

**DAYONG(JASON) WU (Ph.D., EIT)**  
**CURRICULUM VITAE**

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**EDUCATION:**

- **Doctoral Degree:** Civil Engineering, specialized in Transportation Engineering, Texas Tech University; Received in May 2016
- **Master's Degree:** Civil Engineering, specialized in Structural Engineering, Utah State University; Received in December 2007
- **Bachelor's Degree:** Civil Engineering, Zhengzhou University, China; Received in July 2003.

**AWARDS:**

- **Dean's Fellowship of Edward E. Whitacre College of Engineering (2011-2012):** Texas Tech University;

**ACADEMIC WORKING HISTORY:**

- **Texas A&M Transportation Institute (belongs to the Texas A&M University System), Dallas, Texas**
  - **Assistant Research Scientist (10/2019 - Present):** Division of Research and Implementation/Dallas Program
- **Texas Tech University, Lubbock, Texas**
  - **Senior Research Associate (06/2017-10/2019):** Dept. of Civil, Environmental and Construction Engineering
  - **Instructor (08/2017- 05/2018):** Dept. of Civil, Environmental and Construction Engineering
  - **Research Associate (06/2016-05/2017):** Dept. of Civil, Environmental and Construction Engineering
  - **Teaching Assistant/Part-time Instructor (08/2014-05/2016):** Dept. of Civil, Environmental and Construction Engineering
  - **Research Assistant (08/2011-05/2014):** Dept. of Civil, Environmental and Construction Engineering

**RESEARCH AREAS:**

- **Traffic Safety, Transportation Data Analytics, Infrastructure Performance and Management, GIS in Transportation Applications, Intelligent Transportation Systems, Life-Cycle Cost Analysis**

**PUBLICATIONS:**

- **Peer-Reviewed Journal Articles:**
  - **Published Articles (\*Corresponding Author)**
  - 1. Lin Ciyun, Yingzhi Guo, Wenjun Li, Hui Liu, **Dayong Wu**. "An Automatic Lane Marking Detection Method with Low-Density Roadside LiDAR Data", *IEEE Sensors Journal*, 2021.
  - 2. Lin, Ciyun, Wang, Kang, **Dayong Wu**, Gong, Bowen. "Passenger Flow Prediction Based on Land Use around Metro Stations: A Case Study". *Sustainability* 2020, *12*, 6844.
  - 3. Bowen Gong, Ruixin Wei, **Dayong Wu**, Ciyun Lin. "Fleet Management for HDVs and CAVs on Highway in Dense Fog Environment", *Journal of Advanced Transportation*, 2020.
  - 4. Lin Ciyun; Hui Liu; **Dayong Wu**; Bowen Gong. "Background Point Filtering of Low-Channel Infrastructure-Based LiDAR Data Using a Slice-Based Projection Filtering Algorithm." *Sensors* 20, no. 11: 3054.

5. Lin Ciyun, Yongli Yu, **Dayong Wu\***, and Bowen Gong. "Traffic Flow Catastrophe Border Identification for Urban High-density Area Based on Cusp Catastrophe Theory: A Case Study under Sudden Fire Disaster." (2020). *Appl. Sci.* 2020, 10, 3197.
6. Ciyun Lin, **Dayong Wu\***, Hongchao Liu, Xueting Xia, & Nischal Bhattarai "Factor Identification and Prediction for Teen Driver Crash Severity Using Machine Learning: A Case Study." (Applied Sciences 10 (5), 1675, 2020)
7. Lin Ciyun, Kang Wang, **Dayong Wu**, and Bowen Gong. "Research on Residents' Travel Behavior under Sudden Fire Disaster Based on Prospect Theory." *Sustainability* 12, no. 2 (2020): 487.
8. Lin Ciyun, Xiangyu Zhou, **Dayong Wu**, and Bowen Gong. "Estimation of Emissions at Signalized Intersections Using an Improved MOVES Model with GPS Data." *International Journal of Environmental Research and Public Health* 16, no. 19 (2019): 3647.
9. Manzhen Duan, **Dayong Wu** and Hongchao Liu. "Bi-level Programming Model for Resource-Shared Parking Lots Allocation". *Transportation Letters: the International Journal of Transportation Research* (2019)
10. Junxuan Zhao, Hao Xu, Hongchao Liu, Jianqing Wu, Yichen Zheng, and **Dayong Wu**. "Detection and Tracking of Pedestrians and Vehicles using Cost-Efficient Roadside 360-Degree LiDAR Sensors". *Transportation Research Part C: Emerging Technologies* (2019)
11. **Wu Dayong**, Changwei Yuan and Hongchao Liu. "The Decoupling States of CO<sub>2</sub> Emissions in the Chinese Transport Sector from 1994 to 2012: A Perspective on Fuel Types." *Energy & Environment* (2018)
12. Yuan, Changwei, **Dayong Wu\***, and Hongchao Liu. "Using Grey Relational Analysis to Evaluate Energy Consumption, CO<sub>2</sub> Emissions and Growth Patterns in China's Provincial Transportation Sectors." *International journal of environmental research and public health* 14.12 (2017): 1536.
13. Kumfer, Wesley, Hongchao Liu, **Dayong Wu**, Dali Wei, and Sreeram Sama. "Development of a supplementary driver education tool for teenage drivers on rural roads." *Safety science* 98 (2017): 136-144
14. **Wu Dayong**, Junxuan Zhao, Hongchao Liu and Changwei Yuan, "The assessment of damage to Texas highways due to oversize and overweight loads considering climatic factors.", *International Journal of Pavement Engineering* (2017): 1-13.
15. Yuan changwei, **Dayong Wu\***, Dali Wei and Hongchao Liu. "Modeling and Analyzing Taxi Congestion Premium in Congested Cities." *Journal of Advanced Transportation* (2017)
16. **Wu Dayong**, Changwei Yuan, Wesley Kumfer, and Hongchao Liu. "A Life-Cycle Optimization Model Using Semi-Markov Process for Highway Bridge Maintenance." *Applied Mathematical Modelling* (2016)
17. **Wu Dayong**, Changwei Yuan, and Hongchao Liu. "A risk-based optimisation for pavement preventative maintenance with probabilistic LCCA: a Chinese case." *International Journal of Pavement Engineering* (2015): 1-15.
18. Wei Dali, Changwei Yuan, Hongchao Liu, **Dayong Wu**, and Wesley Kumfer. "The Impact of Service Refusal to the Supply–Demand Equilibrium in the Taxicab Market." *Networks and Spatial Economics* (2016): 1-29.
19. Wei Dali, Wesley Kumfer, **Dayong Wu**, and Hongchao Liu. "Traffic queuing at unsignalized crosswalks with probabilistic priority." *Transportation Letters* (2016): 1-15.
20. Bian Changzhi, Changwei Yuan, Wenbo Kuang, and **Dayong Wu**. "Evaluation, Classification, and Influential Factors Analysis of Traffic Congestion in Chinese Cities Using the Online Map Data." *Mathematical Problems in Engineering* (2016).

21. Manzhen Duan, **Dayong Wu**, Bo Dong, Lin Zhang, “Quantitatively Measuring Transportation Network Resilience under Earthquake Uncertainty and Risks”, *American Journal of Civil Engineering*. Vol. 4, No. 4, 2016, pp. 174-184. doi: 10.11648/j.ajce.20160404.17
22. Yuan Changwei, Shuai Zhang, Ping Jiao, **Dayong Wu**. “Temporal and spatial variation and influencing factors research on total factor efficiency for transportation carbon emissions in China”, *Resources Science*, 2017, 39(4):687-697. DOI: 10.18402/resci.2017.04.10 (in Chinese)
23. Yuan Changwei, Xiaoli Rui, **Dayong Wu**, Ping Jiao. “Carbon Emission Reduction Pressure Index for China's Provincial Transport Sector Based on Geographical Weighted Regression Model[J]”. *China Journal of Highway and Transport*, 2016, 29(6): 262-270 (in Chinese).
24. **Wu Dayong**, “The Framework of Cloud-Based BIM Facility Management Design and Its Challenges”, *Journal of Information Technology in Civil Engineering and Architecture*, 2014, Vol.6, No.5 (in Chinese).
25. Yang Qi, Yunfeng Yang, **Dayong Wu**, Xianwei Zhao, “User Cost Model of Highway Work Zone during Discrete Periods Under influence of Uncertain Factors”, *Journal of Traffic and Transportation Engineering* 14, No. 1 (2014): 97-102 (in Chinese).
26. Yuan Changwei, Qunqi Wu, Dali Wei, **Dayong Wu**. Optimal Modeling and Equilibrium Mechanism of Taxi Market with Consideration of Service Refusal[J]. *China Journal of Highway and Transport*, 2014, 27(6): 91-97 (in Chinese).
- **Articles under review:**
27. Modeling Driver Behavior in Dilemma Zone Based on Stochastic Model Predictive Control, (submitted to *Mathematical Problems in Engineering*)

- **Peer-Reviewed Conference Proceedings**

1. Junxuan Zhao, Hao Xu, **Dayong Wu**, and Hongchao Liu, “An Artificial Neural Network to Identify Pedestrians and Vehicles from Roadside 360-Degree LiDAR Data”, the 97th Transportation Research Board Annual Meeting, Washington, USA, 2018 (Presented in TRB 2018);
2. **Dayong Wu**, Junxuan Zhao, Hongchao Liu, and Changwei Yuan, “Evaluating the Impact of Oversize and Overweight Loads on Highways in Different Climate Zones: Texas Case Study”, the 96th Transportation Research Board Annual Meeting, Washington, USA, 2017 (Presented in TRB 2017);
3. Changwei Yuan, **Dayong Wu** and Hongchao Liu, “Energy Consumption, CO2 Emissions, and Growth Patterns in China’s Provincial Transport Sectors: Grey Relational Analysis”, the 96th Transportation Research Board Annual Meeting, Washington, USA, 2017 (Presented in TRB 2017);
4. Changwei Yuan, **Dayong Wu**, and Dali Wei, “Taxi Price Equilibrium Model with Waiting Price for Congested Cities: Beijing Case Study”, the 96th Transportation Research Board Annual Meeting, Washington, USA, 2017 (Presented in TRB 2017);
5. **Dayong Wu**, Hongchao Liu\*, Changwei Yuan, Dali Wei, “*A Quantitative Assessment Framework for Post-Earthquake Transportation Network Resilience Using Fuzzy Logic*”, the 95th Transportation Research Board Annual Meeting, Washington, USA, 2016 (Presented in TRB 2016);
6. **Dayong Wu**, Changwei Yuan, Dali Wei, “*Risk-Based Life-Cycle Cost Analysis in Preventive Pavement Management: A Chinese Highway Case*”, the 93rd Transportation Research Board Annual Meeting, Washington, USA, 2014 (Presented in TRB 2014);
7. Sangwook Lee, **Dayong Wu**, Sang-wook Bae, “*Analyzing Life-Cycle Costs in Repairing Bridge Piles: TxDOT Case*”, the 93rd Transportation Research Board Annual Meeting, Washington, USA, 2014 (Presented in TRB 2014);
8. Sangwook Lee\*, **Dayong Wu**, Sang-wook Bae, “*Evaluation of Life-Cycle Cost Analysis Programs for*

*Bridge Pile Repair Projects*”, the 49<sup>th</sup> ASC Annual International Conference Proceedings, California, USA, 2013 (Presented in ASC 2013);

- **Technical Reports**

1. Minh Le, Dayong Wu & Srinivas Geedipally, “Dallas District Four-Year Safety Plan”, 2020.
2. Liu Hongchao, **Dayong Wu** & Junxuan Zhao, “Towards an Open-Source Web GIS-based Bridge Management System using Advanced Geo-Spatial Data Visualization and Integration Technologies”, Southern Plains Transportation Center, 2018.
3. **Wu Dayong**, Wesley Kumfer and Hongchao Liu. “*Understanding Older Teen Drivers: Expansion of Interactive Tool with Data from College Students.*”, TxDOT eGrants Publication, 2017.
4. Kumfer Wesley, **Dayong Wu**, Hongchao, Liu. “*Midland SL 250 Safety Study*”. TxDOT IAC Publication. Texas Tech Center for Multidisciplinary Research in Transportation, 2017.
5. Liu Hongchao, Sanjaya Senadeheera, **Dayong Wu**, and Junxuan Zhao. “*Web-based Routing Assistance Tool to Reduce Pavement Damage by Overweight and Oversize Vehicles*”, Report No. SPTC14.1-45-F, Southern Plains Transportation Center, 2016.
6. Liu Hongchao, **Dayong Wu**, Bo Pang, Wesley Kumfer. “*Analysis of Game Day Traffic Patterns for Jones AT&T Stadium in Lubbock, TX.*” TxDOT IAC Publication. Texas Tech Center for Multidisciplinary Research in Transportation, 2016.
7. Liu Hongchao, Wesley Kumfer, Bo Pang and **Dayong Wu**. “*Comparative Analysis of Design Alternatives for the Interchanges of SL 250, I-20, and BI-20 in Midland, TX.*” TxDOT IAC Publication. Texas Tech Center for Multidisciplinary Research in Transportation, 2015.

**RESEARCH PROJECTS:**

1. Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) Program: “S.M. Wright Smart Corridor, City of Dallas”, Federal Highway Administration (FHWA), 2021-2024 (\$4 Million, Team Member)
2. “Traffic Management System (TMS) Asset Management Planning and Life Cycle Cost Analysis”, Federal Highway Administration (FHWA), 2020-2022 (\$175,000, Co-PI)
3. “Focused Approach to Safety Selection Process Assistantce”, Federal Highway Administration (FHWA), 2020, (\$60,000, Team Member)
4. “Development of a Roadside LiDAR-Based Situational Awareness System for Work Zone Safety: Proof-of-Concept Study”, Safe-D UTC, 2020, (\$240,000, PI)
5. “4-Year Safety Plan for the TxDOT Dallas District”, TxDOT, 2020 (Team Member)
6. “Safety Analysis and Design & Operational Strategies for Two Highway Segments in Midland-Odessa Area”, TxDOT, 2019, (\$75,000, Team Leader)
7. “Evaluate and Prepare a Level of Service Analysis on the I-20 Frontage Roads within the city limits of Sweetwater, Texas”, TxDOT, 2018-2019, (\$160,000, Team Leader)
8. “Analyze teen driver crash statistics in rural Texas and incorporate it into the education program”, TxDOT, 2018-2019, (\$160,000, Team Leader)
9. *Towards an Open-source Web GIS-based Bridge Management System Using Advanced Geo-Spatial Data Visualization and Integration Technologies*, sponsored by the Southern Plain Transportation Center (SPTC), 2017 – 2018 (\$60,000, Team Leader)
10. *A Comprehensive Safety Analysis for Loop 250 Corridor*, sponsored by the Texas Department of Transportation (TxDOT), 2016-2017 (\$120,000, Team Member)
11. *Understanding Older Teen Drivers: Expansion of Interactive Tool with Data from College Students.* 2017-TxTechLB-G-1YG-0120. Sponsored by the Texas Department of Transportation (TxDOT), 2016 (\$160,000, Team Member)

12. *Implementation of Interactive Animation Tool for Teenage Drivers of Rural Roads*. 2016-TxTechLB-G-1YG-0191. Sponsored by the Texas Department of Transportation (TxDOT), 2015 (\$160,000, Team Member)
13. *A GIS-Based Routing Assistance Tool to Reduce Pavement Damage by Overweight and Oversize Vehicles*, sponsored by the Southern Plain Transportation Center (SPTC), 2014 – 2016 (\$120,000, Team Leader)
14. *Analysis of Game Day Traffic Patterns for Jones AT&T Stadium in Lubbock, TX*, sponsored by the Texas Department of Transportation (TxDOT), 2014-2015 (\$55,000, Team Leader)
15. *State Loop 250 Corridor Study in Midland, TX- Phase II: Interchanges and Frontage Roads*, sponsored by Texas Department of Transportation (TxDOT), 2014-2015 (\$87,272, Team Member)
16. *Comparative Analysis of Design Alternatives for the Marsha Sharp Freeway and State Loop 289 Interchange in Lubbock, TX*, sponsored by Texas Department of Transportation (TxDOT), 2013-2014 (\$58,000, Team Member)
17. *Repair Systems for Deteriorated Steel Bridge Piles*, sponsored by Texas Department of Transportation (TxDOT), 2011-2013 (\$245,000, Team Member)
18. *Magnum Pipeline ROW Surveying and Alignment Package*, prepared for Magnum Holdings, 2010-2011 (\$40,330, Team Member)

## **PROPOSALS:**

1. “Utilizing Cooperative Automated Transportation (CAT) Data to Enhance Freeway Operational Strategies”, The National Cooperative Highway Research Program (NCHRP), FHWA (pending) (PI)
2. “Digitizing Traffic Control Infrastructure for Autonomous Vehicles (AV)”, Texas Department of Transportation (TxDOT) (pending) (pending) (Co-PI)
3. “Real-Time Multi-Modal Border Crossing Monitoring System with Roadside 3D LiDAR”, Center for International Intelligent Transportation Research (pending) (PI)
4. “Development of a Roadside LiDAR-Based Situational Awareness System for Work Zone Safety: Proof-of-Concept Study”, Safe-D UTC (**Awarded**) (PI)
5. “Alternative Technologies For Mitigating The Risk of Injuries and Deaths in the Work Zone”, NCHRP, 2020 (Not Awarded) (PI)
6. “Considerations for “Super 3” Cross-Section in High-Volume Rural Corridors with Turning Traffic”, TxDOT, 2019 (Not Awarded) (Co-PI)
7. “Strategies for Sustainable Teen Driver Education in West Texas”, TxDOT eGrant, 2019, (Not Awarded) (Co-PI)
8. “Connected-Vehicle Enabled Weather-Responsive Management Strategies in Texas”, TxDOT, 2019, (Not Awarded) (Co-PI).
9. “Preparing and Utilizing Emerging Technologies and Innovative Research in Transportation”, TxDOT, 2018 (Not Awarded) (Co-PI).
10. “Analyze teen driver crash statistics in rural Texas and incorporate it into the education program”, TxDOT, 2018 (**Awarded**) (Co-PI).
11. “Inter-Agency Cooperation Contracts with Lubbock, Odessa and Abilene Districts”, TxDOT, 2017. (**Awarded**) (Major Contributor).
12. “Effects of Education on Speeding Behavior”, the National Highway Traffic Safety Administration (NHTSA), the MAS# DTNH2217D00026 LOT A (Field Data Collection and Analysis), 2017. (Not Awarded) (Co-PI).

13. “Towards an Open-source Web GIS-based Bridge Management System Using Advanced GeoSpatial Data Visualization and Integration Technologies”, Southern Plain Transportation Center, 2016. **(Awarded)** (Co-PI)
14. “Statewide Benefit/Cost Analysis Studies”, Nevada Department of Transportation, 2016. **(Awarded)** (Major Contributor)
15. “Ports-to-Plains Integrated Freight Corridor Transportation Center”, Tier 1 University Transportation Center Program Grant Solicitation, 2016. (Not Awarded) (Major Contributor)

### **PROFILE:**

- **EIT: No.136226;**
- **Skills:** VISSIM; Synchro; TransCAD; MicroStation/GeoPak; ArcMAP; Microsoft Visual Studio (C#); ArcGIS API/SDK, JavaScript; HCS; AutoCAD/Civil 3D; REVIT; MATLAB; ABAQUS; MySQL; HTML5/CSS;
- **Codes and Specifications:** AASHTO Highway Geometry Design “Green Book”; Highway Capacity Manual; Highway Safety Manual; TxDOT Roadway Design Manual; AASHTO Bridge Design Specifications; AISC Steel Construction Manual;

### **ACADEMIC SERVICE:**

- **Membership/Friend:**
  - North Central Texas Council of Governments (NCTCOG)
    - Regional Safety Advisory Committee (North/Central Texas)
    - ITS Stakeholder Task Force Meeting (North/Central Texas)
  - Institute of Transportation Engineers (ITE)
  - Transportation Research Board (TRB)
    - Environmental Analysis in Transportation
    - Geographic Information Science and Applications
- **Journal Reviewer Service:**
  - Transportation Research Record: Journal of the Transportation Research Board (TRR Journal)
  - Sustainability
  - Case Studies on Transport Policy
  - International of Pavement Engineering
  - Energies
  - Applied Sciences
  - Sensors
  - Electronics
  - Transportation Research Part E: Logistics and Transportation Review
  - Business & Information Systems Engineering: Computational Mobility (special issue)
  - Civil Engineering Infrastructures Journal
  - IEEE Access
  - Journal of Intelligent Transportation Systems