Meixin Zhu

Assistant Professor, The Hong Kong University of Science and Technology (Guangzhou)
No. 1 Duxue Road, Nansha, Guangzhou, China
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INTERESTS

Autonomous Driving, Reinforcement Learning, Driving Behavior, Traffic-Flow Modeling and Simulation, Traffic Signal Control, Multi-Agent Reinforcement Learning

PROFESSIONAL EXPERIENCES

The Hong Kong University of Science and Technology (Guangzhou), Guangzhou, China
- Tenure-track Assistant Professor   Sep 2022 – Present
  - Systems Hub, Intelligent Transportation Thrust

The Hong Kong University of Science and Technology, Hong Kong, China
- Affiliated Assistant Professor   Sep 2022 – Present
  - Department of Civil and Environmental Engineering

EDUCATION

University of Washington, Seattle, US
- Ph.D. in Intelligent Transportation System   Sep 2018 – Aug 2022
- Advisor: Prof. Yinhai Wang, professor in CEE, adjunct professor in ECE
- Dissertation: Behavior Modeling and Motion Planning for Autonomous Driving using Artificial Intelligence

Georgia Institute of Technology, Atlanta, US
- Master of Science in Computer Science   Jan 2021 – Dec 2023
  - Specialization: machine learning

Tongji University, Shanghai, China
- Master of Science in Communication and Transportation Engineering   Sep 2015 – Jun 2018
- Bachelor of Science in Traffic Engineering   Sep 2011 – Jun 2015
- Advisor: Prof. Xuesong Wang

RESEARCH EXPERIENCE

Motional, Software Research Intern   Jan 2022 – Jul 2022
- Behavioral planning for autonomous driving.

Amazon, Applied Scientist Intern   Jun 2021 – Sep 2021
- Last Mile ML Science Team. Developed a new model for last mile delivery optimization.

Oak Ridge National Laboratory (ORNL), Research Intern   Jun 2019 – Dec 2019
- Signal Timing Control for Large-Scale Networked Intersections

PUBLICATIONS

Under review and preprints

[1] D Chen, **M. Zhu**, H Yang, X Wang, Y Wang, "Data-driven Traffic Simulation: A Comprehensive Review," *arXiv preprint arXiv:2310.15975*, Oct 2023.

[2] P Wang, M Zhu, S Shen, "ENTROPY: Environment Transformer and Offline Policy Optimization," *arXiv preprint arXiv:2303.03811*, Mar 2023.

[3] **M. Zhu**, S. Du, X. Wang, H. Yang, Z. Pu, and Y. Wang, "Transfollower: Long Sequence Car-Following Trajectory Prediction through Transformer," Jan 2022 (**2022 ASA TSIG student paper award**).

Journal Articles

[1] H. Lu, Y. Liu, **M. Zhu**, C. Lu, H. Yang, and Y. Wang, "Enhancing interpretability of autonomous driving via human-like cognitive maps: a case study on lane change," *IEEE Transactions on Intelligent Vehicles*, Feb 2024.

[2] H. Lu, M. Tsai, **M. Zhu**, H. Yang, C. Liu, S. Yin, and Y. Wang, "Traffic Performance Score: Measuring Urban Mobility and Online Predicting of Near-Term Traffic, like Weather Forecasting," *Transportation Research Record*, Jan 2024.

[3] X. Chen, **M. Zhu**, K. Chen, P. Wang, H. Lu, H. Zhong, X. Han, X. Wang, and Y. Wang, "FollowNet: a comprehensive benchmark for car-following behavior modeling," *Scientific Data*, Nov 2023.

[4] Z. Yu, **M. Zhu**, K. Chen, X. Chu, X. Wang "LF-Net: A Learning-based Frenet planning approach for urban autonomous driving," *IEEE Transactions on Intelligent Vehicles*, Nov 2023.

[5] H. Zhong, R. Xu, H. Lu, Y. Liu, **M. Zhu**, "Dynamic assessment of population exposure to traffic-originated PM2. 5 based on multisource geo-spatial data," *Transportation Research Part D: Transport and Environment*, vol. 124, pp. 103823, Nov 2023.

[6] C. Liu, H. Yang, **M. Zhu**, F. Wang, T. Vaa, and Y. Wang, "Real-time multi-task environmental perception system for traffic safety empowered by ddge artificial intelligence," *IEEE Transactions on Intelligent Transportation Systems*, Sep 2023.

[7] H. Yu, P. Wang, J. Wang, J. Ji, Z. Zheng, J. Tu, G. Lu, J. Meng, **M. Zhu**, S. Shen, and F. Gao, "Catch planner: catching high-speed targets in the flight," *IEEE/ASME Transactions on Mechatronics*, Jun 2023.

[8] R. Ke, Z. Cui, Y. Chen, **M. Zhu**, H. Yang, Y. Zhuang, and Y. Wang, "Lightweight edge intelligence empowered near-crash detection towards real-time vehicle event logging," *IEEE Transactions on Intelligent Vehicles*, Feb 2023.

[9] Y. Du, J. Chen, C. Zhao, F. Liao, and **M. Zhu**, "A hierarchical framework for improving ride comfort of autonomous vehicles via deep reinforcement learning with external knowledge," *Computer Aided Civil and Infrastructure Engineering*, Nov 2022.

[10] H. Wang, **M. Zhu**, W. Hong, C. Wang, W. Li, G. Tao, and Y. Wang, "Network-wide traffic signal control using bilinear system modeling and adaptive optimization," *IEEE Transactions on Intelligent Transportation Systems*, Oct 2022.

[11] **M. Zhu**, H. Yang, C. Liu, Z. Pu, and Y. Wang, "Real-time crash identification using connected electric vehicle operation data," *Accident Analysis & Prevention*, vol. 173, Aug 2022.

[12] H. Yang, J. Cai, **M. Zhu**, C. Liu, and Y. Wang, "Traffic-informed multi-camera sensing (TIMS) system based on vehicle re-identification," *IEEE Transactions on Intelligent Transportation Systems*, Mar 2022.

[13] **M. Zhu**, W. Zhu, J. Lutin, Y. Wang, and Z. Cui, "Developing a Practical Method to Compute State-Level Bus Occupancy Rate," *Journal of Transportation Engineering, Part A: Systems*, vol. 147, issue 6, Jun 2021.

[14] P. Sun, X. Wang, and **M. Zhu**, "Modeling car-following behavior on freeways considering driving style," *Journal of Transportation Engineering, Part A: Systems*, vol. 147, issue 12, Dec 2021.

[15] H. Yang, **M. Zhu**, C. Liu, and Y. Wang, "How fast you will drive? Predicting speed of customized paths by deep neural network," *IEEE Transactions on Intelligent Transportation Systems*, Feb 2021 (IF: 6.492).

[16] **M. Zhu**, Y. Wang, J. Hu, X. Wang, and R. Ke, "Safe, efficient, and comfortable velocity control based on reinforcement learning for autonomous driving," *Transportation Research Part C: Emerging Technologies*, vol. 117, pp. 102662, Aug 2020 (**TR-C most cited paper**, IF: 8.3).

[17] **M. Zhu**, X. Wang, and Y. Wang, "Human-like autonomous car-following model with deep reinforcement learning," *Transportation Research Part C: Emerging Technologies*, vol. 97, pp. 348–368, Dec 2018 (**TR-C most cited paper**, IF: 8.3).

[18] **M. Zhu**, X. Wang, A. Tarko, and S. Fang, "Modeling car-following behavior on urban expressways in Shanghai: A naturalistic driving study," *Transportation Research Part C: Emerging Technologies*, vol. 93, pp. 425–445, Aug 2018 (IF: 8.3).

[19] **M. Zhu**, X. Wang, and J. Hu, "Impact on car following behavior of a forward collision warning system with headway monitoring ," *Transportation Research Part C: Emerging Technologies*, vol. 111, pp. 425–244, Feb 2020 (IF: 8.3).

[20] Z. Pu, **M. Zhu**, Z. Cui, and Y. Wang, "Monitoring public transit ridership flow by passively sensing Wi-Fi and Bluetooth mobile devices," *IEEE Internet of Things Journal*, Jun 2020 (IF: 9.471).

[21] H. Wang, **M. Zhu**, W. Hong, C. Wang, G. Tao, and Y. Wang, "Optimizing signal timing control for large urban traffic networks using an adaptive linear quadratic regulator control strategy," *IEEE Transactions on Intelligent Transportation Systems*, Aug 2020 (IF: 6.492).

[22] X. Wang, **M. Zhu**, M. Chen, and P. Tremont, "Drivers' rear end collision avoidance behaviors under different levels of situational urgency," *Transportation Research Part C: Emerging Technologies*, vol. 71, pp. 419–433, Oct 2016 (IF: 8.089).

[23] X. Wang, M. Chen, **M. Zhu**, and P. Tremont, "Development of a kinematic-based forward collision warning algorithm using an advanced driving simulator," *IEEE Transactions on Intelligent Transportation Systems*, vol. 17, no. 9, pp. 2583–2591, Sep 2016 (IF: 6.492).

[24] X. Wang, and **M. Zhu**, "Calibrating and validating car-following models on urban expressways for Chinese drivers using naturalistic driving data," *China Journal of Highway and Transport*, vol. 31, issue 9, pp. 129–138, Oct 2018.

[25] M. Yang, X. Wang, and **M. Zhu**, "Driving behavior research based on naturalistic driving study," *Traffic and Transportation*, vol. 33, no. 3 pp. 7–9, Mar 2017.

[26] X. Wang, **M. Zhu**, and M. Chen, "Dimension reduction and multivariate analysis of variance for drivers' forward collision avoidance behavior characteristic," *Journal of Tongji University*, vol. 44, no. 12 pp. 1858–1866, Dec 2016.

[27] X. Wang, **M. Zhu**, and Y. Xing, "Impacts of collision warning system on car-following behavior based on naturalistic driving data," *Journal of Tongji University*, vol. 44, no. 7 pp. 1045–1051, Jul 2016.

[28] X. Wang, **M. Zhu**, and M. Chen, "Impacts of situational urgency on drivers' collision avoidance behaviors," *Journal of Tongji University*, vol. 44, no. 6 pp. 876–883, Jun 2016.

Conference Articles

[1] C. Ye, X. Wang, **M. Zhu** and A. Morris, "Automated Vehicle Decision-Making Based on Reinforcement Learning and Responsibility-Sensitive Safety," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[2] H. Lu, C. Lu, **M. Zhu** and H. Yang, "A Brain-Inspired Perception-to-Planning Framework for Lane-Changing Empowered by Cognitive Map," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[3] R. shi, X. Wang, **M. Zhu**, A. Morris, and D. Qin, "Digitized Traffic Rules Guided Trajectory Planning: A Case Study of Right-Turn Scenario," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[4] P. Wang, **M. Zhu**, H. Lu, X. Chen, S. Shen and X. wang, "BEVGPT: Generative Pre-trained Transformer for Autonomous Driving Prediction, Decision Making and Planning," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[5] X. Chen, K. Chen, **M. Zhu**, X. Wang, H. Yang and Y. Wang, "MetaFollower: Adaptable Personalized Autonomous Car Following," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[6] X. Han, **M. Zhu**, X. Chen, P. Cai and X. Chu, "EnsembleFollower: A Hybrid Car-Following Framework Based On Reinforcement Learning and Hierarchical Planning," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[7] H. Yang, C. Liu, **M. Zhu**, R. Ke, Y. Wang, "Mitigating the Bias for Traffic Visual Perception Systems Empowered by Learning Few-Shot Representations," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[8] M. Tsai, C. Liu, H. Yang, X. Jiang, **M. Zhu** and Y. Wang, "Unified Framework for Multi-Contrastive Learning in Spatial-Temporal Traffic Forecasting," *Presentation at the 103th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2024.

[9] **M. Zhu**, H. Yang, and C. Liu, and Y. Wang, "Multi-Agent Deep Reinforcement Learning for Network-Wide Traffic Signal Control," *accepted by the 102th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2023.

[10] K Chen, X Chen, Z Yu, **M. Zhu**, H Yang, "EquiDiff: A Conditional Equivariant Diffusion Model For Trajectory Prediction," *The 26th IEEE International Conference on Intelligent Transportation Systems (ITSC 2023)*, Bilbao, Bizkaia, Spain, Sep 2023.

[11] C. Liu, H. Yang, **M. Zhu**, C. Kopca, and Y. Wang, "Edge-based Automatic Real-time Road Surface Condition Monitoring system (RSCMS) based on Single Monocular Surveillance Camera," *accepted by the 102th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2023.

[12] H. Yang, C. Liu, **M. Zhu**, Y. Zhuang, M. Tsai, and Y. Wang, "Cooperative Perception and Interaction Smart Node for Non-motorized Users and Disabilities Empowered by Edge Ensemble Learning," *accepted by the 102th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2023.

[13] **M. Zhu**, J. Hu, Z. Pu, Z. Cui, L. Yan, and Y. Wang, "Traffic sign detection and recognition for autonomous driving in virtual simulation environment," *International Conference on Transportation and Development*, Jun 2022.

[14] S Ricord, **M. Zhu**, Y Wang "Impact of Homeless Encampments on Roadway Safety and DOT Policy: Summary of Findings from Current Data Sources," *International Conference on Transportation and Development*, Jun 2022.

[15] **M. Zhu**, H. Yang, and C. Liu, and Z. Pu, "Real-time crash identification using connected electric vehicle operation data," *accepted by the 101th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2022.

[16] Y. Liang, **M. Zhu**, Z. Wu, and Y. Wang, "Actor critic reinforcement learning for ecological cooperative adaptive cruise control," *accepted by the 101th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2022.

[17] Z. Cui, M. Tsai, **M. Zhu**, H. Yang, C. Liu, and Y. Wang, "Traffic performance score 2.0: measure urban mobility and online predict near-term traffic like weather forecast," *accepted by the 101th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2022.

[18] R. Xu, X. Wang, **M. Zhu**, and X. Zhu, "Impact of cell phone use on driving risk: a naturalistic driving study," *accepted by the 101th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2022.

[19] H. Yang, C. Liu, R. Ke, **M. Zhu**, and Y. Wang, "RISTS: real-time IoT system for traffic sensing by edge computing and multi-camera vehicle re-identification," *accepted by the 101th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2022.

[20] H. Yang, **M. Zhu**, R. Ke, C. Liu, and Y. Wang, "Novel network-scale traffic sensing approach using multi-camera object tracking and re-identification," *accepted by the 100th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2021.

[21] R. Ke, Z. Cui, Y. Chen, **M. Zhu**, and Y. Wang, "IoT system for real-time near-crash detection for automated vehicle testing," *accepted by the 100th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2021.

[22] Z. Cui, **M. Zhu**, S. Wang, P. Wang, Q. Cao, C. Kopca, and Y. Wang, "Traffic performance score for measuring the impact of COVID-19 on urban mobility," *accepted by the 100th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2021.

[23] P. Sun, X. Wang, and **M. Zhu**, "Modeling car-following behavior on freeways considering driving style," *accepted by the 100th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2021.

[24] H Yang, C Liu, **M. Zhu**, W Sun, Y Wang, "Hybrid data-fusion model for short-term road hazardous segments identification based on the acceleration and deceleration information," *International Conference on Transportation and Development*, May 2020.

[25] **M. Zhu**, X. Wang, and Y. Wang, "Differences in freeway car following: empirical findings from naturalistic driving studies in Shanghai and Ann Arbor," *accepted by the 99th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2020.

[26] Z. Pu, X. Guo, Z. Cui, **M. Zhu**, and Y. Wang, "Mining public transit ridership flow and origin-destination information from wi-fi and bluetooth sensing data," *accepted by the 99th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2020.

[27] Z. Cui, M. Fu, **M. Zhu**, X. Ban, and Y. Wang, "Transportation artificial intelligence platform for traffic forecasting," *accepted by the 99th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2020.

[28] H. Wang, C. Wang, **M. Zhu**, and W. Hong, "Globalized modeling and signal timing control for large-scale networked intersections," in *Proceedings of the 2nd ACM/EIGSCC Symposium On Smart Cities and Communications (SCC 2019)*, Portland, OR, USA:ACM, Sep 2019.

[29] P. Sun, X. Wang, and **M. Zhu**, "Calibrating Car-Following Models on Freeway Based on Naturalistic Driving Study," in *19th COTA International Conference of Transportation Professionals*, Jul 2019.

[30] **M. Zhu**, X. Wang, and J. Hu, "Impact on car following behavior of a forward collision warning system with headway monitoring," *Presentation at the 98th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2019.

[31] X. Wang, L. He, **M. Zhu**, and C. Chai, "Calibrating car-following model on surface roads using Shanghai naturalistic driving study data," *Presentation at the 98th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2019.

[32] **M. Zhu**, X. Wang, and Y. Wang, "Human-like autonomous car-following planning by deep reinforcement learning," *Presentation at the 97th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2018.

[33] X. Wang, M. Yang, and **M. Zhu**, "An exploration of cut-in behavior and gap acceptance using Shanghai Naturalistic Driving data," *Presentation at the 97th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2018.

[34] **M. Zhu**, X. Wang, and Y. Wang, "Human-like autonomous car-following model by deep deterministic policy gradient reinforcement learning," *Accepted for Oral Presentation at the ASCE International Conference on Transportation and Development*, Pittsburgh, Pennsylvania, Jul 2018.

[35] **M. Zhu**, X. Wang, and A. Tarko, "Calibrating car-following models on urban expressways for Chinese drivers using naturalistic driving data," *Oral Presentation at the 96th Annual Meeting of the Transportation Research Board*, Washington D.C., USA, Jan 2017.

[36] **M. Zhu**, and X. Wang, "Impact of a forward collision warning system on headway and reaction time during car following," in *Proceedings of the 14th World Conference on Transport Research*, Shanghai, China, Jul 2016.

[37] **M. Zhu**, X.S. Wang, and X.M. Wang, "Car-following headways in different driving situations: a naturalistic driving study," in *Proceedings of the 16th COTA International Conference of Transportation Professionals*, Shanghai, China, Jul 2016.

[38] X. Wang, and **M. Zhu**, "Car-following headways in different driving situations: a naturalistic driving study in China," in *Proceedings of the 5th International Symposium on Naturalistic Driving Research*, Blacksburg, Virginia, USA, Oct 2016.

Patents

[1] X. Wang, **M. Zhu**, and P. Sun, "A autonomous driving velocity control algorithm based on multi-objective optimization," *C.N. Patent 109709956 A*, filed Dec 2018, and issued May 2019.

[2] X. Wang, **M. Zhu**, and P. Sun, "A human-like autonomous car-following model based on deep reinforcement learning," *C.N. Patent 109733415 A*, filed Jan 2019, and issued May 2019.

[3] X. Wang, **M. Zhu**, and M. Chen, "A forward collision warning algorithm considering heterogeneity of drivers' reaction," *C.N. Patent 105691391 A*, filed Jun 2016, and issued Sep 2017.

Reports

[1] Y. Wang, X. Ban, Z. Cui, and **M. Zhu**, "An artificial intelligence platform for network-wide congestion detection and prediction using multi-source data," *Connected Cities for Smart Mobility toward Accessible and Resilient Transportation Center (C2SMART)*, Jun 2019.

[2] Y. Wang, W. Zhu, and **M. Zhu**, "A connected vehicle-based adaptive navigation algorithm," *Pacific Northwest Transportation Consortium (PacTrans)*, Jun 2019.

[3] Y. Wang, M. Roger, J. Lutin, W. Zhu, **M. Zhu**, "Developing a statistically valid and practical method to compute bus and truck occupancy data," *Federal Highway Administration (FHWA)*, May 2019.

AWARDS & SCHOLARSHIPS	▪ **Top 3 cited paper**, Transportation Research Part C: Emerging Technologies	Mar 2023

	■ **Best Dissertation Award**, TRB Standing Committee on Artificial Intelligence and Advanced Computing Applications (AED50)	Jan 2023
	■ 2022 Transportation Statistics Interest Group **(TSIG) Student Paper Award**	Jan 2022
	■ 2nd Place, Transportation Forecasting Competition, TRB AI Committee AED50	Jan 2022
	■ Graduate Student Travel Award, PacTrans	Jan 2022, Jan 2020
	■ **Most Cited Paper**, Transportation Research Part C: Emerging Technologies	Apr 2020
	■ **Wining Award**, 2021 Digital China Innovation Contest	Apr 2021

■ **Wining Award**, 2021 Digital China Innovation Contest — Apr 2021
Top 4 of 1332 teams, Smart Transportation-Collision Detection based on Big Data of Internet of Vehicles.

■ Second Place, Poster Competition of 2020 PacTrans Student Transportation Conference — Nov 2020

■ Outstanding Graduates of Shanghai, Shanghai Education Commission — Mar 2018
Top 5%, for outstanding graduate students in Shanghai.

■ National Graduate Scholarship (twice), Ministry of Education, China — Oct 2017, Oct 2016
Top 0.2%, for outstanding graduate students in China.

■ Outstanding Student Award, Tongji University — Oct 2016
One of 44 awardees from the 13,864 graduate students in Tongji.

■ China Graduate Mathematical Contest in Modeling, Second Prize — Sep 2016

■ Volvo Scholarship, Volvo Group — Dec 2014
One of 15 awardees in China, for outstanding engineering students.

■ National Competition of Transport Science and Technology for Students, Second Prize — May 2014
One of 8 winning groups in China.
Project: Traffic Parameter Analysis Platform based on Unmanned Aerial Vehicle (UAV).

■ Mathematical Contest in Modeling, Honorable Mention — Jan 2014
Paper: Modeling the Keep-Right-Except-To-Pass Rule Using Cellular Automaton

■ National Endeavor Fellowship (twice), Ministry of Education, China — Nov 2013, Nov 2012
Top 3% of all the undergraduate students in China.

■ China Undergraduate Mathematical Contest in Modeling, Second Prize — Sep 2013
Top 5% among over 30,000 competition teams in China.

TEACHING

Instructor, INTR 5230 Data-driven Methods in Transportation, HKUST(GZ) — Spring 2023, 2024

Instructor, INTR 5130 Traffic Control and Simulation, HKUST(GZ) — Fall 2022, 2023

Instructor, CET590 Traffic Systems Operations, University of Washington — Fall 2021
- ■ Basic topics
  - **Traffic System Control**: Pretimed/Actuated Signal Control; Freeway Operations.
  - **Traffic Simulation**: Modeling with VISSIM; VAP; Driver Behavior Models; Behavior Model Calibration.
- ■ Advanced topics:
  - **Traffic System Control**: Proportional–Integral–Derivative (PID) Control; Linear Feedback Control, Model Predictive Control (MPC); Linear Quadratic Regulator (LQR); Deep Reinforcement Learning; Traffic Control Case Studies based on Cutting-Edge Research; Autonomous Driving Research.
  - **Traffic Simulation**: Modeling with SUMO; Python for Controlling VISSIM and SUMO Simulation; Advanced Driver Behavior Modeling Methods including Imitation Learning, Inverse Reinforcement Learning, and Sequence to Sequence Models; Automatic Behavior Model Calibration.

Teaching Assistant, CET590 Traffic Systems Operations, University of Washington — Fall 2020
- Homework grading and tutoring, simulation tutorials, and final exams preparation.

Teaching Assistant, Statistical Analysis in Transportation Engineering, Tongji University — Fall 2017
- Preparing course slides and tutoring students on SAS coding.

PROFESSIONAL ACTIVITIES

Reviewer

- ■ IEEE Transactions on Robotics
- ■ IEEE Transactions on Intelligent Transportation Systems
- ■ IEEE Intelligent Transportation Systems Magazine
- ■ Transportation Research Part B: Methodological
- ■ Transportation Research Part C: Emerging Technologies
- ■ IEEE Transactions on Intelligent Vehicles
- ■ IEEE Transactions on Artificial Intelligence

- IEEE Internet of Things Journal
- IEEE Transactions on Automation Science and Engineering
- IEEE Transactions on Knowledge and Data Engineering
- IEEE Transactions on Mobile Computing
- IEEE Transactions on Circuits and Systems for Video Technology
- IEEE International Conference on Robotics and Automation (ICRA)
- Transportation Research Record
- Transportmetrica B: Transport Dynamics
- Accident Analysis & Prevention
- Journal of Intelligent Transportation Systems
- ACM Transactions on Intelligent Systems and Technology
- Human Factors: The Journal of the Human Factors and Ergonomics Society
- Journal of Advanced Transportation
- Journal of Transportation Engineering, Part A: Systems
- IEEE Open Journal of Intelligent Transportation Systems
- IET Intelligent Transport Systems
- Mathematical Problems in Engineering
- International Conference on Machine Learning (ICML)
- Conference on Neural Information Processing Systems (NeurIPS)
- International Conference on Learning Representations (ICLR)
- IEEE International Conference on Robotics and Automation (ICRA)
- International Journal of Human-Computer Interaction (IJHCI)
- Discrete Dynamics in Nature and Society
- PLOS ONE
- Electronic Research Archive
- Scientific Reports
- Journal of Computational Design and Engineering
- Sensors
- Field Robotics
- 2023 IEEE Conference on Advanced Robotics and its Social Impact (ARSO)
- Applied Sciences
- Journal of Intelligence & Robotics
- The 25th International Symposium on Transportation and Traffic Theory (ISTTT25)
- Journal of Intelligent & Fuzzy Systems
- Automotive Innovation
- International Journal of Human-Computer Interaction

Subcommittee on Connected and Automated Traffic Flow (CAT-Flow), TRB Committee on Traffic Flow Theory and Characteristics (ACP50)

- Committee Member   Oct 2021 – Present

Connected & Autonomous Vehicles (CAV) Impacts Committee, ASCE Transportation & Development Institute (T&DI)

- Younger Committee Member   Sep 2019 – Present

Artificial Intelligence Committee, ASCE Transportation & Development Institute (T&DI)

- Associate Committee Member   2020 – Present

Street and Highway Operations Committee, ASCE Transportation & Development Institute (T&DI)

- Associate Committee Member   2019 – Present

Associate Member, **American Society of Civil Engineers (ASCE)**   2019 – Present

Student Member, **IEEE, IEEE Intelligent Transportation Systems Society (ITSS)**   2021 – Present

Student Member, **Association for Computing Machinery (ACM)**   2021 – Present