

# Lexing Zhang

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## Education

**Chang'an University, China** (Project 211)

**Sept. 2021-Jul. 2025 (expected)**

- Department of Transportation, School of Transportation Engineering
- B.Eng. in Transportation
- GPA (first six semesters): 87.26/100
- Core courses: System Analysis Engineering (98); Fundamentals of College Computer (96); Carriage of dangerous goods (94); Engineering Surveying (93); Transportation Engineering Theory (93); GIS(geographic information system) (bilingual) (93); Engineering Mechanics (91); Engineering Drawing I (90);

**National University of Singapore, Singapore**

**Aug. 2024-May. 2025 (expected)**

- Civil and Environmental Engineering, College of Design and Engineering
- Exchange student

## Publications & Patents

1. Boyao Peng, **Lexing Zhang**, Enkai Li. Lane Level Joint Control of Off-Ramp and Main Line Speed Guidance on Expressway in Rainy Weather. 103rd Annual Meeting of Transportation Research Board (TRB 2024) (Accepted).
2. Boyao Peng, **Lexing Zhang**, Enkai Li, Yin Feng, Ying Zhang, Li Zhong. Free-flow tolling system for expressway with fusion of 5G communication and high-precision positioning technology. The 4th International Conference on Smart City Engineering and Public Transportation (SCEPT2024) (Accepted).
3. Chen Ma, Baixi Shi, Yanqiu Cheng, **Lexing Zhang**, Kuanmin Chen. From Lockdown to Recovery: Modeling the Long-term Effects of COVID-19 on Xi'an's Metro Ridership. 104th Annual Meeting of Transportation Research Board (TRB 2025) (Accepted).
4. Wenxuan wang, **lexing zhang**, boyan. Development of a Surrogate Safety Measure for Evaluating Rear-End Collision Risk Perception. Transportation Research Record. under review.
5. Wenxuan Wang, **Lexing Zhang\***, Jiale Lei, Boyao Peng and Yin Feng. Vehicle Acceleration Prediction Considering Group Consistency and Individual Differences Using Attention-enhanced LSTM Network. IEEE Intelligent Transportation Systems Magazine. under review.
6. **Lexing Zhang**, Boyao Peng, Tinghuan Liang, Xiaoyun Cheng, Ying Zhang, Shaoxuan Zhu, Wanting Fan, Yi Zhao. National Invention Patent "A free-flow toll collection method and system for expressways". Under review.
7. Boyao Peng, **Lexing Zhang**, Enkai Li, Xiaoyun Cheng, Yin Feng, Li Zhong, Jiajun Zhu, Hengxu Hu, Jiale Lei, Haoyang Wu. National Invention Patent "A kind of induction method and system for the exit vehicle of the highway ramp toll station". Under review.

## Research Experience

### Research on the Passing Efficiency of Highway Free Flow Tolling System

Project Leader | Xi'an, China | Nov. 2021 – Nov. 2022

- Developed a free-flow tolling system for motorways using cellular automata traffic simulation model
- Evaluated capacity for various ratios of manual, ETC, and free-flow toll lanes under different traffic volumes
- Implemented cellular automata traffic simulation code for capacity analysis
- Enhanced algorithm adaptability for motorway scenarios
- Published findings in a conference paper and filed a patent application

### Highway Driving Safety Research Seminar

Team Member | Xi'an, China | Dec. 2022 – Aug. 2023

- Analyzed driving characteristics of expressway exit areas during rainfall
- Proposed speed guidance strategy for vehicles exiting expressways to reduce accidents in rainy conditions
- Conducted literature review, model building, data collection and processing

- Designed speed guidance strategy and provided recommendations to highway bureau
- Published findings in a conference paper for TRB 2024

### Long-Term and Short-Term Speed Prediction at Tunnel Exits

Project Leader | Xi'an, China | Nov. 2023 – Present

- Established optimization algorithm for tunnel exit speed prediction using driver-style clustering and environmental variables
- Conducted experiments on five deep learning models to improve prediction accuracy
- Implemented data processing and deep learning network construction using Python
- Submitted findings as a paper to IEEE Intelligent Transportation Systems Magazine.

### Competitions

- National 1<sup>st</sup> Prize, The 18th "Challenge Cup" National College Students' Extracurricular Academic Science and Technology Works Competition Oct. 2023
- Honorable Mention, 2024 American Collegiate Mathematical Modeling Contest Mar. 2024
- Provincial 1<sup>st</sup> Prize, "Higher Education Society Cup" National Undergraduate Mathematical Contest in Modeling Nov. 2023
- Provincial 1<sup>st</sup> Prize, the 1<sup>st</sup> Shaanxi Provincial College Students Transportation Technology Competition in 2023 Apr. 2023
- Provincial 2<sup>nd</sup> Prize, the 1<sup>st</sup> Shaanxi Provincial College Students Transportation Technology Competition in 2023 Apr. 2023
- Provincial 2<sup>nd</sup> Prize, the 2<sup>nd</sup> Shaanxi Provincial College Students Transportation Technology Competition in 2024 (won two awards in total) Apr. 2024
- Provincial 3<sup>rd</sup> Prize, the 2<sup>nd</sup> Shaanxi Provincial College Students Transportation Technology Competition in 2024 Apr. 2024
- University 1<sup>st</sup> Prize, the 13<sup>th</sup> "Challenge Cup" College Students Extracurricular Academic Science and Technology Works Competition of Chang'an University Apr. 2023

### Scholarships

- National Scholarship 2022-2023 academic year
- Class Academic Merit Scholarship 2022-2023 academic year
- College Contribution Scholarship 2022-2023 academic year
- Course Excellence Scholarship 2022-2023 academic year

### Skills

- Software: SPSS, MATLAB, Visio, VISSIM, AutoCAD, Origin.
- Computer skills: Python, familiar with basic machine learning algorithms, and basic data processing skills.
- English Proficiency (TOEFL: 88, CET-4: 531, CET-6: 509)