Curriculum Vitae

Yuyan (Annie) Pan, Ph.D.

CONTACT INFORMATION
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Google Scholar: https://scholar.google.com/citations?user=4pjS2hYAAAAJ&hl=zh-CN

RESEARCH INTERESTS
- Connected and Automated Vehicles, Electric Vehicles, Traffic Demand Management
- Machine Learning Applications in Smart Mobility, Traffic State Estimation and Prediction
- Traffic Flow Theory, Transportation Network Optimization, Dynamic Traffic Assignment

EDUCATION BACKGROUND
- Beijing University of Technology, Beijing, China.
  •Ph.D., Transportation Engineering, November 2023.
- Beijing University of Technology, Beijing, China.
  •M.S., Transportation Engineering, July 2018.
- Shandong University of Technology, Zibo, China.
  •B.S., Transportation Engineering, July 2014.

WORK EXPERIENCE
- 2024/4~present, Postdoctoral Scholar. Department of Civil and Environmental Engineering, The Pennsylvania State University. University Park, PA (Advisor: Dr. Xianbiao (XB) Hu).

PEER-REVIEWED PUBLICATION
1. **Pan, Y. A.**, Cheng, Q., Li, A., Zhang, J., Guo, J., & Chen, Y. (2024). Analysis of Congestion Key Parameters, Dynamic Discharge Process, and Capacity Estimation at Urban Freeway Bottlenecks: A Case Study in Beijing, China. Transportation Letters.
2. **Pan, Y. A.**, Li, F., Li, A., Niu, Z., & Cheng, Q. (2024). Urban Intersection Traffic Flow Prediction: A Physics-guided Stepwise Framework Utilizing Spatio-Temporal Graph Neural Network Algorithms. Multimodal Transportation.
3. Li, W., Chen, Y., **Pan, Y. A.**, & Zhang, Y. (2024). An Improved Spatio-Temporal Network Traffic Flow Prediction Method Based on Impedance Matrix. Journal of Highway and Transportation Research and Development. http://doi.org/10.26599/HTRD.2024.9480015
4. Zhao, H., Chen, Y., Zhang, B. & **Pan, Y. A.** (2024). Study on Transit Signal Priority Timing Considering Traffic and Environmental Benefit. Journal of Highway and Transportation Research and Development. http://doi.org/10.3969/j.issn.1002-0268.2024.02.022
5. **Pan, Y. A.**, Guo, J., Chen, Y., Cheng, Q., Li, W., & Liu, Y. (2024). A Fundamental Diagram based Hybrid Framework for Traffic Flow Estimation and Prediction by Combining a Markovian Model with Deep Learning. Expert Systems with Applications, 122219. https://doi.org/10.1016/j.eswa.2023.122219
6. **Pan, Y. A.**, Zheng, H., Guo, J., & Chen, Y. (2023). Modified Volume-Delay Function Based on Traffic Fundamental Diagram: A Practical Calibration Framework for Estimating Congested and Uncongested Conditions. Journal of Transportation Engineering, Part A: Systems, 149(11), 04023112. https://doi.org/10.1061/JTEPBS.TEENG-790
7. **Pan, Y.**, Guo, J., & Chen, Y. (2022). Calibration of Dynamic Volume-delay Functions: A Rolling Horizon-based Parsimonious Modeling Perspective. Transportation Research Record, 2676(2), 606-620. https://doi.org/10.1177/03611981211044727

8. **Pan, Y. A.**, Guo, J., Chen, Y., Li, S., & Li, W. (2022). Incorporating Traffic Flow Model into a Deep Learning Method for Traffic State Estimation: A Hybrid Stepwise Modeling Framework. Journal of Advanced Transportation, 2022. https://doi.org/10.1155/2022/5926663
9. **Pan, Y.**, Guo, J., Chen, Y., & Xie, J. (2022). Analysis of Urban Expressway Traffic Flow Characteristics Based on Traffic Flow Model: A Case Study of Beijing and Los Angeles. Science Technology & Engineering. 2022, 22(36): 16238-16245.
10. **Pan, Y.**, Guo, J., Chen, Y., Zhao, H., & Li, S. (2022). Study on Volume-Delay Function in Oversaturated Condition Based on Fundamental Diagram. Journal of Highway and Transportation Research and Development. Accepted. Unpublished.
11. Chen, Y., Li, S., **Pan, Y.**, & Zhang, J. (2022). Urban Expressway Congestion Forewarning Based on Slope Change of Traffic Flow Fundamental Diagram. Journal of Transportation Engineering, Part A: Systems, 148(6), 04022030. https://doi.org/10.1061/jtepbs.0000687
12. Chen, Y., Zhao, H., **Pan, Y.**, & Li, S. (2022). Research on Signal Timing Optimization Model Considering Stopping Emissions Based on VISSIM Simulation. In CICTP 2022, 590-600. https://ascelibrary.org/doi/abs/10.1061/9780784484265.056
13. Shi, J., Xie, J., **Pan, Y.**, & Li, Y. (2022). Mixed Traffic Flow Simulation Analysis Considering Manual-Automatic Driving on Single Lane Road. Science Technology & Engineering. 2022, 22(28): 12651-12658.
14. Tong, L., **Pan, Y.***, Shang, P., Guo, J., Xian, K., & Zhou, X. (2019). Open-Source Public Transportation Mobility Simulation Engine DTALite-S: A Discretized Space-Time Network-Based Modeling Framework for Bridging Multi-Agent Simulation and Optimization. Urban Rail Transit, 5, 1-16. https://doi.org/10.1007/s40864-018-0100-x

CONFERENCE PRESENTATION

1. Equitable Electric Vehicle Charging: Feasibility and Benefits of Streetlight Charging in Kansas City Right-of-Way. Transportation Research Board 104th Annual Meeting. Washington, DC. January 2025.
2. Fundamental Diagram-Consistent Fluid Queue Model for Hyper-Congestion and Dynamic Traffic Flow Characterization. Transportation Research Board 104th Annual Meeting. Washington, DC. January 2025.
3. Revisiting BPR Volume Delay Functions: A Space-Time Network-Based Modeling Perspective. Transportation Research Board 100th Annual Meeting. Online Conference. January 2021.
4. A Review on Volume-Delay-Functions: Connecting Theoretical Fundamental, Practical Deployment and Emerging Applications. 4th Bridging Transportation Researchers. Online Conference. August 2022.

RESEARCH PROJECTS

Pan as the Major Technical Investigator

- PennDOT Act 130 Reporting: Evaluating the Impact of Connected and Automated Vehicles to the Commonwealth of Pennsylvania. Pennsylvania Department of Transportation (PennDOT), $99,893.07, funded by Pennsylvania Department of Transportation, 04/08/2024-01/08/2025
  Major Technical Investigator: Investigation, organization and report writing
- Electric Vehicle Charging Station (EVST) Innovation: Streetlight Charging in City Right-of-Way, funded by U.S. Department of Energy (DOE). Lead organization Metropolitan Energy Center, subcontract to PSU.
  Major Technical Investigator: Data analysis and report writing

PEER REVIEWER

- Transportation Research Part B/C/E
- Transportmetrica B: Transport Dynamics
- Transportation Research Record
- Transportation

- Journal of Advanced Transportation
- Urban Rail Transit
- Multimodal Transportation
- International Journal of Intelligent Systems
- Journal of Highway and Transportation Research and Development
- Complexity
- Ain Shams Engineering Journal
- TRB Annual Meeting and Transportation Research Record (TRB)
- COTA International Conference of Transportation Professionals (CICTP)

SKILLS

- **Programming:** Python, GAMS, OSM2GMNS, Path4GMNS
- **Simulation:** DTALite, SUMO, VISSIM, TransCAD, Anylogic
- **Statistics:** SPSS, SQL, Zotero, Overleaf
- **Visualization:** GIS, QGIS, NeXTA GUI