

# Chen Shi

chenshi.edu@gmail.com

Dalian University of Technology, Ganjingzi District, Dalian, Liaoning 116024 • China • +86-15184341543

## EDUCATION

**Dalian University of Technology** | Transportation Planning and Management (Master's, 83.6) SEP 2024-2027

**Courses :** Intelligent Transportation Systems, Traffic Control Theory and Method, Integration of Land Use and Transportation Planning, Deep Learning and Algorithm Design, Stochastic Process.

**Dalian University of Technology** | Transportation Engineering (Bachelor's, 85.9) SEP 2020 - JUN 2024

**Courses:** Transportation Planning, Traffic Management and Control, Traffic Flow Theory and Simulation Technology, Operations Research, C++, Python, Data Structures and Algorithms.

## RESEARCH EXPERIENCE

### ☐ Research on Multi-level Cooperative Control Strategies for Vehicle-Road Collaboration

Mar. 2024 - present

- ✓ **Model Development:** Built a three-level "Signal-Route-Speed" optimization model with coupling through saturation and delay. Applied MPC and TuRBO for signal timing optimization, K-shortest path and MSA for route assignment.
- ✓ **Algorithm Design:** Proposed PIA-TuRBO algorithm integrating traffic engineering knowledge (Webster delay model) into Bayesian optimization with cooperative prior functions and adaptive trust region strategies.
- ✓ **Coupling Mechanism:** Established coupling chain: route flow→intersection flow→saturation→delay, achieving bidirectional influence through incidence matrix.
- ✓ **Simulation Validation:** Implemented on SUMO using Qingdao network (31 intersections). Preliminary results show 42.9%-67.6% reduction in total travel time (penetration rate 30%-80%).

### ☐ Intelligent Transportation Experimental Platform | Python, FastAPI, PostgreSQL, JavaScript

Jun. 2025 - Present

- ✓ Developing *vehicle-road-cloud integrated platform* with multi-source data collection, traffic flow reconstruction/prediction, control strategy optimization and experiment management modules.
- ✓ Building *full-stack* application using Python FastAPI backend, PostgreSQL database with SQLAlchemy ORM, and JavaScript frontend with ECharts visualization.
- ✓ Implementing *virtual-physical simulation environment* for traffic scenario testing and performance evaluation.

### ☐ Research on Regional Integrated Traffic Control Technology in the Intelligent Connected Environment

Feb. 2023 - Mar. 2024

- ✓ Constructed multi-layered traffic signal models coordinated with connected vehicles.
- ✓ Optimized a simulation platform for managing hybrid traffic flows.

## OTHER EXPERIENCE

- ✧ **Outcomes:** Conference paper for ITSAC 2025, Invention Patents of China \*2
- ✧ **Awards:** DUT Outstanding Bachelor's Thesis Award (2024)
- ✧ **Conference Presentations:** ISMT 2024
- ✧ **Academic Visits:** Japan (Oct 2023), Singapore (Jun 2024)
- ✧ **Academic Training:** THU-TUM Winter School on Transportation (Nov 2024), GREAS 2025 for NCSU

## SKILLS

- ✧ **Techniques:** Traffic Control and Modeling, Python Programming, Simulation Validation, System Modeling, Full-Stack Development
- ✧ **Soft Skills:** Academic Communication, Academic Poster Presentation, Online Research, Teamwork