Zhanhong Cheng

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Education

McGill University — Montreal, Canada
Ph.D. candidate in Transportation — Jan 2019–Current
- Advisor: Prof. Lijun Sun (McGill) & Prof. Martin Trépanier (PolyMtl)
- Thesis: "Travel Behavior-Based Forecasting Method in Metro System"

Harbin Institute of Technology — Harbin, China
M.S. in Transportation Planning and Management — Sep 2016–Jul 2018
- Advisor: Prof. Jia Yao
- Thesis: "An Analysis of Two Hybrid Route Choice Models in Stochastic Assignment Paradox"

Harbin Institute of Technology — Weihai, China
B.Eng. in Traffic Engineering — Aug 2012–Jul 2016
- Thesis: "Design of a Traffic Data Management and Analysis Software"

Research Interests

- Travel behavior pattern mining
- Spatiotemporal data forecasting
- Machine learning in transportation
- Sustainable transportation

Experience

Exo — Montreal, Canada
Intern — Feb 2019–Current
- Mitacs project: "spatiotemporal travel behavior modeling and analysis for better public transport systems"

Wenzhou Urban Planning and Design Institution — Wenzhou, China
Intern — Summer 2016
- Residential area parking spaces renovation project

Weihai Traffic Engineering Research Institute — Weihai, China
Research Assistant — May 2015–Jun 2016
- Weihai traffic signal system optimization project
- Traffic impact analysis

Scholarships and Awards

- CIRRELT Excellence Scholarship (Doctoral Rédaction) — 2020–2021
- McGill Engineering Doctoral Award (International) — 2019–Current
- Excellent Graduate Thesis of HIT — 2018
- First Level Scholarship of HIT — 2016, 2017

- Excellent Graduate of Shandong Province 2016
- Third Prize of National Competition of Transport Science and Technology 2015
- First Prize of China Undergraduate Mathematical Contest in Modeling 2014

Journal Publications

[1] **Z. Cheng**, M. Trépanier, and L. Sun, "Incorporating travel behavior regularity into passenger flow forecasting", *Transportation Research Part C: Emerging Technologies*, vol. 128, p. 103 200, 2021. DOI: 10.1016/j.trc.2021.103200.

[2] **Z. Cheng**, J. Yao, A. Chen, and S. An, "Analysis of a multiplicative hybrid route choice model in stochastic assignment paradox", *Transportmetrica A: Transport Science*, pp. 1–25, 2021. DOI: 10.1080/23249935.2021.1953189.

[3] X. Wang, **Z. Cheng**, M. Trépanier, and L. Sun, "Modeling bike-sharing demand using a regression model with spatially varying coefficients", *Journal of Transport Geography*, vol. 93, p. 103 059, 2021. DOI: 10.1016/j.jtrangeo.2021.103059.

[4] **Z. Cheng**, M. Trépanier, and L. Sun, "Probabilistic model for destination inference and travel pattern mining from smart card data", *Transportation*, pp. 1–19, 2020. DOI: 10.1007/s11116-020-10120-0.

[5] J. Yao, **Z. Cheng**, J. Dai, A. Chen, and S. An, "Traffic assignment paradox incorporating congestion and stochastic perceived error simultaneously", *Transportmetrica A: Transport Science*, vol. 15, no. 2, pp. 307–325, 2019. DOI: 10.1080/23249935.2018.1474962.

[6] J. Yao, W. Huang, A. Chen, **Z. Cheng**, S. An, and G. Xu, "Paradox links can improve system efficiency: An illustration in traffic assignment problem", *Transportation Research Part B: Methodological*, vol. 129, pp. 35–49, 2019. DOI: 10.1016/j.trb.2019.07.018.

[7] J. Yao, **Z. Cheng**, F. Shi, S. An, and J. Wang, "Evaluation of exclusive bus lanes in a tri-modal road network incorporating carpooling behavior", *Transport Policy*, vol. 68, pp. 130–141, 2018. DOI: 10.1016/j.tranpol.2018.05.001.

Working Papers

[1] **Z. Cheng**, M. Trepanier, and L. Sun, *Real-time forecasting of metro origin-destination matrices with high-order weighted dynamic mode decomposition*, 2021. arXiv: 2101.00466 [stat.AP].

[2] Y. Wu, **Z. Cheng**, and L. Sun, *Individual mobility prediction via attentive marked temporal point processes*, 2021. arXiv: 2109.02715 [cs.LG].

[3] K. Zhu, **Z. Cheng**, J. Wu, F. Yuan, and L. Sun, *Quantifying out-of-station waiting time in oversaturated urban metro systems*, 2021. arXiv: 2106.00888 [stat.AP].

Conferences

[1] X. Wang, **Z. Cheng**, M. Trépanier, and L. Sun, "Modeling bike-sharing demand using a regression model with spatially varying coefficients", in *Transportation Research Board 100th Annual Meeting*, Washington, D.C. (virtual), 2021.

[2] **Z. Cheng**, H. Alizadeh, M. Nazem, M. Trépanier, and L. Sun, "Long-term ridership forecast using heuristic, SARIMA and random forest methods", in *TransitData 2020*, Toronto (virtual), 2020.

[3] **Z. Cheng**, M. Trépanier, and L. Sun, "Integrating travel behavior regularity into passenger flow prediction", in *TransitData 2020*, Toronto (virtual), 2020.

[4] **Z. Cheng**, M. Trépanier, and L. Sun, "Inferring trip destinations in transit smart card data using a probabilistic topic model", in *TransitData 2019*, Paris, 2019.

[5] Z. Zhuang, **Z. Cheng**, J. Yao, J. Wang, and S. An, "Bus travel time reliability incorporating in-stop waiting time and in-vehicle travel time with AVL data", in *Transportation Research Board 98th Annual Meeting*, Washington, D.C., 2019.

[6] J. Yao, **Z. Cheng**, S. An, and A. Chen, "Analysis of a multiplicative hybrid route choice model in stochastic assignment paradox", in *Transportation Research Board 97th Annual Meeting*, Washington, D.C., 2018.

[7] J. Yao, J. Dai, A. Chen, **Z. Cheng**, and S. An, "Traffic assignment paradox incorporating congestion and stochastic perceived error simultaneously", in *Transportation Research Board 97th Annual Meeting*, Washington, D.C., 2018.

Presentations

[1] "Probabilistic model for destination inference and travel pattern mining from smart card data", in *Zooming in on collaborative digital intelligence*, Montreal (virtual), Apr. 21, 2021. [Online]. Available: https://youtu.be/xLuYrb_mmdM.