Curriculum Vitae

Hu, Xianbiao (XB) Ph.D.

Assistant Professor

Dept. of Civil and Environmental Engineering

The Pennsylvania State University

Address: 221B Sackett Building, University Park, PA 16802-1408

Email: xbhu@psu.edu

Office: (+1) 814-863-0523

Webpage: https://sites.psu.edu/xbhu/

Education Background:

2013   **PhD** in Transportation Engineering

Department of Civil Engineering and Engineering Mechanics, University of Arizona

Thesis: Developing the Analysis Methodology and Platform for Behaviorally Induced System Optimal Traffic Management.

Advisor: Dr. Yi-Chang Chiu

2009   **MS** in Transportation Engineering.

School of Transportation Engineering. Tongji University, China

Thesis: Travel Time Estimation Based on Cellular Probe Data Collection

2006   **BS** in Transportation Engineering.

School of Transportation Engineering. Tongji University, China

Work Experience

2021/8~present	Assistant Professor. Dept. of Civil and Environmental Engineering, The Pennsylvania State University. University Park, PA
2017/8~2021/8	Assistant Professor. Dept. of Civil, Architectural and Environmental Engineering, Missouri University of Science and Technology. Rolla MO
2011/8~2017/7	Founding team member, and R&D Director. Metropia Inc. Tucson, AZ
2016/4~2017/7	Affiliate Professor. University of Arizona. Tucson, AZ
2007/12~2010/7	R&D Engineer, TrafficCast China (Shanghai) Co., Ltd Shanghai, China

Research Interests

- **Smart Mobility Systems**: Connected and Automated Vehicles, Electric Vehicles, Mobility Behavior Management
- **Transportation Big Data Analytics**: Mobility Behavior Modeling and Analytics, Machine Learning and Artificial Intelligence, Multi-Source Transportation Data Mining
- **Traffic Flow and System Modeling**: Large-Scale Modeling and Simulation, Dynamic/Static Traffic Assignment, Traffic Flow Modeling

Publications:

Refereed Journal Articles ([*]denotes that I am the corresponding author; [#]denotes supervised students)

[1] Wei, J., Cheng, Y., Chen, K., Wang, M., Ma, C., **Hu, X.,** (2022). Nonlinear Model-based Subway Station-Level Peak Hour Ridership Prediction Approach in the Context of Peak Deviation. *Transportation Research Record: Journal of the Transportation Research Board*.

[2] Tang, Q.[#], **Hu, X.**[*], Lu, J., Zhou, X. (2021). Analytical characterization of multi-state effective discharge rates for bus-only lane conversion scheduling problem. Transportation Research Part B: Methodological, 148, 106-131. https://doi.org/10.1016/j.trb.2021.04.008

[3] Tang, Q.[#], Cheng, Y.[#], **Hu, X.**[*], Chen, C.[#], Song, Y.[#], Qin, R. (2021). Evaluation Methodology of Leader-Follower Autonomous Vehicle System for Work Zone Maintenance. *Transportation Research Record: Journal of the Transportation Research Board*. https://doi.org/10.1177%2F0361198120985233

[4] Tang, Q.[#], **Hu, X.**[*], Ru, Q. (2021). Development of Operation Guidelines for Leader-Follower Autonomous Maintenance Vehicles at Work Zone Locations. *Transportation Research Record: Journal of the Transportation Research Board*. https://doi.org/10.1177/03611981211056644

[5] Song, Y.[#], **Hu, X.**[*] (2021). Learning Electric Vehicle Driver Range Anxiety with An Initial State of Charge-Oriented Gradient Boosting Approach. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations* https://doi.org/10.1080/15472450.2021.2010053

[6] Tang, Q.[#], **Hu, X.**[*], Yang, H. (2021). Identification of Operational Design Domain for Autonomous Truck Mounted Attenuator System on Multilane Highways. *Transportation Research Record: Journal of the Transportation Research Board*. https://doi.org/10.1177%2F03611981211061555

[7] Ma, Q., Yang, H., Ma, Y., Di Yang, D., **Hu, X.**, Xie, K. (2021). Examining municipal guidelines for users of shared E-Scooters in the United States. *Transportation Research Part D: Transport and Environment*. https://doi.org/10.1016/j.trd.2021.102710

[8] Cheng, Y.[#], Chen, C.[#], **Hu, X.**[*], Chen, K., Tang, Q., Song, Y. (2021). Enhancing Mixed Traffic Flow Safety via Connected and Autonomous Vehicle Trajectory Planning with a Reinforcement Learning Approach. Journal of Advanced Transportation. https://doi.org/10.1155/2021/6117890

[9] Luo, Y., Zeng, W., **Hu, X.**, Yang, H., Shao, L. (2021). Coupling the driving forces of urban CO_2 emission in Shanghai with logarithmic mean Divisia index method and Granger causality inference. Journal of Cleaner Production, 298, 126843 https://doi.org/10.1016/j.jclepro.2021.126843

[10]   Luo, Y., Zeng W., Li, D., **Hu, X.**, Zhang, H. (2021). A Hybrid Approach for Examining the Drivers of Energy Consumption in Shanghai. *Renewable and Sustainable Energy Reviews*. https://doi.org/10.1016/j.rser.2021.111571

[11]   Deng, Y., Yan, S., Zhang, P., **Hu, X.** (2021). Mining Route Set Distribution Range and Affecting Factor Threshold Based on GPS Data. *Transportation Research Record: Journal of the Transportation Research Board*. https://doi.org/10.1177%2F0361198121999059

[12]   Deng, Y., Cao, Y., **Hu, X.** (2021). Exploring spatial-temporal heterogeneity of free-floating bike-sharing system: a case study of Xi'an, China. Advances in Transportation Studies. https://www.atsinternationaljournal.com/index.php/2021-issues/lv-november-2021/1237-exploring-spatial-temporal-heterogeneity-of-free-floating-bike-sharing-system-a-case-study-of-xi-an-china

[13]   Tang, Q.[#], **Hu, X.**[*] (2020). Modeling Individual Travel Time with a Back Propagation Neural Network Approach for Advanced Traveler Information Systems. *ASCE Journal of Transportation Engineering, Part A: Systems*. https://doi.org/10.1061/JTEPBS.0000359

[14]   Tang, Q.[#], **Hu, X.**, Qi, H. (2020). Modeling Routing Behavior Learning Process for Vacant Taxis in A Congested Urban Traffic Network. *ASCE Journal of Transportation Engineering, Part A: Systems*. https://doi.org/10.1061/JTEPBS.0000352

[15]   Li, Y.[#], Yang, D., **Hu, X.**[*] (2020). A Differential Privacy-Based Privacy-Preserving Data Publishing Algorithm for Transit Smart Card Data. *Transportation Research Part C: Emerging Technologies*. https://doi.org/10.1016/j.trc.2020.102634

[16]   Cheng, Y.[#], Tang, Q.[#], **Hu, X.**[*], Qi, H., Yang, H. (2020). A Monte Carlo Tree Search-Based Mixed Traffic Flow Control Algorithm for Arterial Intersection. *Transportation Research Record: Journal of the Transportation Research Board*. https://doi.org/10.1177%2F0361198120919746

[17]   Chen C.[#], Song Y.[#], **Hu, X.**[*], Guardiola I. (2020). Analysis of Electric Vehicle Charging Behavior Patterns with Function Principal Component Analysis Approach. *Journal of Advanced Transportation*. https://doi.org/10.1155/2020/8850654

[18]   **Hu, X.**[*], Zhu. X., Chiu. Y.C., Tang, Q.[#] (2020). Will Information and Incentive Affect Traveler's Day-to-Day Departure Time Decisions? - An Empirical Study of Decision Making Evolution Process. *International Journal of Sustainable Transportation*. https://doi.org/10.1080/15568318.2019.1570402

[19]   Qi, H., Dai, R., Tang, Q.[#], **Hu, X.**[*] (2020). Quasi-Real Time Estimation of Turning Movement Spillover Events Based on Partial Connected Vehicle Data. *Transportation Research Part C: Emerging Technologies*. https://doi.org/10.1016/j.trc.2020.102824

[20]   Qi, H., **Hu, X.**[*] (2020). Real-Time Headway State Identification and Saturation Flow Rate Estimation: A Hidden Markov Chain Model. *Transportmetrica A: Transport Science*. https://doi.org/10.1080/23249935.2020.1722285

[21]   Deng. Y., Liu, X., **Hu, X.**[*], Zhang, M. (2020). Reduce Bus Bunching with a Real-Time Speed Control Algorithm Considering Heterogeneous Roadway Conditions and Intersection Delays. *ASCE Journal of Transportation Engineering, Part A: Systems*. https://doi.org/10.1061/JTEPBS.0000358

[22]   Deng, Y., Luo, X., **Hu, X.**[*], Ma, Y., Ma, R. (2020). Modeling and Prediction of Bus Operation States for Bunching Analysis. *ASCE Journal of Transportation Engineering, Part A: Systems*. https://doi.org/10.1061/JTEPBS.0000436

[23]   Deng, Y., Li, M., Tang, Q.[#], He, R., and **Hu, X.**[*] (2020) Heterogenous Trip Distances-based Route Choice Behavior Analysis Using Real-World Large-Scale Taxi Trajectory Data. *Journal of Advanced Transportation*. https://doi.org/10.1155/2020/8836511

[24]   Qi, H., Dai, R., Tang, Q.[#], **Hu, X.[*]** (2020). Coordinated Intersection Signal Design for Mixed Traffic Flow of Human-Driven and Connected and Autonomous Vehicles. *IEEE Access.* https://doi.org/10.1109/ACCESS.2020.2970115

[25]   Qi, H., **Hu, X.[*]** (2019). Monte Carlo Tree Search-Based Intersection Signal Optimization Model with Channelized Section Spillover. *Transportation Research Part C: Emerging Technologies*. 106, 281-302. https://doi.org/10.1016/j.trc.2019.07.017

[26]   **Hu, X.[*]**, Yuan, Y., Zhu, X., Yang, H., Xie, K. (2019). Behavioral Responses to Pre-Planned Road Capacity Reduction Based on Smartphone GPS Trajectory Data - A Functional Data Analysis Approach. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*. 23, 133-143. https://doi.org/10.1080/15472450.2018.1488133

[27]   **Hu, X[*]**., Zhu, X., Ma, Y.L., Chiu, Y. C., Tang, Q. [#] (2019). Advancing Usage Based Insurance – A Contextual Driving Risk Modeling and Analysis Approach. *IET Intelligent Transport Systems*. 13, 453 – 460. 2019. https://doi.org/10.1049/iet-its.2018.5194

[28]   Yu, X., Gao, S., **Hu, X.**, Park, H. (2019). A Markov Decision Process Approach to Vacant Taxi Routing with E-hailing. *Transportation Research Part B: Methodological*. 121, 114-134. 2019. https://doi.org/10.1016/j.trb.2018.12.013

[29]   Ma, Q., Yang, H., Xie, K., Wang, Z., **Hu, X.** (2019). Taxicab Crashes Modeling with Informative Spatial Autocorrelation. *Accident Analysis & Prevention*. 131, 297-307. https://doi.org/10.1016/j.aap.2019.07.016

[30]   Xie, Q., Lan, T., **Hu X.,** Li, Y.[##], Wang, C., Yin, Y. (2019). A Distributed Consensus Protocol Based on Neighbor Selection Strategies for Multi-Agent Systems Convergence. *IEEE Access*. 7, 132937 – 132949. https://doi.org/10.1109/ACCESS.2019.2939207

[31]   Qi, H., **Hu X.[*]** (2018). Bayesian Inference of Channelized Section Spillover via Markov Chain Monte Carlo Sampling. Transportation Research Part C: Emerging Technologies. Volume 97, Pages 478-498. https://doi.org/10.1016/j.trc.2018.11.004

[32]   Ma, Y.L., Zhu, X., **Hu, X.[*]**, Chiu, Y.C. (2018). The Use of Context-Sensitive Insurance Telematics Data in Auto Insurance Rate Making. *Transportation Research Part A: Policy and Practice*. Volume 113, Pages 243-258. https://doi.org/10.1016/j.tra.2018.04.013

[33]   Li, Z., Kluger, R., **Hu, X**., Wu, Y.J., Zhu, X. (2018). "Reconstructing Vehicle Trajectories to Support Travel Time Estimation." *Transportation Research Record: Journal of the Transportation Research Board*. Volume 2672, Issue 42, Pages 148-158. https://doi.org/10.1177%2F0361198118772956

[34]   An, K., Chiu, Y.C., **Hu, X.**, and Chen, X. (2018) "A Network Partitioning Algorithmic Approach for Macroscopic Fundamental Diagram-Based Hierarchical Traffic Network Management." *IEEE Transactions on Intelligent Transportation Systems*. Volume 19, Issue 4, Pages 1130-1139. https://doi.org/10.1109/TITS.2017.2713808

[35]   **Hu, X.[*]**, Chiu Y.C., Villalobos, J., Nava, E. (2017). "A Sequential Decomposition Framework and Method for Calibrating Dynamic Origin-Destination Demand in a Congested Network." *IEEE Transactions on Intelligent Transportation Systems*. Volume 18, Issue 10, Pages 2790-2797. https://doi.org/10.1109/TITS.2017.2661751

[36]   **Hu, X.[*]**, Chiu, Y.C., Shelton, J. (2017). Development of a Behaviorally Induced System Optimal Travel Demand Management System. *Journal of Intelligent Transportation Systems: Technology, Planning, and Operations*. Volume 21, Issue 1, pages 12-25. https://doi.org/10.1080/15472450.2016.1171151

[37]   Zhu, X., Yuan, Y., **Hu, X.**, Chiu, Y.C., and Ma, Y.L. (2017). "A Bayesian Network model for contextual versus non-contextual driving behavior assessment." *Transportation Research*

Part C: Emerging Technologies. Volume 81, Pages 172-187. 2017. https://doi.org/10.1016/j.trc.2017.05.015

[38]   **Hu, X.**[*], Chiu, Y.C., Ma, Y.L., Zhu, L. (2015). Studying Driving Risk Factors using Multi-Source Mobile Computing Data. *International Journal of Transportation Science and Technology*. Volume 4, Issue 3, Pages 295-312. https://doi.org/10.1260/2046-0430.4.3.295

[39]   **Hu, X.**[*], Chiu, Y.C. (2015). A Constrained Time-Dependent K Shortest Paths Algorithm Addressing Overlap and Travel Time Deviation. *International Journal of Transportation Science and Technology*. Volume 4, Issue 4, Pages 371-394. https://doi.org/10.1016/S2046-0430(16)30169-1

[40]   **Hu, X.**[*], Chiu, Y.C., Zhu, L. (2015). Behavior Insights for Incentive-Based Active Demand Management Platform. *International Journal of Transportation Science and Technology*. Volume 4, Issue 2, Pages 119-133. https://doi.org/10.1260/2046-0430.4.2.119

[41]   Zhu, X., **Hu, X.**, Chiu, Y.C. (2013). Design of Driving Behavior Pattern Measurements Using Smartphone Global Positioning System Data. *International Journal of Transportation Science and Technology.* Volume 2, Issue 4, Pages 269-288. https://doi.org/10.1260/2046-0430.2.4.269

[42]   Xiong, W., Chen, X., **Hu, X.**, Yang, R. (2013). Study on Urban Arterial Pedestrian Crossing Facility Selection. *Urban Transport of China*. Volume 11, Issue 1, Pages 49-59.

[43]   **Hu, X.**, Gao, S., Chiu, Y.C., Lin, D.Y. (2012). Modeling Routing Behavior for Vacant Taxi Cabs in Urban Traffic Networks. *Transportation Research Record: Journal of the Transportation Research Board*. Volume 2284, Issue 1, Pages 81-88. https://doi.org/10.3141%2F2284-10

[44]   Xiong, W., Chen, X., **Hu, X. (2010)**. Discussion on Planning for Non-Motorized Travels in Cities. *Urban Transport of China*. Volume 8, Issue 1, Pages 44-54.

[45]   Liu, J., **Hu, X.**, Fu, D., Chen, M. (2009). Design and Application of Trip Survey Analysis System Using Cellular Probe Technology. *Journal of Highway and Transportation Research and Development.* Volume S1, pages 151-154.

[46]   Xiong, W., Chen, X., **Hu, X. (2009)**. Spatial Separation and Signal Timing for Arterial Pedestrian Crossings. *Urban Transport of China.* Volume 7, Issue 2, Pages 60-67.

Books and Chapters

[1] Tang, Q.[#], **Hu, X.**[*] (2019). Triggering behavior changes with information and incentives: An active traffic and demand management-oriented review. Advances in Transport Policy and Planning, Academic Press. Volume 3, Pages 209-250. Edited by Eran Ben-Elia. Cambridge, MA. https://doi.org/10.1016/bs.atpp.2019.05.002

Technical Reports

[1] Xianbiao Hu, Qing Tang, Genda Chen. Development of ATMA Deployment Guidelines Considering Traffic and Safety Impacts. USDOT through Mid-America Transportation Center. 2022.

[2] Qing Tang, Xianbiao Hu, Ashley Nylen, Tyler Weldon, Theresa Drum. ATMA System Description. Autonomous Maintenance Technology Pool Fund report. 2021

[3] Deshaun Arrington, Qing Tang, Xianbiao Hu, Ashley Nylen, Tyler Weldon, Theresa Drum. Autonomous Maintenance Technology Literature Review. Autonomous Maintenance Technology Pool Fund report. 2021

[4] Qing Tang, Xianbiao Hu. Modeling and Development of Operation Guidelines for Leader-Follower Autonomous Truck-Mounted Attenuator Vehicles. USDOT through Mid-America Transportation Center. 2021.

[5] Ruwen Qing, Xianbiao Hu. Evaluation and Behavioral Interventions for Safe Deployment of Autonomous Truck Mounted Attenuators (ATMA) Vehicles: A Driving Simulator Based Study. Intelligent System Center. 2019.

[6] Xianbiao Hu, Ruwen Qin, Matt Demoss, David Doell, Chenxi Chen. Evaluation of Route 160 Widening Project: A Before-and-After Study with Driving Simulator. Missouri Department of Transportation. 2018.

[7] Xianbiao Hu, Yi-Chang Chiu, Yu-Luen Ma, Xiaoyu Zhu, Allen Greenberg. Pay-As-You_Drive-And-You-Save (PAYDAYS) Insurance Actuarial Study. FHWA. DTFH61-13-C-00033. 2017.

Peer-Reviewed Conference Proceedings

[1] Qing Tang[#], Yanqiu Cheng[#], **Xianbiao Hu**, Chenxi Chen[#], Yang Song[#]. Field Testing and Evaluation of Leader-Follower Autonomous Truck Mounted Attenuator Vehicle System for Work Zone Maintenance. Transportation Research Board 99th Annual Meeting, Washington DC. 2020.

[2] Qing Tang[#], Yanqiu Cheng[#], **Xianbiao Hu**. Quantification of Traffic Impact by Leader-Follower Autonomous Truck Mounted Attenuator Vehicle System for Work Zone Maintenance. Transportation Research Board 99th Annual Meeting, Washington DC. 2020.

[3] Yanqiu Cheng[#], **Xianbiao Hu**, Qing Tang[#], Hongsheng Qi. A Model-Free Approach for Connected and Autonomous Vehicles Trajectory Scheduling: Monte Carlo Tree Search-Based Mixed Traffic Flow Control Algorithm. Transportation Research Board 99th Annual Meeting, Washington DC. 2020.

[4] Yajuan Deng, Meiye Li, **Xianbiao Hu**. Route Choice Behavior Analysis Considering Heterogenous Travel Distances Using Occupied Taxi Trajectory Data. Transportation Research Board 99th Annual Meeting, Washington DC. 2020.

[5] Yang Song[#], **Xianbiao Hu**. Initial State of Charge (SOC)-Focused Electric Vehicles Driver Charging Behavior Analysis. The 3rd International Symposium on Multimodal Transportation. National University of Singapore, Singapore. 2019

[6] Qing Tang[#], **Xianbiao Hu**. Modeling Individual Travel Time with a Back Propagation Neural Network Approach for Advanced Traveler Information Systems. Mobil. TUM 2019, International Scientific Conference on Mobility and Transport. 2019.

[7] Qing Tang[#], **Xianbiao Hu**. Modeling the Provisioning of Individual Travel Time for Advanced Traveler Information Systems. Transportation Research Board 98th Annual Meeting, Washington DC. 2019.

[8] Xinlian Yu, Song Gao, **Xianbiao Hu**. Optimizing Vacant Taxis' Routing Decisions: Model-based and Model-free Approaches. Transportation Research Board 98th Annual Meeting, Washington DC. 2019.

[9] Kang An, **Xianbiao Hu**, Xiaohong Chen. Traffic Network Partitioning for Hierarchical Macroscopic Fundamental Diagram Application Based on Fusion of GPS probe and Loop Detector Data. The 7th International Symposium on Dynamic Traffic Assignment: Smart Transportation. Hong Kong. 2018.

[10] **Xianbiao Hu**, Xiaoyu Zhu, Yu-Luen Ma, Yi-Chang Chiu. Advancing Usage Based Insurance – A Contextual Driving Risk Modeling and Analysis Approach. The 18th COTA International Conference of Transportation Professionals. Beijing, 2018.

[11] Xiaoyu Zhu, **Xianbiao Hu**, Yi-Chang Chiu. Will Information and Incentive Affect Traveler's Day-to-Day Departure Time Decisions? An Empirical Study of the Decision-Making Evolution Process. Transportation Research Board 97th Annual Meeting, Washington DC. 2018.

[12] Xinlian Yu, Song Gao, **Xianbiao Hu**, Hyoshin Park. Multi-cycle Optimal Taxi Routing with E-Hailing. Transportation Research Board 97th Annual Meeting, Washington DC. 2018.

[13] Zheng Li, Robert Kluger, **Xianbiao Hu**, Yao-Jan Wu and Xiaoyu Zhu. "Reconstructing Vehicle Trajectories to Support Travel Time Estimation." Transportation Research Board 97th Annual Meeting, Washington DC. 2018.

[14] **Xianbiao Hu**, Xiaoyu Zhu, Yifei Yuan, Asif Rehan, Yi-Chang Chiu, and Mia Zmud. A Multi-Resolution Approach to Investigate the Impacts of Pre-Planned Road Capacity Reduction Based on Smartphone GPS Trajectory Data. Transportation Research Board 96th Annual Meeting, Washington DC. 2017.

[15] Hyunsoo Noh, Aichong Sun, **Xianbiao Hu**, Asif Rehan. Development of a Regional Network Performance Measurement Model for Planning Applications Based on High-Frequency GPS Data. Transportation Research Board 96th Annual Meeting, Washington DC. 2017.

[16] Kang An, Yi-Chang Chiu, **Xianbiao Hu**, Xiaohong Chen. A Network Partitioning Algorithm to Support Macroscopic Fundamental Diagram Based Hierarchical Traffic Network Control and Management. Transportation Research Board 96th Annual Meeting, Washington DC. 2017.

[17] Xiaoyu Zhu, **Xianbiao Hu**, Yi-Chang Chiu, Yu-Luen Ma. Contextual Driving Risk Analysis Using Dynamic Smartphone-Based Data: The Potential for Usage Based Insurance. 14th World Conference on Transport Research. Shanghai, China, 2016.

[18] **Xianbiao Hu**, Yi-Chang Chiu, Yu-Luen Ma, Lei Zhu. Studying Driving Risk Factors using Multi-Source Mobile Computing Data. 7th International Symposium on Travel Demand Management. Tucson, AZ, 2015.

[19] Yu-Luen Ma, Yi-Chang Chiu, **Xianbiao Hu**. Identifying Driving Risk Factors to Support Usage-Based Insurance using Smartphone Personalized Driving Data. TRB Big Data and Urban Informatics Workshop. 2014

[20] **Xianbiao Hu**, Yi-Chang Chiu, Steve Delgado. Behavior Insights for Incentive-Based Active Demand Management Platform. Transportation Research Board 93rd Annual Meeting, 2014.

[21]   **Xianbiao Hu**, Yi-Chang Chiu, Jeff Shelton. Achieving System Optimal Routing and Understanding Implication to Travel Demand Forecasting. Transportation Research Board Innovations in Travel Demand Forecasting 2014.

[22]   **Xianbiao Hu**, Song Gao, Yi-Chang Chiu, Dung-Ying Lin. Modeling Routing Behavior for Vacant Taxi Cabs in Urban Traffic Networks. 91st Annual Meeting of Transportation Research Board Compendium of Papers. Paper #12-3616. Washington, DC, Jan. 22-26, 2012.

[23]   **Xianbiao Hu**, Yi-Chang Chiu. A New Approach to Calibrating Time-Dependent Origin-Destination Departure Profile for Traffic Simulation Models. 14th International IEEE Conference on Intelligent Transportation Systems, Washington DC, USA, 2011.

[24]   **Yi-Chang Chiu**, Song Gao, Dung-Ying Lin, Xianbiao Hu. A Routing Behavior Model for Vacant Taxi Cabs in Urban Traffic Networks. The 11th Asia-Pacific ITS Forum & Exhibition. Kaohsiung, Taiwan, 2011.

[25]   Wen Xiong, Xiaohong Chen, **Xianbiao Hu**. The Effect of Car Free Day Event and Its Enlightenment to Urban Transportation Planning. 23rd Annual Meeting of the Architectural Society of China, Urban Transportation Planning Branch, Shanghai, 2009

[26]   **Xianbiao Hu**, Wen Xiong, Xiaohong Chen. Several Thoughts on the Urban Road Cross-Section - From the Perspective of Slow Traffic. 7th International Conference of Chinese Transportation Professionals. Shanghai, pp.38-42, 2007.

Non-Peer-Reviewed Conference Proceedings and Presentations

a. *Invited seminars or lectures*

[1] Invited Webinar. Work Zone Safety and How to Use New Technologies to Mitigate Work Zone Intrusion. Invited by TRB Standing Committee on Maintenance and Operations Management AKR10. Attracted 600+ registrants with $95 paid tickets. Satisfactory rate 93%.

[2] Invited seminar. Steve Perone, Matt DeMoss, Xianbiao Hu. Route 160 Widening: S&T Driving Simulator Provides Design Team Valuable Input. Ozarks Chapter of the Institute of Transportation Engineers. Springfield MO. 2019.

[3] Xianbiao Hu, Xiaoyu Zhu, Yu-Luen Ma, Yi-Chang Chiu. Advancing Usage Based Insurance – A Contextual Driving Risk Modeling and Analysis Approach. World Transport Convention. Beijing. 2018.

[4] Invited seminar. Xianbiao Hu. Building a Connected Mobility Management and Analytics-Centered Smarter Transportation Systems. University of Arkansas. Fayetteville, AR. September 2018.

[5] Invited seminar. Xianbiao Hu. Building a Connected Mobility Management and Analytics-Centered Smarter Transportation Systems. Missouri S&T Institute of Transportation Engineers (ITE). Dec. 2017.

[6] Invited seminar. Xianbiao Hu. Building a Connected Mobility Management and Analytics-Centered Smarter Transportation Systems. St. Louis University. November, 2017.

[7] Invited seminar. Xianbiao Hu. Building a Connected Mobility Management and Analytics-Centered Smarter Transportation Systems. University of Missouri at Columbia. September, 2017.

[8] Invited seminar. Xianbiao Hu. Metropia Data Collection, Analytics and Applications – Review and Opportunities. 4th Pima Association of Governments (PAG)- University of Arizona (UA) seminar. April 2016.

[9] Invited seminar. Active Traffic and Demand Management (ATDM) and its Application in Improving City Mobility. Arizona State University (ASU) Transportation Seminar, Tempe, AZ, October 2015.

[10]   Invited seminar. Active Traffic and Demand Management (ATDM) and its Application in Improving City Mobility. Department of Civil Engineering & Engineering Mechanics, University of Arizona, Tucson, AZ, October 2015.

[11]   Invited seminar. Metropia: User Engagement, Incentive, and Gamification - Implications for Multi-Modal Integrated Corridor Management and Transportation Operational Planning. Southern Arizona Institute of Transportation Engineers (SAITE) Luncheon. Tucson, AZ, May 2015.

[12]   Invited seminar. Development of a Behaviorally Induced System Optimal Travel Demand Management System. Department of Mathematics graduate seminar, University of Arizona, April 2015.

[13]   Invited seminar. Identifying Driving Risk Factors to Support Usage-Based Insurance using Smartphone Personalized Driving Data. Civil Engineering Department graduate seminar, University of Arizona, 2014.

[14]   Invited seminar. Revolutionizing the City Mobility Ecosystem. University of Arizona Institute of Transportation Engineers (UAITE) seminar. 2014.

b.   *Other Conference Presentations (not including those already in the peer-reviewed conference proceedings)*

[1] Xianbiao Hu, Sol Moinuddin. 109th Annual Transportation Engineers Association of Missouri conference. Arterial Corridor Signal Timing Optimization – A Preliminary Case Study of Barry Road in Kansas City MO. Branson MO. 2019

[2] Xianbiao Hu. Building a Connected Mobility Management and Analytics-Centered Smarter Transportation Systems. University of Missouri Research Summit: Human in the digital age. University of Missouri at Kansas City. Kansas City. September 2018.

[3] Xianbiao Hu, Yaw Adu-Gyamfi. Building a University of Missouri System Transportation Big Data Cloud Platform. 2nd Transportation Infrastructure Conference. December 2017.

[4] Xianbiao Hu. Contextual Driving Risks Analysis Using Individualized Dynamic Smartphone. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Nashville, TN, USA, 2016

[5] Xianbiao Hu, Song Gao. Analyzing Trip Planning Behavior for Mobility Service Drivers. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Nashville, TN, USA, 2016

[6] A Multi-Resolution Approach in Investigating the Impacts of Preplanned Capacity Reduction Based on Smartphone Trajectory data – A Case Study in Austin TX. ITS Arizona 23rd Annual Conference. September 2016.

[7] Xianbiao Hu, Xiaoyu Zhu, Jeff Lin, Yi-Chang Chiu. Active Traffic and Demand Management and its Implications for Travelers' Departure Time Choice. 16th COTA International Conference of Transportation Professionals. Shanghai, China 2016.

[8] Xianbiao Hu. Process and Application of Analyzing Smartphone GPS Trajectories for Transportation Planning Purposes. 15th TRB National Transportation Planning Applications Conference. Atlantic City, New Jersey. May, 2015.

[9] Xianbiao Hu, Yi-Chang Chiu. Vacant Taxi Driver Routing Behavior Learning Process. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Phoenix, AZ, USA, 2012

[10] Xianbiao Hu, Yi-Chang Chiu. Development and Numerical Analysis of a K-Short Path Ranking Algorithm. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Phoenix, AZ, USA, 2012

[11] Hong Zheng, Xianbiao Hu, Yi-Chang Chiu. On the Path Marginal Cost of System Optimal Dynamic Traffic Assignment Problem. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Phoenix, AZ, USA, 2012

[12] Xianbiao Hu, Yi-Chang Chiu. On a Two-stage Time-dependent OD Calibration Methodology for Matching Link Counts and Speed Profile. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Charlotte, NC, USA, 2011.

[13] Song Gao, Yi-Chang Chiu, Xianbiao Hu, Dung-Ying Lin. A Routing Behavior Model for Vacant Taxi Cabs in Urban Traffic Networks. Institute for Operations Research and the Management Sciences (INFORMS) Annual Meeting, Charlotte, NC, USA, 2011.

Research Grants:

External (Total grants $4,619,355, my shared-credits $1,220,568)

[1] PI. Optimization of Transportation Infrastructure System Performance with Autonomous Maintenance Technology in Work Zones. US Department of Transportation through Mid-America Transportation Center. 2020-2021. 55%. (total budget $85,000, shared credits $46,750).

[2] Co-PI. Transportation Safety Training in Rural Areas: An Exploration of Virtual Reality and Driving Simulation in Driver Response and Awareness. US Department of Transportation through Mid-America Transportation Center. 2020-2021. PI Benjamin Kwasa. 40%. (total budget $85,000, shared credits $34,000).

[3] Co-PI of Missouri S&T. National Center for Transportation Infrastructure Durability and Life Extension (NCTriDurLE) – a National University Transportation Center. US Department of

Transportation. 2020-2022. PI: Xianming Shi at Washington State University, and Jenny Liu at Missouri S&T. 17%. (Total budget $7.5m, Missouri S&T 3-year budget $1,620,000, shared credits $270,540).

[4] Co-PI. Inspecting and Preserving Infrastructure through Robotic Exploration (INSPIRE) – a Tier-1 University Transportation Center. US Department of Transportation. 2020. PI: Dr. Genda Chen and seven other Co-PIs. 5%. (budget $1,400,000, shared credits $70,490).

[5] Co-PI (Missouri S&T PI). Electrifying Terminal Trucks in Unincentivized Markets. Department of Energy. 2020-2022. PI Metropolitan Energy Center. 100%. (Total budget $780,000, Missouri S&T budget $45,000, shared credits $45,000).

[6] PI. Systematic Documentation for Autonomous Maintenance Technology Promotion and Deployment. Colorado Department of Transportation. 2020-2022. 100%. (total budget $130,000, shared credits $130,000).

[7] PI. How Bad is COVID-19 Hurting Electric Vehicle Usage and Mobility Patterns? -A Case Study in Kansas City Missouri for Agency and Industry Decision-Makings. 4/2020-6/2020. Google. 100%. $2,500 Google Maps Platform credits.

[8] Co-PI (Missouri S&T PI). Electric Vehicle Charging Station (EVST) Innovation: Streetlight Charging in City Right-of-Way. Department of Energy. 2019-2022. PI Metropolitan Energy Center. 100%. (Total budget $1,215,708, Missouri S&T budget $243,907, shared credits $243,907)

[9] PI. Development of ATMA/AIPV Deployment Guidelines Considering Traffic and Safety Impacts. Colorado Department of Transportation. 2019-2022. 100%. (total budget $92,572, shared credits $92,572).

[10] PI. Development of ATMA/AIPV Deployment Guidelines Considering Traffic and Safety Impacts. US Department of Transportation through Mid-America Transportation Center. Cash match to CDOT project above. 2020-2021. Missouri S&T. 100%. (total budget $92,572, shared credits $92,572).

[11] PI. Analyzing the Impact of Autonomous Maintenance Technology to Transportation Infrastructure Capacity for Condition Monitoring and Performance Management. 2019-2021. US Department of Transportation through National Center for Transportation Infrastructure Durability and Life Extension (NCTriDurLE). 100%. (Total budget $52,312, shared credits $52,312).

[12] Co-PI. GAANN: Preparing Interdisciplinary Professionals for Rebuilding/Engineering Resilient Infrastructure of the Nation. Department of Education. 2019-2022. PI Magdy Abdelrahman. 5%. (Total budget $651,174, shared credits $32,559)

[13] Co-PI (Missouri S&T PI). Missouri DOT Leader-Follower TMA System. Missouri Department of Transportation. 2018-2020. PI Kratos Defense. 100%. (Total budget $550,000, Missouri S&T budget $52,000, shared credits $52,000)

[14] PI. Development of Autonomous Trucks Operation Guidelines and Driver Training Process. US Department of Transportation through Mid-America Transportation Center. 2018-2020. 100%. (Total budget $37,438, shared credits $37,438)

[15]   PI. Evaluation of Route 160 Widening Project: A Before-and-After Study with Driving Simulator. Crawford, Murphy & Tilly. 2018-2019. Co-PI Ruwen Qin. 60%. (Total budget $29,880, shared credits $17,928)

Internal

[16]   Co-PI, Preparing Multidisciplinary Datahub for Digital and Intelligent Infrastructure System –Preliminary Phase. 2020-2021. Center for Intelligent Infrastructure. Missouri S&T. PI Jenny Liu. $45,750.

[17]   PI. ConnectSafe: Connect Usage Based Insurance, Transportation Big Data and Socioeconomic Behavioral Research in Building a Safe-Driving Community. Missouri S&T Smart Living Research Center. 8/2018-7/2019. Co-PI Ana Ichim. $31,500

[18]   Co-PI. Evaluation and Behavioral Interventions for Safe Deployment of Autonomous Truck Mounted Attenuators Vehicles: A Driving Simulator Based Study. Misouri S&T Intelligent Systems Center. 8/2019-5/2020. PI Ruwen Qin. $9,273.

Prior to Missouri S&T ($130k shared-credits, total grants $364k)

[1] Co-PI and Project Manager. Pay-As-You-Drive-And-You-Save (PAYDAYS) Insurance Actuarial Study. Federal Highway Administration (FHWA). 9/2013-9/2016. $240,722 (Total budget $). 40% (Total budget $300,000, Metropia budget 240,722, shared credits $96,308.8)

[2] Co-PI. Exploring Emerging Traffic Data Collection for Transportation Planning and Operations using the Metropia System. Pima Association of Governments. Mar 2015-June 2016. 40% (Total budget $50,000, shared credits $20,000)

[3] PI. Utilizing DynuStudio-DynusT Dynamic Traffic Assignment Software Suite to model Fuzhou transportation network. Fujian University of Technology. Sept 2016. 100% shared credits. (Total budget $14,334, shared credits $14,334)

Awards, Honors and Recognitions:

[1] Joseph H. Senne Jr. Academy of Civil Engineers Faculty Scholarly Achievement Award, Missouri S&T, 2020.

[2] Outstanding Teaching Award. Missouri S&T. 2020

[3] University of Missouri System Teaching Scholar. 2020.

[4] Excellent Associate Editor. International Journal of Transportation Science and Technology. 2021.

[5] Excellent Reviewer. International Journal of Transportation Science and Technology. 2020.

[6] American Society of Civil Engineers (ASCE) Excellence in Civil Engineering Education (ExCEEd) Fellowship. 2019

[7] Recipient. National Science Foundation (NSF) Smart and Connected Communities (S&CC) travel grant. 9/2018.

[8] Excellent Paper Award. 2018 World Transport Convention. June 18-21, 2018. Paper presented "Advancing Usage Based Insurance – A Contextual Driving Risk Modeling and Analysis Approach". 74 out of 1829 (4%)

[9] Provost's eFellow. Missouri University of Science and Technology. 2018.

[10] Recipient. Center for Advancing Faculty Excellence (CAFE) Professional Development Fund. 2017.

[11] Recipient. The Second Urbanology "West Lake Silver Award", and Hsue-shen Tsien Urbanology Gold Award Nomination. International Urbanology Research Center, Hangzhou, China. Research claimed: Discussion on Planning for Non-Motorized Travel in Cities. 2012 (10 out of 233).

[12] Best paper award. Annual Meeting of the Chinese Urban Transportation Planning Association. Paper presented: "Study on Urban Arterial Pedestrian Crossing Facility Selection." 2012.

[13] Recipient. Shanghai Municipality Research Achievements Award for Decision-making Consultation. Shanghai Municipality. Research claimed: Non-Motorized Traffic Research and Planning of Shanghai's Central City. 2011 (10 out of 85).

[14] Invited research group member. Guidelines for the planning and designing of Urban Arterial Pedestrian Crossing Facilities, Shanghai Road Administration Bureau, SZ-C-B03-2007. 2007.11.14.

[15] Recipient. Third prize in Chinese Mathematical Olympiad of Zhejiang Province (out of approx. 300,000). The second and third prizes in multiple disciplines in the Chinese Olympiad competitions in Jinhua District (out of approx. 30,000), including Mathematics, Physics, Chemistry and Biology. 1999 - 2002.

Research Advising

Ph.D.

1. Qing Tang. 2018/8-present (expected). Qualify exam passed. Dissertation topic "Modeling of Heterogenous Travel Behaviors in Transportation Network Systems".
2. Chenxi Chen. 2018/10-present (expected).
3. Yang Song. 2019/1-present (expected).

Master

1. Venkata Siddhartha Naidu Chokkakula. (2018/1-2019/5). Non-thesis
2. Marie Buckman. (2020/1-present). Non-thesis
3. Kevin Reis. (2020/9-present). Non-thesis

Undergraduate Researchers

1. Ashley Fillback. OURE program. The Effects of the MoveRolla TDD Project on the Pedestrian. 2018/5- 2019/4.

2. Shihao Pan. OURE program. Transportation Network Simulation of Rocheport (MO) Area. 2018/5- 2019/4.

3. Kara Duong. OURE program. Pedestrian Studies: Effects of Impairment and the Impact on Travel Safety. 2019/5- 2020/4.

Visiting Scholars

1. Yang Li, from Guangdong University of Technology. 2018/9-2019/9. Funded by her University in China.

2. Yanqiu Cheng, from Chang'An University. 2018/8-2020/4. Partially funded by my MoDOT project, partially self-funded.

Committee Member

1. Vinayaka Nagendra Harikishan Gude Divya Sampath, PhD. Department of Engineering Management and System Engineering. Missouri S&T. 6/2020.

2. Akhilesh Ojha. PhD. Department of Engineering Management and System Engineering. Missouri S&T. 2019.

3. Bhanu Partap Singh Kanwar. PhD. Department of Engineering Management and System Engineering. Missouri S&T. 2018.

4. Zheng Li. Master. Department of Civil Engineering and Engineering Mechanics. University of Arizona, 2016.

5. Paul Hoffer. Master. University of Arizona, Department of Civil Engineering and Engineering Mechanics. University of Arizona, 2013.

Teaching

1. CIV_ENG 5513 Traffic Engineering. Missouri S&T. 2018FS, 2019FS, 2020FS.

2. CIV_ENG 5515 Advanced Traffic Operation and Capacity Analysis. Missouri S&T. 2018SS, 2019SS, 2020SS.

Evaluation of the above classes:

Semester	Class	Effectiveness (Out of 4.00)	Class Size
2020 SS	CIV_ENG 5515	4.0 All campuses average (S&T, MSU, distance students)	34
2019 FS	CIV_ENG 5513	3.4 All campuses average (S&T, MSU, MU, distance students)	61
2019 SS	CIV_ENG 5515	3.0	25

2018 FS	CIV_ENG 5513	2.9 All campuses average (S&T, MSU, distance students)	40
2018 SS	CIV_ENG 5515	3.6	6

3. CIV_ENG 5250 Air Transportation. 2018 Fall Semester (8 enrolled). Shared course from UM Columbia. Secondary instructor.

4. CIV_ENG 6001 Special Topics: Transport Network. 2019 Spring Semester (6 enrolled). Shared course from UM Columbia. Secondary instructor.

5. CIV_ENG 6001 Special Topics: Advanced Safety Modeling. 2019 Fall Semester (4 enrolled). Shared course from UM Columbia. Secondary instructor.

6. CIV_ENG 6099 Research. 2018 Fall Semester (2 enrolled), 2019 Spring Semester (1 enrolled). 2019 Fall Semester (1 Enrolled).

Professional development activities for teaching improvement:

1. University of Missouri Teaching Scholar Program. 2020-2021.

2. American Society of Civil Engineers (ASCE) Excellence in Civil Engineering Education (ExCEEd) teaching workshop. 2019/7.

3. Missouri S&T Provost eFellow training. 2018/8-present.

4. 2018/5-2018/8. Faculty Success Program, National Center for Faculty Development & Diversity

5. 2018/5/22-2018/5/23. 3rd Transportation Engineering Education Workshop. Auburn University. Auburn, AL

Professional Service Activities:

Department and University Service

1. Member. CEE Undergraduate Program Committee. Penn State. 2021/8-present

2. Review Team Members. COE Academic Integrity Committee. Penn State. 2021/9-present

3. Member. Chancellor Search Committee. Missouri S&T. 2018/9-2019/2.

4. Faculty Advisor. Missouri S&T Institution of Transportation Engineers (ITE) chapter. 2017/8-2021/7.

5. Member. Department Undergraduate Program Committee. Missouri S&T. 2017/8--2021/7.

6. Member. Department Public Relations, Engagement and Recruiting Committee. Missouri S&T. 2020/3-2021/7.

7. Academic advisor for 20 undergraduate students Individual Design Task (IDT). 2018 Spring semester (7), 2018 Fall semester (5). 2019 Spring semester (4), 2019 Fall semester (4).

8. Judge. Undergraduate Research Conference. Missouri S&T. 2018.

9. Judge. AT&T Missouri S&T SMART City Initiative Case Study Competition. 2017/11.

Profession Service and Society Membership

1. Associate Editor. The International Journal of Transportation Science and Technology (CiteScore: 5.8), 2020 - present.

2. Committee Research Coordinator. TRB Committee on the Maintenance and Operations Management (AKR10). 2022 – present.

3. Standing committee member. TRB Committee on the Impacts of Information and Communication Technologies (ICT) on Travel Choices (AEP35), 2012 – present.

4. TRB Committee Research Coordinators Leadership Council (CRCC), Highway Infrastructure Group (AK000) Representative. 2020-present.

5. Member. American Society of Civil Engineers

6. NSF panelist

7. Member. City of Rolla Pedestrian and Bicyclist Technical Committee. 2017-present.

8. Advisor. Missouri Department of Natural Resources Volkswagen Trust Advisory Committee. 2017.

9. Organizing committee member and publication chair. 7th International Symposium on Travel Demand Management. Tucson, AZ. April 2015.

10. Guest Editor. Special issue on Travel Demand Management, The International Journal of Transportation Science and Technology. Published October 2015.

11. Member. Traffic Engineering – Traffic Design and Construction – Transportation Network Design Technical Committee, World Transport Convention. 2017/8-2019/8.

12. Reviewer for 20+ peer reviewed journals and conferences

    a. Transportation Research Part B, C

    b. IEEE Transactions on Intelligent Transportation System

    c. Journal of Intelligent Transportation Systems: Technology, Planning, and Operations

    d. IET Journal of Intelligent Transportation Systems

    e. ASCE Journal of Transportation Engineering, Part A: Systems

    f. Transportmetrica A: Transport Science

    g. Journal of Advanced Transportation

    h. Transport

    i. Transportation

    j. Plus one

    k. Journal of Simulation

l. PROMET –Traffic & Transportation

m. Journal of Transportation of the Institute of Transportation Engineers

n. Advances in Mechanical Engineering

o. Automation in Construction

p. International Journal of Transportation Science and Technology

q. Traffic and Transportation Research

r. Transportation Research Board

s. COTA International Conference of Transportation Professionals

t. 7th International Symposium on Travel Demand Management

u. IEEE Intelligent Transportation Systems Conferences

v. And many others after I stopped counting

In the News

1. Putting electric vehicle charging stations on the map (Link). The Fabricator. 2021.

2. Missouri S&T: "Hu appointed associate editor of International Journal of Transportation Science and Technology". (Link) Jan. 2020

3. Missouri S&T CArEE department: "Missouri S&T researchers organize IACIP workshop and present at TRB's annual meeting". (Link) Jan. 2020.

4. Missouri S&T CArEE department: "Missouri S&T researcher received an Excellent Paper Award at the 2018 World Transportation Convention". (Link) June 2018.

5. Missouri S&T: "Students use a driving simulator to test roadway design before construction". (Link) May 2019

6. KGUN-TV, channel 9 (KGUN-9): "No more traffic jams: UA startup company designs new mobile app". (Link). Sept. 24, 2013

7. Arizona Daily Wildcat: "New app to aid traffic flow." (Link) Apr. 16, 2015.

8. Startup Tucson. "Mobile Traffic App from Tucson Startup Brings New Solution for Congestion." (Link). Sept. 21, 2013.

9. Tongji University: "Tongji University signs Accelerated Master Program (AMP) agreement with the University of Arizona". (Link). May 25, 2016

10. Soochow University: "Soochow University in discussion with the University of Arizona on Accelerated Master Program (AMP) agreement". (Link). May 26, 2016