Chengyuan ZHANG

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CONTACT

- Homepage: https://chengyuan-zhang.github.io; Google Scholar: [Link]
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- Room 396, Macdonald Engineering Building, 817 Sherbrooke St W, Montreal, Quebec H3A 0C3, CANADA;

EDUCATION

McGill University — Montréal, Québec, Canada
Ph.D. Candidate (20'-26'), supervised by Prof. Lijun Sun — Sept. 2020 - May 2026 (expected)

· **Dissertation**: Stochastic Modeling and Simulations of Car-Following Behaviors
· **Cumulative GPA: 4.00/4.00**;
· **Courses:** COMP588@McGill, IFT6135@UdeM, ECSE683@McGill, COMP540@McGill, CIV1532H@UofT
· Fast tracked to the Ph.D. program in 2022 winter with 4.00/4.00 Master's GPA;

Chongqing University — Chongqing, China
B.S. in Vehicle Engineering — Sept. 2015 – June 2019

· **Selected scholarships and awards:** National Scholarship, 2017; Outstanding Undergraduate Thesis Award, 2019; Outstanding Graduate of Chongqing University, 2019; Outstanding Student Award (top 3%), 2018 and 2017;
· Selected to **Excellent Student Program** (top 5%, on basis of outstanding academic performance;)
· Completed extensive coursework in **Electronics Science and Technology** (2015-2016.)

University of Pennsylvania — Philadelphia, Pennsylvania, USA
Visiting Student — Jan. 2018 – Feb. 2018

ACADEMIC EXPERIENCE

Carnegie Mellon University (Robotics Institute) — Pittsburgh, Pennsylvania, USA
Visiting Student Researcher (supervised by Prof. Changliu Liu) — Jan. 2023 – Aug. 2023

University of California, Berkeley (Department of Mechanical Engineering) — Berkeley, California, USA
Visiting Student Researcher (supervised by Prof. Masayoshi Tomizuka) — Sept. 2019 – Jan. 2020

Carnegie Mellon University (Department of Mechanical Engineering) — Pittsburgh, Pennsylvania, USA
Visiting Student Researcher (supervised by Prof. Ding Zhao) — July 2018 – Oct. 2018

PREPRINTS

[1] ***Zhang, C.***, Wu, C., & Sun, L. (2025). Markov Regime-Switching Intelligent Driver Model for Interpretable Car-Following Behavior. arXiv preprint arXiv:2506.14762. [arXiv]

[2] ***Zhang, C.***, He, Z., Wu, C., & Sun, L. (2025). When Context Is Not Enough: Modeling Unexplained Variability in Car-Following Behavior. arXiv preprint arXiv:2507.07012. [arXiv]

JOURNALS (CHRONOLOGICAL ORDER)

[1] Chen, X., ***Zhang, C.***, Zhao, X. L., Saunier, N., & Sun, L. (2025). Forecasting Sparse Movement Speed of Urban Road Networks with Nonstationary Temporal Matrix Factorization. Transportation Science. [TranSci] [arXiv] [slides] [Github] [blog]

[2] ***Zhang, C.***, Wang, W., & Sun, L. (2024). Calibrating Car-Following Models via Bayesian Dynamic Regression. Transportation research part C: emerging technologies. (ISTTT25 Special Issue) [TR PartC] [arXiv] [Github]

[3] ***Zhang, C.***, & Sun, L. (2024). Bayesian Calibration of the Intelligent Driver Model. IEEE Transactions on Intelligent Transportation Systems. [IEEE TITS][arXiv] [Github] [presentation] [poster]

[4] Chen, X., ***Zhang, C.***, Cheng, Z., Hou, Y., & Sun, L. (2023). A Bayesian Gaussian Mixture Model for Probabilistic Modeling of Car-Following Behaviors. IEEE Transactions on Intelligent Transportation Systems. [IEEE TITS]

[5] Chen, X., ***Zhang, C.*** (equal contributions), Chen, X., Saunier, N., & Sun, L. (2022). Discovering dynamic patterns from spatiotemporal data with time-varying low-rank autoregression. IEEE Transactions on Knowledge and Data Engineering (accepted). [IEEE TKDE] [arXiv] [data & code] [blog]

[6] ***Zhang, C.***, Zhu, J., Wang, W., & Xi, J. (2020). Spatiotemporal Learning of Multivehicle Interaction Patterns in Lane-Change Scenarios. *IEEE Transactions on Intelligent Transportation Systems.* [demo] [IEEE TITS] [project website] [Github]

[7] ***Zhang, C.***, Zhang, X., Ye, H., Wei, M., & Ning, X. (2019). An Efficient Parking Solution: A Cam-Linkage Double-Parallelogram Mechanism Based 1-Degrees of Freedom Stack Parking System. *Journal of Mechanisms and Robotics, 11*(4), 045001. [demo] [ASME JMR]

[8] ***Zhang, C.***, & Xiao, J. (2018). Chaotic Behavior and Feedback Control of Magnetorheological Suspension System with Fractional-Order Derivative. *Journal of Computational and Nonlinear Dynamics, 13*(2), 021007. [ASME JCND]

CONFERENCES (CHRONOLOGICAL ORDER)

[1] ***Zhang, C.***, Chen, K. (equal contributions), Zhu, M., Yang, H., & Sun, L. (2024). Learning Car-Following Behaviors Using Bayesian Matrix Normal Mixture Regression. *2024 IEEE Intelligent Vehicles Symposium (IV).* [arXiv][IEEE IV]

[2] ***Zhang, C.***, Chen, R., Zhu, J., Wang, W., Liu, C., & Sun, L. (2023). Interactive Car-Following: Matters but NOT Always. *2023 IEEE Intelligent Transportation Systems Conference (ITSC).* [arXiv][IEEE ITSC]

[3] Wang, W., ***Zhang, C.***, Wang, P., & Chan, C. (2020). Learning Representations for Multi-Vehicle Spatiotemporal Interactions with Semi-Stochastic Potential Fields. *2020 IEEE Intelligent Vehicles Symposium (IV).* [IEEE IV]

[4] ***Zhang, C.***, Zhu, J., Wang, W., & Zhao, D. (2019). A General Framework of Learning Multi-Vehicle Interaction Patterns from Videos. *2019 IEEE Intelligent Transportation Systems Conference (ITSC).* [IEEE ITSC]

BOOKS

[1] Wang, W., Wang, L., ***Zhang, C.***, Liu, C., & Sun, L. (2022). Social Interactions for Autonomous Driving: A Review and Perspectives. *Foundations and Trends in Robotics: Vol. 10, No. 3-4, pp 197–376.* [ebook] [arXiv]

[2] Chen, X., Jin, J., Liao, Q., ***Zhang, C.***, Chen, X. Academic Writing with LaTeX (in Chinese), 2023. [ebook] [link]

PATENT

[1] CN108222589B, Cam-connecting rod type mechanical three-dimensional parking device. ***Zhang, C.***, Zhang, X., Ye, H., Shi, J., Wang, M., & Ning, X. *Chongqing University.*

TEACHING EXPERIENCE

Traffic Engineering and Simulation (by Prof. Lijun Sun) *2022 Fall and 2023 Fall*
Teaching Assistant, Department of Civil Engineering, McGill University

Basics of Machine Learning and Data Analysis (by Prof. Pradeep Ravikumar) *2022 Fall*
Teaching Assistant (Online), Department of Computer Science, Carnegie Mellon University

Statistical Machine Learning (by Prof. Dino Sejdinovic) *2020 Spring, 2020 Summer, and 2022 Summer*
Teaching Assistant (Online), Department of Statistics, Oxford University

ACADEMIC ACTIVITIES

· (Co-)Chair/(Co-)Ornaizer:
  - 2nd SIAM workshop on IEEE IV24', Jeju Shinhwa World, Jeju Island, Korea, 2024. [Website]
  - 1st SIAM workshop on IEEE IV23', Anchorage, Alaska, USA, 2023. [Website]

· Journal Reviewer:
  - Transportation Research Part B: Methodological;
  - Transportation Research Part C: Emerging Technologies;
  - Artificial Intelligence for Transportation;
  - IEEE Transactions on Intelligent Transportation Systems;
  - IEEE Transactions on Intelligent Vehicles;
  - IEEE Transactions on Consumer Electronics;
  - IEEE Transactions on Cybernetics;
  - IEEE Sensors Journal;
  - European Journal of Operational Research;
  - Travel Behaviour and Society;
  - ASME Journal of Mechanism and Robotics;
  - ASME Journal of Mechanism Design;
  - Physica A: Statistical Mechanics and its Applications;
  - Automotive Innovation;
  - Advanced Engineering Informatics;
  - Journal of Traffic and Transportation Engineering;
  - Nonlinear Dynamics;

· Conference Reviewer:
  - IEEE International Conference on Intelligent Transportation Systems (ITSC), 22-24;
  - IEEE Intelligent Vehicles Symposium (IV), 23-24;
  - Symposium on Machine Learning for Autonomous Driving; [NeurIPS'23] [AAAI'25]
  - Transportation Research Board Annual Meeting;
  - The 5th Symposium on Management of Future Motorway and Urban Traffic Systems (MFTS), 2024;
  - RSS 2024 Workshop on Autonomous Vehicles Across Scales (AVAS), 2024; [RSS'24]
  - Bayesian Decision-making and Uncertainty Workshop; [NeurIPS'24]
  - International Symposium on Transportation Data & Modelling (ISTDM), 2025;

· IEEE Graduate Student member;

· IEEE Intelligent Transportation Systems Society (ITSS) Student member;

· Student member of Chinese Overseas Transportation Association (COTA);

· Student member of Interuniversity Research Centre on Enterprise Networks, Logistics and Transportation (CIRRELT);

· Member of the Society of Automotive Engineers (SAE) of China;

AWARDS & SCHOLARSHIPS

· The Honorable Mention Award for the 2024 Clifford Spiegelman Student Paper Competition, 2024 [Link]

· Graduate Mobility Award, McGill University, 2022-2023

· Graduate Research Enhancement and Travel Awards, McGill University, 2023

· Ron Rice Memorial Award, McGill University, 2023

· Mitacs Globalink Research Award - Abroad, 2022-2023

· McGill Engineering Doctoral Award (MEDA), CAD $111,000, McGill University, 2022-2025

· FRQNT Master's Scholarship (B1X), CAD $17,500, 2022-2023 [Link]

· FRQNT Doctoral Scholarship (B2X), CAD $100,000, 2023-2027 [Link]

· CIRRELT Doctoral Scholarship of Excellence - Final Stages, CAD $7,500, 2025 [Link]

· CIRRELT Doctoral Scholarship of Excellence - Early Stages, CAD $4,000, 2023 [Link]

· CIRRELT Master's Scholarship of Excellence, CAD $3,500, 2022

· Graduate Excellence Fellowship Awards, McGill University, 2020

· IVADO Excellence Scholarships - Msc, CAD $40,000, 2020-2022

- Outstanding Team Award & Best Application Award at DeeCamp, China, 2019
- Outstanding Graduate of Chongqing University, 2019
- First Prize in the 2018 National College Mechanical Innovation Competition (TOP #10 in China), 2018
- National Scholarship, China, 2017
- First Prize in the Chongqing University Physics Contest (#1/500 in Chongqing University), 2015