Y.** “LA Corridor Validation via MaxEnt Route Choice with PeMS (VDS) and LA-Sim Network.” Manuscript in preparation; target journal: *Transportation Research Part B*.
- **Tang, S., Ji, K. Y., Bills, T., & Kim, Y.** “PD-MUSE: Primal-Dual Maximum-Utility Structured Estimator with Entropy Regularization and Moment Constraints.” Manuscript in preparation; target journal: *Transportation Research Part A*.
- **Tang, S.** “Review on Short-term Traffic Flow Prediction Methods Under Big Data.” *International Conference on Mechatronics and Smart Systems*, 2023.

## Presentations

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- **Tang, S.** “Convex Reformulations for Logit-Family Choice Models: A Primal–Dual Estimator and Open-Source Implementation.” Talk, *The Fourth ITS Irvine Symposium on Emerging Research in Transportation*, University of California, Irvine, 2026.

## Research Experience

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### Incoming Graduate Research Assistant

University of California Institute of Transportation Studies (UC ITS)

Los Angeles, CA

July 2026 –

### Undergraduate Thesis: “Mapping Trip Distance Distributions Using Network Embedding and Topological Analysis”

Supervised by Irene Martinez (TU Delft) and Yonglei Jiang (BJTU)

Beijing, China / Delft, Netherlands  
Dec. 2024 – May 2025

- Developed a cross-city framework to analyze and predict trip distance distributions using OpenStreetMap-based network features across cities in China and the Netherlands.

- Combined network embedding, topological analysis, and gravity-style modeling to study how transportation network structure shapes urban travel behavior.

### **Core Member, “Adaptive Test-Time Learning for Driver Fatigue Detection”**

**Singapore**

Supervised by Xinliang Zhou and Yang Liu, Nanyang Technological University

*Jan. 2024 – Feb. 2025*

- Developed test-time adaptation methods for cross-driver fatigue detection using the NTHU-DDD, UTA-RLDDD, and FAHD datasets.
- Designed a subject-specific pattern assessment module and an adaptive learning-rate mechanism to improve cross-subject generalization under distribution shift.
- Built an experiment and visualization pipeline using WandB, t-SNE, and Matplotlib to track adaptation dynamics and progressive alignment of fatigue patterns.

### **Research Assistant**

**Irvine, CA**

Freight Train Identification Project with Caltrans, supervised by Stephen G. Ritchie

*Mar. 2024 – Sept. 2024*

- Supported freight-train image identification by extending more than 1,000 night-time recognition labels and preparing data for model refinement.
- Improved night-time label recognition performance by incorporating new labels, tuning deep learning models, and applying GIS and signal-processing workflows.

### **Research Member, Cambridge University Academic Training Program**

**Cambridge, UK**

Research on Path Planning, Intelligent Navigation, and Behavioral Decision-Making Algorithms

*Jan. 2023 – Mar. 2023*

- Built robot navigation and emergency-delivery simulations in Webots, contributing to modeling, algorithm design, and system deployment.
- Developed a heterogeneous robot-team framework that reduced simulated urban delivery time by 25% and improved task completion efficiency by 40%.
- Authored a first-author conference paper, “Review on Short-term Traffic Flow Prediction Methods Under Big Data,” accepted by the International Conference on Mechatronics and Smart Systems.

## **Industry Experience**

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### **Cloud Control Technology Department Intern**

**Chongqing, China**

Western China Internet of Vehicles (Chongqing) Co., Ltd.

*June 2023 – Aug. 2023*

- Supported the Chongqing Intelligent Networked New Energy Vehicle Demonstration Zone Project through site survey, IoV equipment commissioning, and technical coordination.
- Assisted in drafting the *Vehicle, Road, and Cloud Integration System White Paper 3.0*.

### **Vehicle-Road Coordination R&D Intern**

**Chongqing, China**

China Merchants Chongqing Communications Technology Research and Design Institute

*June 2021 – July 2021*

- Compiled international standards and case studies for intelligent transportation and smart city applications.
- Authored project proposals and field survey reports; presented findings to senior management.

## **Selected Awards & Honors**

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- **Best Diplomatic Presence Award**, 2023 “Model APEC” Conference
- **Beijing Municipal Second Prize**, “Internet+” Innovation and Entrepreneurship Competition
- **First Prize**, BJTU Innovation & Entrepreneurship Qualification Trials
- **School Class Scholarship for Academic Excellence**, First Prize (top 1%)

## **Additional Information**

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- **Languages:** Mandarin (native), English (IELTS: 8, GRE: 335)

- **Technical Skills:** Python, R, Julia, MATLAB; Vissim, MATSim, TransModeler, Webots, Civil3D, AutoCAD
- **Interests:** Public speaking, tennis, volleyball, guzheng, guqin, calligraphy