Yanlin Zhang

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Education

2021 – now **Ph.D., University of Illinois Urbana-Champaign** in Transportation Engineering / Computational Science and Engineering (CSE).

2020 – 2021 **M.Sc., Northwestern University** in Transportation System Analysis and Planning.
Thesis: *Integrated Bike Sharing and Transit Network Design Under Heterogenous Demand*.

2016 – 2020 **B.Eng., Tongji University** in Traffic Engineering (Highest Honors).
Thesis: *Analysis of incentive–triggered travel behavior changes*.

2019 – 2020 **Exchange Student, University of California, Berkeley** in the GLOBE Program for two semesters.

Research Publications

Published Articles

1. **Y. Zhang** and A. Talebpour, "Characterizing human–automated vehicle interactions: An investigation into car-following behavior," *Transportation Research Record*, p. 03 611 981 231 192 999, 2023.

In Revisions

1. R. Ammourah, P. Beigi, B. Fan, C.-C. Hsiao, S. H. Hamdar, R. James, M. Khajeh-Hosseini, H. Mahmassani, D. Monzer, T. Radvand, A. Talebpour, M. Yousefi, and **Y. Zhang**, "Introduction to the Third Generation Simulation (TGSIM) Dataset: Data Collection and Trajectory Extraction," Under review for publication in Transportation Research Record. Revisions submitted November 2023.
2. N. Li, H. S. Mahmassani, **Y. Zhang**, A. Talebpour, and S. H. Hamdar, "A Close Look into the Spatio-Temporal Distribution of Speed, Lane Changes and Heavy Vehicles in a CongestedFreeway Weaving Section," In revision for publication in Transportation Research Record. Revision pending submission.
3. **Y. Zhang**, A. Talebpour, H. Mahmassani, and S. H. Hamdar, "An Investigation of Discretionary Lane-changing Decisions: Insights From the Third Generation SIMulation (TGSIM) Dataset," In revision for publication in Transportation Research Record. Revision pending submission.

Conference Presentations

1. S. Hegde, H. Mahmassani, **Y. Zhang**, A. Talebpour, and S. H. Hamdar, *Investigating Conflicts, Lane Changes, and Platoons in Relation to Local Densities Along a Congested Freeway Weaving Section*, Presented at the Transportation Research Board 103rd Annual Meeting, Washington, D.C. Presentation Number: TRBAM-24-03331 (Poster), 2024.
2. N. Li, H. Mahmassani, **Y. Zhang**, A. Talebpour, and S. H. Hamdar, *A Close Look into the Spatio-Temporal Distribution of Speed, Lane Changes, and Heavy Vehicles in a Congested Freeway Weaving Section*, Presented at the Transportation Research Board 103rd Annual Meeting, Washington, D.C. Presentation Number: TRBAM-24-06069 (Poster), 2024.
3. A. Talebpour, H. Mahmassani, S. H. Hamdar, C.-C. Hsiao, D. Monzer, N. Li, R. Ammourah, T. Radvand, V. Okoth, and **Y. Zhang**, *A Closer Look at the Differences Between Human Driver Behavior and Automated Vehicle Decision Making*, Presented at the Transportation Research Board 103rd Annual Meeting, Washington, D.C. Presentation Number: TRBAM-24-06373 (Poster), 2024.

4. **Y. Zhang**, A. Talebpour, H. Mahmassani, and S. H. Hamdar, *An Investigation of Discretionary Lane-Changing Decisions: Insights from the Third Generation SIMulation (TGSIM) Data Set*, Presented at the Transportation Research Board 103rd Annual Meeting, Washington, D.C. Presentation Number: TRBAM-24-06377 (Lectern), 2024.
5. **Y. Zhang** and A. Talebpour, *Characterizing human-automated vehicle interactions: an investigation into car-following behavior*, Presented at the Transportation Research Board 102nd Annual Meeting, Washington, D.C. Presentation Number: TRBAM-23-02584 (Lectern), 2023.
6. **Y. Zhang** and A. Talebpour, *Impacts of Automated Vehicles on Mixed Traffic Flow: a Causal Analysis of Changes in Car-following Behavior*, Presented at the Traffic Flow Theory and Characteristics Committee (ACP50) Summer meeting (TFTC-2023), Amsterdam, NL, 2023.
7. **Y. Zhang** and A. Talebpour, *Characterizing human-automated vehicle interactions: an investigation into car-following behavior*, Presented at the 2022 INFORMS Annual Meeting, Indianapolis, IN, 2022.
8. **Y. Zhang** and A. Talebpour, *Characterizing human-automated vehicle interactions: Safety Implications on Mixed Autonomy Traffic*, Presented at the 71st Annual Illinois Transportation Engineering and Safety Conference, Champaign, IL, 2022.

Projects

TGSIM: the Third Generation of SIMulation

- **Objective:** Collect accurate trajectory datasets capable of characterizing human-automated vehicle interactions under diverse scenarios in highway and city environments.
- **Key Contributions:**
  - **Developed a comprehensive data processing pipeline:** Integrated deep-learning-based object detection, tracking, image stabilization, and data cleaning to extract accurate trajectory data from fixed/moving aerial videography.
  - **Dataset Generation:** Processed 14 hours of high-definition video, converting it into over 11K+ vehicle-kilometers of high-fidelity trajectory data.
  - **Research and Publications:** Authored 3 journal papers and 1 report to USDOT about data collection and modeling.

AVA: Automated Vehicles for All

- **Objective:** Test the safe integration of automated driving systems on rural roadways.
- **Key Contributions:**
  - **LiDAR-based Road segmentation:** Developed a lidar-based road segmentation integrated with ROS, enabling real-time operation.
  - **Automated Data Analysis Pipeline:** Developed an automated pipeline for extracting critical data regarding the surrounding objects of an autonomous vehicle.
  - **Safety Testing of Control Algorithm:** Conducted testing of longitudinal control algorithms using the Dataspeed Drive-by-Wire system.

Honors and Awards

2023 **Charles E. DeLeuw Scholarship**, CEE Department, University of Illinois Urbana-Champaign.

2020 **Outstanding Graduate Award of Shanghai (top 5%)**, MoED of Shanghai, CHN.

2017 **National Scholarship with highest honor (top 1%)**, Ministry of Education, CHN.