HONGCHAO LIU
Professor of Civil, Environmental and Construction Engineering
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Professional Preparation

B.S.E. in Civil Engineering, Hebei University of Technology, China, 1990
M.S.E. in Civil Engineering (transportation), Tsinghua University, China, 1996
Ph. D. in Civil Engineering (transportation), the University of Tokyo, Japan, 2000
Postdoctoral in Transportation Engineering, the University of California at Berkeley, 2003

Professional Chronology

Professor, Texas Tech University (2014-present)
Associate Professor, Texas Tech University (2009-2014)
Assistant Professor, Texas Tech University (2004-2019)
Assistant Research Engineer, the University of California at Berkeley (2003-2004)
Research Associate, the University of Tokyo (2000-2001)
Research Assistant, the University of Tokyo (1997-2000)
Transportation Engineer, Beijing Urban Planning and Design Institute (1996-1997)

Research Interests

Traffic operation, optimal control and management of highway systems
Data analytics
Intelligent transportation systems, with focus on sensing and cooperative
highway & infrastructure

Honors/Awards

Pyke Jonson Best Paper Award. Transportation Research Board of the National Academies, 2023.
Best Paper Award. The 25th World Intelligent Transportation System Congress, Copenhagen, Danmark, July 2018.
George T. And Gladys Abell-Hanger Faculty Award, Whitacre College of Engineering (2015)
Whitacre Research Award, Whitacre College of Engineering (2012)
Huangshan Visiting Professor, Hefei University of Technology, China (2011)
Teacher of the Year, Department of Civil, Environmental and Construction Engineering, (2010)
Most Influential Professor, Whitacre College of Engineering Honors Convocation, (2009)
Hemphill-Wells New Professor Excellence in Teaching Award, finalist of the Whitacre College of Engineering (2006)
Fellowship, American Society of Civil Engineers (ASCE) Excellence in Civil Engineering Education (ExCEED), (2006)
Featured Young Faculty in ENVISION 2(2), Newsletter of the Whitacre College of Engineering (2006)
Monbusho Japanese Government Scholarship, the University of Tokyo (1997-2000)

Synergistic Activities/Committee Membership

1. Developed and maintained an active research and education program in traffic engineering at the Department of Civil, Environmental and Construction Engineering
2. Supervised and mentored over 50 graduate students, including 18 PhD students as major advisor.
3. Member of ASCE, ITE, IEEE, TRB, and engaged in a range of professional society activities as program committee member, conference organizer and paper reviewer
4. Served as editor-in-chief for one international journal and editorial board member of several others. Currently, associate editor of *Journal of Intelligent Transportation Systems*.

5. Chair or member of university, college and departmental committees on faculty development leave, tenure and promotion, faculty search, award, and curriculum development

Selected Recent Publications (marked by * are current and former graduate students, postdoctoral researchers, and visiting scholars)

1. Igene, M.,* Q. Luo,* K. Jimee,* M. Soltanirad,* T. Bataineh,* and **H. Liu** (2024). "Integrating LiDAR sensor data into microscopic model calibration for proactive safety analysis." *Sensors*, 24(13). Impact Factor: 3.7.
2. Lin, C.* B., S. Deng, B. Gong*, and **H. Liu**. (2024). "Vehicle Reference-Based Point Cloud Registration for Low-Channel Roadside LiDARs." *IEEE Sensors*. 25(1), 1198-1208. IF: 4.3.
3. Zhang, Y.,* Q. Luo*, S. Zhang, S. Xie, **H. Liu** (2024). "SORT-based Real-time Vehicle Tracking Using Converted 3D LiDAR Data." Forthcoming in *Remote Sensing*. Impact Factor: 4.9.
4. Lin, C.*, S. Zhang, B. Gong*, and **H. Liu** (2024). "Near-crash risk identification and evaluation for takeout delivery motorcycles using roadside LiDAR." *Accident Analysis & Prevention*. Vol. 199, 107520. Impact Factor: 5.9.
5. Wang, Y. C. Lin*, B. Zhao, B. Gong*, and **H. Liu** (2024). Trajectory-based Vehicle Emission Evaluation for Signalized Intersection Using Roadside LiDAR Data. *Journal of Cleaner Production*. Vol. 440. Impact Factor: 11.0.
6. Gong, B.*, J. Sun, C. Lin*, **H. Liu,** and G. Sun (2024). "Louvain-based Traffic Object Detection for Roadside 4D Millimeter-Wave Radar." *Remote Sensing*. 16(366). Impact Factor: 5.4.
7. Xie, C., C. Lin*, X. Zheng, B. Gong*, and **H. Liu** (2024), "Dense Sequential Fusion: Point Cloud Enhancement using Foreground Mask Guidance for Multimodal 3D Object Detection." *IEEE Transactions on Instrumentation & Measurement*. Vol.73, 95. Impact Factor: 5.6.
8. Bhattarai, N.*, Y. Zhang*, **H. Liu**, Y. Pakzad*, H. Xu* (2024). "Proactive Safety Analysis using Roadside LiDAR based Vehicle Trajectory Data: A Study on Rear-end Crashes." *Transportation Research Record*. 2678 (3), 772-785. Impact Factor: 1.9.
9. Zhao, J.*, H. Xu*, Z. Chen, and **H. Liu** (2023). "A Decoding-based Method for Fast Background Filtering of Roadside LiDAR data." *Advanced Engineering Informatics*. Vol.57, 102043. IF: 8.8
10. Zhao, J.*, H. Xu*, Z. Chen, and **H. Liu** (2023). "Accurate Detection of Vehicle, Pedestrian, Cyclist and Wheelchair from Roadside Lidar Sensors." *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations.* 28 (6), 904-920. Impact Factor: 4.3.
11. Zhang, Q.*, N. Bhattarai,* H. Chen, H. Xu*, and **H. Liu** (2023). "An Effective Method of Vehicle Trajectory Tracking using Adaptive Kalman Filter from Roadside LiDAR." *ASCE Journal of Transportation Engineering, Part A: Systems*. 149(6). Impact Factor: 2.1.
12. Bhattarai, N.*, Y. Zhang*, H. Xu*, and **H. Liu** (2023). "Crash Frequency Prediction Based on Extreme Value Theory using Roadside Lidar-based Vehicle Trajectory Data." *Accident Analysis and Prevention*. Vol. 193, 107306. Impact Factor: 5.9.
13. Chen, Z., H. Xu*, J. Zhao*, and **H. Liu** (2023). "Curbside Parking monitoring with Roadside LiDAR." *Transportation Research Record*. 2677(10), 825-837. (Pyke Jonson Best Paper Award.)
14. Lin, C.,* J. Yang, B. Gong,* **H. Liu,** and G. Sun (2023). "Grid and Homogeneity-based Ground Segmentation Using Light Detection and Ranging Three-dimensional Point Cloud." *J. Appl. Remote Sens.* **17**(3), 038506, doi: 10.1117/1.JRS.17.038506. IF: 1.8.
15. Chen, Z., J. Zhao*, H. Xu* and **H. Liu** (2023). "A Novel Background Filtering Method with Automatic Parameter Adjustment for Real-Time Roadside LiDAR Sensing System." *IEEE Transactions on Instrumentation & Measurement*. Vol. 72, 1-10. Impact Factor: 5.6.
16. Lin, C*., Y. Wang, B. Gong*, and **H. Liu** (2023). "Vehicle Detection and Tracking using Low-channel Roadside LiDAR." *Measurement*. Impact Factor: 5.6.
17. Liu, H., C. Lin*, B. Gong*, and **H. Liu** (2023). "Lane-level and full-Cycle Multi-Vehicle Tracking Using Low-channel Roadside LiDAR." *IEEE Transactions on Instrumentation & Measurement*. Vol. 72, 1-12. Impact Factor: 5.3.
18. Gong, B*, B. Zhao, Y. Wang, C. Lin*, and **H. Liu** (2023). "Lane Marking Detection Using Low-Channel Roadside LiDAR." *IEEE Sensors*, **23**(13), 14640-14649. Impact Factor: 4.3.