Zhenyu Wang, PhD

Senior Research Faculty
Center for Urban Transportation Research
College of Engineering
University of South Florida
zwang9@usf.edu
(813) 974-8998

KEY EXPERTISE

Artificial Intelligence and Big Data; Automated and Connected Vehicle; Transportation Safety; Advanced Statistical Analysis and Machine Learning; Traffic Operations and Simulation; Intelligent Transportation Systems (ITS); Naturalistic Driving Study; Virtual Reality (VR) and Augmented Reality (AR) Powered Training

EDUCATION

Ph.D., Transportation Engineering, University of South Florida — *Tampa, Florida – 2008*
M.S., Transportation Engineering, Chang'an University — *China – 2003*
B.S., Electrical Engineering, Taiyuan University of Technology — *China – 1996*

PROFESSIONAL EXPERIENCE

Senior Research Faculty / Center for Urban Transportation Research, University of South Florida — *2019–Present*
Instructor/Adjunct Faculty / Civil and Environmental Engineering, University of South Florida — *2009–Present*
Research Faculty / Center for Urban Transportation Research, University of South Florida — *2013–2019*
Research Scientist / Center for Urban Transportation Research, University of South Florida — *2012–2013*
Postdoctoral Scholar / Civil and Environmental Engineering, University of South Florida — *2008–2011*

TEACHING EXPERIENCE

"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2022*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2021*
"Computer Application in Transportation Engineering," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2020*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2020*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2019*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2018*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2017*
"Traffic Flow Theory," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Fall 2014*
"Transportation Engineering I," Undergraduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Summer 2014*
"Transportation Safety," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2014*

"Intelligent Transportation System," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Fall 2013*

"Geotechnical Laboratory," Undergraduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Fall 2011*

"Data Management in Transportation Engineering," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Summer 2011*

"Computer Application in Transportation Engineering," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2011*

"Geotechnical Laboratory," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Fall 2010*

"Access Management," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Spring 2010*

"Data Management in Transportation Engineering," Graduate Level, Civil & Environmental Engineering, University of South Florida, Tampa — *Summer 2009*

GRADUATE STUDENT COMMITTEES

Dongfang Zhao, University of South Florida — Ph.D. Dissertation (Chair) — *2021*

Ahmad Tazay, University of South Florida — Ph.D. Dissertation — *2016*

Tatok Raharjo, University of South Florida — Master's Thesis — *2016*

Shengdi Chen, University of South Florida — Ph.D. Dissertation — *2013*

Sujan Sikder, University of South Florida — Ph.D. Dissertation — *2013*

Weiping Deng, University of South Florida — Ph.D. Dissertation — *2013*

Bing Huang, University of South Florida — Ph.D. Dissertation — *2012*

Linjun Lu, University of South Florida — Ph.D. Dissertation — *2009*

Bing Cao, University of South Florida — Ph.D. Dissertation — *2009*

Chauhan Arjun, University of South Florida — Master's Thesis — *2010*

Wang Qing, University of South Florida — Master's Thesis — *2009*

SERVICE

Friend, TRB Visibility Standard Committee (AND40), TRB Highway/Rail Grade Crossings (AHB60), TRB Access Management (AHB70) — *2018–Present*

President, International Chinese Transportation Professional Association (ICTPA) Florida Chapter — *2018–Present*

Vice President, International Chinese Transportation Professional Association (ICTPA) Florida Chapter — *2015–2017*

Committee Member, 11th Asia Pacific Transportation Development Conference & 29th ICTPA Annual Conference, Hsinchu, Taiwan — *2016*

Technical Committee Member, 10th Asia Pacific Transportation Development Conference & 27th ICTPA Annual Conference, Beijing, China — *2014*

Technical Committee Member, 26th ICTPA Annual Conference, Tampa, USA — *2013*

INVITED REVIEWER FOR PEER-REVIEWED JOURNALS

- Accident Analysis & Prevention
- Journal of Advanced Transportation
- Advances in Transportation Studies
- Journal of Highway and Transportation Research and Development
- IATSS Research
- Journal of Transportation Safety & Security
- Safety Science

- Scientia Iranica
- Traffic Injury Prevention
- Transportation Research Part C
- Transportation Research Board Annual Meetings (2009–2016)
- Journal of Southeast University
- Journal of Traffic and Transportation Engineering
- Journal of Chang'an University (Natural Science Edition)

RESEARCH PROJECTS PERFORMED

As Principal Investigator or Co-PI

- Developing Pedestrian Realistic Artificial Datasets (RADs), funded by FHWA, $350,762, PI *2025–2028*
- Continuous Friction Measuring Equipment Assessment and Testing Results for Florida Pavement, funded by FDOT, $315,216, PI *2025–2028*
- Pavement Marking Data Integration, Performance Prediction, and Maintenance Management, funded by FDOT, $80,000, Co-PI *2025–2026*
- Deployment of Immersive Workforce Training Programs for Railway Operations and Safety using Virtual Reality and Augmented Reality Technologies, funded by FRA Consolidated Rail Infrastructure and Safety Improvements (CRISI) Program, $1,003,796, PI *2024–2028*
- Evaluation of Safety Improvements and Outcomes in FDOT District 7, funded by FDOT District 7, $340,000, Co-PI *2024–2026*
- Evaluation of Promising Countermeasures and Innovative Techniques on Speed Management to Improve Pedestrian and Bicycle Safety, funded by FDOT, $170,000, Co-PI *2024–2025*
- Root Cause Analysis, Dashboard Development, and Countermeasure Implementation Prioritization for Speeding and Aggressive Driving Crashes and Impaired Driving Crashes, funded by FDOT, $379,962, Co-PI *2025–2026*
- Innovative Signal Timing Design and Operation Strategies to Improve Nighttime Arterial Safety, funded by FDOT, $200,000, Co-PI *2025–2026*
- Enhancement of SCRIM Safety Data Analysis and Tool Development to Support Prioritization of 3R and Safety Project Selection and Deployment, funded by FDOT District 7, $160,000, Co-PI *2024–2026*
- FDOT District 7 Before-After Studies and Safety Countermeasure Evaluation, funded by FDOT District 7, $250,000, Co-PI *2023–2024*
- SCRIM Safety Data Analysis and Guideline Development for Using Continuous Pavement Friction Measurements to Support Prioritization of 3R and Safety Project Selection and Deployment, funded by FDOT District 7, $192,539, Co-PI *2023–2024*
- Application of Artificial Intelligence Technologies in FDOT Safety and Transportation System Management and Operational (TSM&O) Programs, funded by FDOT, $407,218, PI *2023–2024*
- Development of an Immersive Training Platform for Roadway Construction Workers using Virtual Reality (VR) Technologies, funded by CTEDD (USDOT Tier I University Transportation Center), $700,000, PI *2022–2023*
- Assessment of Highway-Railroad Grade Crossing Strategies, Countermeasures, and Technologies to Improve Traffic Safety and Mobility in Florida, funded by FDOT, $247,424, Co-PI *2022–2023*
- Development of Comprehensive Roadmap and Resource Guide Towards Congestion Reduction, funded by National Institute for Congestion Reduction (NICR), $120,000, Co-PI *2022–2023*
- FDOT District 7 District-Wide Street Lighting Measurement and Analysis, funded by FDOT, $335,040, Co-PI *2022*
- Demand-Side Management of Auto Traffic – Year 2, funded by National Institute for Congestion Reduction (NICR), $115,000, Co-PI *2021–2022*
- Toward a Florida Automated, Connected, Electric, and Shared (ACES) Transportation System Roadmap: Phase II, funded by FDOT, $150,251, Co-PI *2021–2022*
- Development of Automated Roadway Lighting Diagnosis Tools for Nighttime Traffic Safety Improvement, Phase II, funded by CTEDD (USDOT Tier I University Transportation Center), $69,744, PI *2021–2022*

- Technical Support for FDOT District 7 Safety Study, funded by FDOT, $282,000, Co-PI *2021–2022*
- Interstate 4 (I-4) Florida's Regional Advanced Mobility Elements (FRAME) Before Study Data Collection & Analysis, funded by USDOT/FDOT, $281,019, Co-PI *2021–2022*
- Development of Before-After Safety Study Toolbox, funded by FDOT, $53,000, Co-PI *2020–2021*
- Development of Crash Modification Factors for Speed Management of Traffic Signal Progression, funded by FDOT, $150,319, Co-PI *2020–2022*
- Demand-Side Management of Auto Traffic - National Institute for Congestion Reduction (NICR) Year 1, funded by NICR, $130,479, Co-PI *2020–2021*
- Railroad Dynamic Envelope Pavement Markings Before-and-After Study for FDOT District 7, funded by FDOT, $30,000, PI *2020–2021*
- Understanding Florida Motorcycle Crashes and Injury Outcomes Using the Motorcycle Crash Causation Study (MCCS) Dataset, funded by FDOT, $109,409, Co-PI *2020–2021*
- Street Lighting Measurements on Selected Corridors in FDOT District 7 (2020), funded by FDOT, $50,167, Co-PI *2020*
- Prioritized Safety Consideration by Work Zone Types and Pilot Implementation, funded by FDOT, $204,953, Co-PI *2019–2021*
- Development of Automated Roadway Lighting Diagnosis Tools for Nighttime Traffic Safety Improvement, funded by USDOT (Tier-1) University Transportation Center, $73,186.65, PI *2019–2020*
- Development of Low Voltage/Extended Runtime Signalized Intersection Using Backup Power after the Loss of Utility Power Due to Hurricanes, funded by FDOT, $329,835, Co-PI *2019–2021*
- Street Lighting Measurements on Selected Corridors in FDOT District 7 (2019), funded by FDOT, $51,600, Co-PI *2019*
- Application of Dynamic Crash Prediction Methodologies to FDOT Safety and Transportation System Management and Operational (TSM&O) Programs, funded by FDOT, $171,646, PI *2018–2019*
- Quality Assurance Review of Intersection Lighting Retrofits, funded by FDOT, $31,310, Co-PI *2019*
- Pilot Implementation for Preventing Incorrect Turns at Highway-Rail Grade Crossings, funded by FDOT, $129,771, Co-PI *2018–2019*
- Integration of a Robust Automated Pedestrian Detection System for Signalized Intersections, funded by FDOT, $249,467, Co-PI *2017–2019*
- Street Lighting Measurements on Selected Corridors in FDOT District 7, Phase IV, funded by FDOT, $39,971.88, Co-PI *2017–2018*
- Understanding Interactions between Drivers and Pedestrian Features at Signalized Intersections, Phase 3, funded by FDOT/FHWA, $325,460, Co-PI *2017–2018*
- Understanding Interactions between Drivers and Pedestrian Features at Signalized Intersections, Phase 2, funded by FDOT/FHWA, $224,811, Co-PI *2016–2017*
- Development of Statewide Guidelines for Implementing Leading Pedestrian Intervals in Florida, funded by FDOT, $128,597, Co-PI *2016–2017*
- NCHRP 03-120 Assessing Interactions between Access Management Treatments and Multimodal Users, funded by TRB, $800,000, Co-PI *2015–2018*
- Street Lighting Measurements on Selected Corridors in FDOT District 1, funded by FDOT, $50,000, Co-PI *2015–2016*
- Study on Motorcycle Safety in Negotiation with Horizontal Curves in Florida and Development of Crash Modification Factors, funded by FDOT, $124,791, PI *2016–2017*
- Optimization of Road Rangers Operations for FDOT District 7 Freeway Systems, funded by FDOT, $49,250, Co-PI *2016*
- Understanding Interactions between Drivers and Pedestrian Features at Signalized Intersections, funded by FDOT/FHWA, $145,551, Co-PI *2015*
- Development of Effective Truck Route Signing Program for City of Tampa, Transportation Division, City of Tampa, Co-PI *2014–2015*
- Pilot Study for Preventing Incorrect Turns at Highway–Rail Grade Crossings, funded by FDOT, $114,081, Co-PI *2014–2015*
- Street Lighting Measurements on Selected Corridors in FDOT District 7, Phase III and Phase IV, funded by FDOT District 7, $99,414, Co-PI *2014*

- Street Lighting Measurements on Selected Corridors in FDOT District 7, Phase II, funded by FDOT District 7, $54,991, Co-PI *2013–2014*
- Roadway Data Representation and Application Development, funded by FDOT, $300,000, Co-PI *2008–2012*
- Safety Performance Evaluation of Freeway Exit Ramps, funded by STC, $25,000, Co-PI *2009*

As Key Personnel and Others

- Florida's Bicycle/Pedestrian Focused Initiative – Communications, funded by FDOT/NHTSA, $400,000, Researcher *2016–2017*
- Florida's Comprehensive Pedestrian and Bicycle Safety Program, funded by FDOT/NHTSA, $650,000, Key Personnel *2015–2016*
- Comprehensive Motorcycle Safety Program, funded by FDOT/NHTSA, $575,000, Researcher *2015–2016*
- Pedestrian Program Evaluation and Data Collection, funded by FDOT/NHTSA, $200,000, Researcher *2014–2015*
- Comprehensive Pedestrian and Bicycle Safety Program, funded by FDOT/NHTSA, $695,430, Key Personnel *2014–2015*
- Community Traffic Safety Support, funded by FDOT/NHTSA, $150,000, Researcher *2013–2014*
- Comprehensive Motorcycle Safety Program, funded by FDOT/NHTSA, $575,000, Researcher *2013–2014*
- Comprehensive Pedestrian Safety Program, funded by FDOT/NHTSA, $400,000, Key Personnel *2013–2014*
- Coordinated Pre-Preemption of Traffic Signals to Enhance Railroad Grade Crossing Safety in Urban Areas and Estimation of Train Impacts to Arterial Travel Time Delay, funded by FDOT, $145,424, Key Personnel *2012–2013*
- Improved Traffic Control Measures to Prevent Incorrect Turns at Highway–Rail Grade Crossings, funded by FDOT/NCTR, $99,033.88, Key Personnel *2012–2013*
- Assessing the Impact of Proposed Transit Investments and Public Policy Choices on Land Use Patterns (A Simulation Approach with UrbanSim), funded by FDOT, $99,947, Key Personnel *2012*
- Tampa Bay In-Vehicle Driving Behavior Field Study, funded by CUBRC/SHRP2-TRB, National Academies, $2,453,669, Researcher *2010–2014*
- Comprehensive Motorcycle Safety Program, funded by FDOT/NHTSA, $575,000, Researcher *2012–2013*

As Graduate Research Assistant

- Development of an Interface between FDOT's Crash Analysis Reporting System and Safety Analyst, funded by FDOT, Key Personnel *2007*
- Safety and Operational Performance Evaluation of Two-Lane Exit Ramps with Optional Lane on Florida's Freeways, funded by FDOT, $150,000, Key Personnel *2006–2007*
- Integrated Work Zone Safety Management System and Analysis Tools, funded by FDOT, $150,000 *2005–2006*
- Development of a Procedure for Prioritizing Intersections for Improvements Considering Safety and Operational Factors, funded by FDOT, $130,000 *2004*
- Determination of Weaving Length for Vehicles Making U-Turns After Making Right Turns from Driveways, funded by FDOT, $150,000 *2003*
- Right Turn Followed by U-Turn at Median Openings on Four-Lane Arterials as an Alternative to Direct Left Turn from Driveways, funded by FDOT, $125,000 *2003*

TRANSPORTATION PROFESSIONAL APPLICATIONS DEVELOPED

Detect-and-Track (DNT) Tool *2020–Present*

- An AI tool to enhance safety before-after studies
- SOTA computer vision technologies to retrieve surrogate safety data from videos
- Implemented in FDOT District 7 projects
- its.cutr.usf.edu/dnt

Intelligence Lighting Analysis (LITA) Tool *2019–Present*

- A web-based application that analyzes high-resolution ALMS lighting data using AI/ML algorithms for nighttime safety management
- Visualizes lighting data and nighttime crash risks in web-GIS maps
- Provides decision-making support to maintain or upgrade roadway lighting systems

- its.cutr.usf.edu/lita

Advanced Lighting Measurement System (ALMS) *2012–Present*

- An automatic data surveillance system for collecting high-resolution lighting data for big-scale roadway networks
- Provides cost-effective solutions for data-driven nighttime safety management and analysis, especially for pedestrians
- Used for lighting data collection and safety analysis for 400+ center miles of roadway corridors in FDOT Districts 1 and 7
- its.cutr.usf.edu/alms

FDOT Alert Today and Alive Tomorrow Website *2013–2019*

- The official website of the Comprehensive Pedestrian Safety Campaign supported by the Safety Office, Florida Department of Transportation
- alerttodayflorida.com

Florida Straight-Line Diagrammer *2009–2012*

- A web-based application to generate Straight-Line Diagrams (SLDs) based on roadway data dynamically retrieved from the Florida RCI database, using a fully automatic and customized approach
- Implemented by the Statistics Office, Florida Department of Transportation

Florida SafetyAnalyst Data Convertor *2009*

- A stand-alone application to prepare crash data for implementation of the Highway Safety Manual and SafetyAnalyst in Florida
- Implemented by the Safety Office, Florida Department of Transportation

Florida Work Zone Crash Database *2007*

- A web-based application to manage work zone related crash data and provide a statistical analysis tool
- Implemented by the Construction Office, Florida Department of Transportation

Prioritization of Intersections for Safety and Operational Improvements *2005*

- A decision support tool to optimize selection of intersection improvement projects considering both safety and operational factors
- Implemented by the Traffic Engineering and Operations Office, Florida Department of Transportation

PUBLICATIONS

- Lyu, H., Wang, Z., Lin, P-S, Lu, Q, Duran, E., Wang, G. (2025). *Exploring the Safety Impacts of Pavement Friction Using Continuous Pavement Friction Measurement Data with Correlated Random Parameters Negative Binomial Models.* Journal of Transportation Engineering, Part B: Pavements (in publishing).
- Lyu, H., Wang, Z., Lin, P-S, Lu, Q, Duran, E., Hsu, P. (2025). *How Does Pavement Friction Impact Motorcycle Crashes? A Florida Analysis.* Transportation Research Record, 2679(10), 647-661.
- Rangaswamy, R., Alnawmasi, N., Wang, Z., Lin, P.S. (2024). *Exploring contributing factors to improper driving actions in single-vehicle work zone crashes: A mixed logit analysis considering heterogeneity in means and variances, and temporal instability.* Journal of Transportation Safety & Security, 16(7), 768-797. https://doi.org/10.1080/19439962.2023.2253748
- Wang, Z., Lin, P-S., Keita, Y. (2024). *Safety Benefits of Parcel Delivery Modes Using Geographically Weighted Negative Binominal Regression.* Proceedings of the International Conference on Transportation and Development 2024: Transportation Safety and Emerging Technologies, 226-237. https://doi.org/10.1061/9780784485514.020
- Lin, P-S., Kourtellis, A., Wang, Z. (2024). *Extended Runtime at Signalized Intersection Using Backup Power after the Loss of Utility Power.* Proceedings of the International Conference on Transportation and Development 2024. https://doi.org/10.1061/9780784485514.032
- Li, Q, Wang, Z., Kolla R., Li, M., Yang, R., Lin, P-S., Li, X. (2023). *Modeling Effects of Roadway Lighting Photometric Criteria on Nighttime Pedestrian Crashes on Roadway Segments.* Journal of Safety Research, 86, 253-261. https://doi.org/10.1016/j.jsr.2023.07.004

- Zhang, Y., Zhang, Z., Wang, Z., Lyu, T., Wang, X., Lu, L. (2023). *Accident Diagnosis and Evaluation System in Parking Lots Using Multisource Data Based on Bayesian Networks.* Journal of Advanced Transportation, 2023, 3150003. https://doi.org/10.1155/2023/3150003
- Wei, F., Dong, D., Liu, P., Guo, Y., Wang, Z., Li, Q. (2022). *Quarterly Instability Analysis of Injury Severities in Truck Crashes.* Sustainability, 14(21), 14055. https://doi.org/10.3390/su142114055
- Ma, S., Guo, Y., Wei, F., Li, Q., Wang, Z. (2022). *An Improved Social Force Model of Pedestrian Twice–Crossing Based on Spatial–Temporal Trajectory Characteristics.* Sustainability, 14(24), 16615. https://doi.org/10.3390/su142416615
- Abhijit, V., Wang, Z., Kolla R., Lin, P-S. (2023). *Evaluation of Dynamic Envelope Pavement Marking to Improve Motorist Stopping Behaviors at Highway-Rail Grade Crossings.* ITE Journal, 93(2), 40-46. https://www.proquest.com/docview/2774981930
- Rangaswamy, R., Kolla, R., Wang, Z., Lee, C., Lin, P-S. (2022). *Evaluation of Dynamic Envelope Pavement Marking to Improve Motorist Stopping Behaviors at Highway-Rail Grade Crossings.* ITE Journal, 95(9), 38-44.
- Wei, F., Cai, Z., Wang, Z., Guo, Y., Li, X., Wu, X. (2021). *Investigating Rural Single-Vehicle Crash Severity by Vehicle Types Using Full Bayesian Spatial Random Parameters Logit Model.* Applied Sciences, 11(17), 7819. https://doi.org/10.3390/app11177819
- Li, Q, Wang, Z., Li, M., Yang, R., Lin, P-S., Li, X. (2021). *Development of crash modification factors for roadway illuminance: A matched case-control study.* Accident Analysis & Prevention, 159, 106279. https://doi.org/10.1016/j.aap.2021.106279
- Cai, Z., Wei, F., Wang, Z., Guo Y., Chen, L., Li, X. (2021). *Modeling of Low Visibility-Related Rural Single-Vehicle Crashes Considering Unobserved Heterogeneity and Spatial Correlation.* Sustainability, 13(3), 7438. https://doi.org/10.3390/su13137438
- Wang, Z., Vasili, A., Yang, R., Lin, P-S. (2021). *Recursive Bivariate Probit Analysis of Injury Severity and Non-Truck Improper Actions in Large Truck-related Crashes on Florida Suburban Roads.* Transportation Research Record, 2675(8). https://doi.org/10.1177/0361198121997146
- Wang, Z., Lin P-S., Vasili, A., Guo, R., Yang R. (2021). *Evaluation of a Low-Cost Countermeasure to Prevent Incorrect Turns at Highway-Rail Grade Crossings.* ITE Journal, 93(3), 43-48.
- Wei, F., Cai, Z., Guo, Y., Liu, P., Wang, Z., Li, Z. (2021). *Analysis of Roadside Accident Severity on Rural and Urban Roadways.* Intelligent Automation & Soft Computing, 28(3), 753-767. doi:10.32604/iasc.2021.014661
- Guo, R., Wu Z., Zhang, Y., Lin, P.S., Wang, Z. (2020). *Insights from Integrated Geo-Location Data for Pedestrian Crashes, Demographics, and Land Uses.* Journal of the Transportation Research Board, 2674(8), 720-731. https://doi.org/10.1177/0361198120920267
- Yang, R., Wang, Z., Lin, P-S., Li, X., Chen, Y., Hsu, P., Alex, H. (2019). *Safety effects of street lighting on roadway segments: development of a crash modification function.* Traffic Injury Prevention, 20(3), 1-7. https://doi.org/10.1080/15389588.2019.1573317
- Xin, C., Wang, Z., Lee, C., Lin, P., Chen T., Guo R., Lu Q. (2019). *Development of crash modification factors of horizontal curve design features for single-motorcycle crashes on rural two-lane highways: A matched case-control study.* Accident Analysis & Prevention, 123, 51-59. https://doi.org/10.1016/j.aap.2018.11.008
- Chen, T., Liu, K., Wang, Z., Deng, G., Chen, B. (2019). *Vehicle forward collision warning algorithm based on road friction.* Transportation Research Part D: Transport and Environment, 66, 49-57. https://doi.org/10.1016/j.trd.2018.04.017
- He, W., Zhang, Z., Lu, L., Wang, Z. (2018). *Analysis on the influence factors of accident severity: evidence from urban river-crossing tunnels in Shanghai of China.* Journal of Engineering Science & Technology Review, 11(5), 100-108. https://doi.org/10.25103/jestr.115.12
- Xin, C., Guo, R., Wang, Z., Lu, Q., Lin, P. S. (2017). *The effects of neighborhood characteristics and the built environment on pedestrian injury severity: A random parameters generalized ordered probability model with heterogeneity in means and variances.* Analytic Methods in Accident Research, 16, 117-132. https://doi.org/10.1016/j.amar.2017.10.001
- Xin, C., Wang, Z., Lin, P., Lee, C., Guo, R. (2017). *Modeling safety effects of horizontal curve design on injury severity of single-motorcycle crashes with mixed-effects logistic model.* Transportation Research Record, 2637, 38-46. https://doi.org/10.3141/2637-05

- Xin, C., Wang, Z., Lin, P., Lee, C., Guo, R. (2017). *Safety effects of horizontal curve design on motorcycle crash frequency on rural two-lane undivided highways in Florida.* Transportation Research Record, 2637, 1-8. https://doi.org/10.3141/2637-01
- Wei, F., Wang, Z., Lu, J. (2017). *Exploring factors contributing to lane changes during left-turns on quadruple left-turn lanes at signalized intersections.* Advances in Mechanical Engineering, 9(5), 1-9. https://doi.org/10.1177/1687814017700062
- Wei, F., Wang, Z., Lin, P., Hsu, P., Ozkul, S., Jackman, J., Bato, M. (2016). *Safety effects of street illuminance at urban signalized intersections in Florida.* Transportation Research Record, 2555, 95-102. https://doi.org/10.3141/2555-13
- Huang Y., Wang, Z. (2014). *Decentralized adaptive fuzzy control for a class of large-scale MIMO nonlinear systems with strong interconnection and its application to automated highway systems.* Information Sciences, 274, 210-224. https://doi.org/10.1016/j.ins.2014.02.132
- Wang, Z., Huang, B., Lu, J., Zhao, J., Zhang, Y. (2014). *Exploring the impact of access design on crash injury severity on multi-lane highways.* Traffic Injury Prevention, 15(1), 102-109. https://doi.org/10.1080/15389588.2013.789871
- Wang, Z., Zhang, Z., Lu, J., Zhao, J. (2012). *Development of a procedure for prioritizing intersection improvement projects considering both safety and operational factors.* Journal of Transportation Safety and Security, 4(1), 35-48. https://doi.org/10.1080/19439962.2011.614374
- Chen, T., Tan, H., Feng, G., Wang, Z., Wei, L. (2012). *APG-TR algorithm of moving vehicle detection.* Journal of Traffic and Transportation Engineering, 4, 100-106.
- Chen, H., Zhang, Y., Wang, Z., Lu, J.J., Pontoriero, D. (2011). *Identifying crash distributions and prone locations by lane groups at freeway diverge areas.* Transportation Research Record, 2237, 88-97. https://doi.org/10.3141/2237-10
- Wang, Z., Chen, H., Lu, J. J. (2009). *Exploring Impacts of Factors Contributing to Injury Severity at Freeway Diverge Areas.* Transportation Research Record, 2102, 43-52. https://doi.org/10.3141/2102-06
- Wang, Z., Lu, J. J., Xiang, Q. (2005). *Safety and operational impacts of access management techniques.* Advances in Transportation Studies, Section B 4, 6, 85-95.
- Gao G., Wang, Z., Huang, W. (2004). *Location selection research of public logistics center based on multi-objective fuzzy decision.* Journal of Highway and Transportation Research and Development, 21(9).
- Wang, Z., Cui, H., Huang, W. (2003). *Study on system architecture of first-aid system for breakdown vehicle on expressway.* Journal of Highway and Transportation Research and Development, 20(4).
- Wang, Z., Gao, G., Huang, W. (2003). *Architecture of Expressway Traffic Control System based on Multi-agent.* Journal of Traffic and Transportation Engineering, 3(1), 76-92.
- Wang, Z., Huang, W. (2001). *Research of developing the system architecture for intelligent transportation system in China.* Journal of Southeast University, 31(3), 85-89.

TECHNICAL REPORTS

- Lin, P-S., Wang, Z., Lu, Q., Lyu, H. SCRIM Safety Data Analysis and Guideline Development for Using Continuous Pavement Friction Measurements to Support Prioritization of 3R and Safety Project Selection and Deployment. Center for Urban Transportation Research (CUTR), University of South Florida, January 2025.
- Wang, Z., Lin, P-S., Alqasemi, R. Development of an Immersive Training Platform for Roadway Construction Workers using Virtual and Augmented Reality Technologies. CTEDD, 2024.
- Lin, P-S., Wang, Z., Kolla, R., Bialkowska-Jelinska, E., Alluri, P., Soltaninejad, M. Assessment of Highway-Railroad Grade Crossing Strategies, Countermeasures, and Technologies to Improve Traffic Safety and Mobility in Florida. Florida Department of Transportation (FDOT), Florida, 2023.
- Lin, P-S., Wang, Z., Li, Qianwen, Lyu, H., Jackman, J., Sipiora, A. Toward a Florida Automated, Connected, Electric, and Shared (ACES) Transportation System Roadmap: Phase II. Florida Department of Transportation (FDOT), Florida, 2023.
- Lin, P-S., Wang, Z., Keita, Y., Yang R. Development of Crash Modification Factors for Speed Management of Traffic Signal Progression. Florida Department of Transportation (FDOT), Florida, 2022.
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