

Wenyao Liu

School of Civil and Environmental Engineering

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EDUCATION

Oklahoma State University, Stillwater, OK

Ph.D. Student	Civil Engineering	2022 (expected)
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Hunan University, Changsha, China

M.S.	Highway and Railway Engineering	2018
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Hunan University, Changsha, China

B.A.	Civil Engineering	2015
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HONORS AND AWARDS

1. Best Poster Award, Second Place, 2020

Wenyao Liu *, Joshua Qiang Li, Guangwei Yang, Xue Yang, and Kelvin C. P. Wang. "Utilizing Pavement Friction Data for the Reduction of Traffic Crashes and Delays." 2020 Oklahoma Transportation Research Day (OTRD). October 20, 2020. Oklahoma City OK.

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| 2. First Prize Graduate Scholarship in Hunan University | 2018 |
| 3. Outstanding Graduate Student in Hunan University | 2017 |
| 4. National Scholarship for Graduate Students (China) | 2016 |

PATENTS

1. Wenyao Liu *. (2018). Bike Saddle Capable of Being Turned Over for Replacement. China Invention Patents.
2. Wenyao Liu *. (2016). A Moving-object Article Management System. China Unity Model Patents.

PEER-REVIEWED JOURNALS

1. **Wenyao Liu**, Qiang Joshua Li, Wenying Yu, Guangwei Yang, Kelvin Wang (2020). "Evaluation of Change Point Detection Approaches for Pavement Dynamic Segmentation." *Journal of Transportation Engineering, Part B: Pavements*. (Accepted)
2. **Wenyao Liu**, Kezhen Yan, Qiang Joshua Li, Shu Yang (2021). "Peridynamics-based Simulation for Semi-Circular Bending (SCB) Fracture Test." *Construction Building Materials*. Vol 268(25) 121190. <https://doi.org/10.1016/j.conbuildmat.2020.121190>.

3. **Wenyao Liu**, Kezhen Yan, Dongdong Ge, and Ming Chen. (2018). "Effect of APAO on the Aging Properties of Waste Tire Rubber Modified Asphalt Binder." *Construction and Building Materials* 175: 333-341. <https://doi.org/10.1016/j.conbuildmat.2018.04.098>.
4. Wei Zhu, Jinxin Pan, Wenbo Ma, Shan Deng, Wujun Zhou, **Wenyao Liu**, Shiguo Long, Caiqian Yang & Lingyun You (2021). "Dynamic response of the heterogeneous deepsea sediment with nonlinear gradient modulus to mining machine loading." *Marine Georesources & Geotechnology*. DOI: 10.1080/1064119X.2021.1883164.
5. Jun Liu, Kezhen Yan, **Wenyao Liu**, Xiaowen Zhao. "Partially replacing Styrene-Butadiene-Styrene (SBS) with other asphalt binder modifier: Feasibility study." *Construction and Building Materials* 249 (2020): 118752. DOI: <https://doi.org/10.1016/j.conbuildmat.2020.118752>.
6. KeZhen Yan, Weili He, Ming Chen, and **Wenyao Liu**. (2016). "Laboratory Investigation of Waste Tire Rubber and Amorphous Poly Alpha Olefin Modified Asphalt." *Construction and Building Materials* 129: 256-265. <https://doi.org/10.1016/j.conbuildmat.2016.10.090>.
7. **Wenyao Liu**, Joshua Qiang Li, Xue Yang, Wenying Yu, Kelvin Wang (2021). "Comparisons of Count Data Models for Safety Performance Function of Highways in Oklahoma." Submitted to the *Canadian Journal of Civil Engineering*.
8. **Wenyao Liu**, Joshua Qiang Li, Xue Yang, Guangwei Yang, Kelvin Wang (2021). "Long Term Performance of High Friction Surfacing Treatment Sites in U.S." Under Preparation.

CONFERENCE PROCEEDINGS AND PRESENTATIONS

1. **Wenyao Liu**, Joshua Qiang Li, Xue Yang, Guangwei Yang, Kelvin Wang (2020). "Pavement Condition Assessment Utilizing Smartphone and Vehicle Sensor Data." International Airfield & Highway Pavements Conference, American Society of Civil Engineers (ASCE), Austin TX. (Full Paper Under Preparation)
2. Joshua Q. Li, Kelvin Wang, Stephen A. Cross, **Wenyao Liu**, and Kevin Sutor (2020). "ODOT Involvement with the NCAT Test Track and Task Groups." International Airfield & Highway Pavements Conference, American Society of Civil Engineers (ASCE), Austin TX. (Full Paper Accepted)
3. **Wenyao Liu**, Joshua Qiang Li, Guangwei Yang, Xue Yang, Kelvin C. P. Wang (2020). "Utilizing Pavement Friction Data for the Reduction of Traffic Crashes and Delays." The 2020 Oklahoma Transportation Research Day (OTRD). Oklahoma City, OK. <https://www.youtube.com/watch?v=gF1LQMTc5CU>. (Poster presentation)
4. **Wenyao Liu**, Guangwei Yang, Kelvin Wang, Joshua Q. Li, Xue Yang, Guolong Wang (2020). "Long Term Performance Monitoring of High Friction Surfacing Treatments (HFST) Sites." The 2020 Oklahoma Transportation Research Day (OTRD). Oklahoma City, OK. <https://www.youtube.com/watch?v=IRV7VM8tVMo>. (Poster presentation)
5. **Wenyao Liu**, Guangwei Yang, Kelvin Wang, Joshua Qiang Li, Guolong Wang (2020). "Long Term Pavement Performance Monitoring of Six LTPP SPS-10 Sections in Oklahoma." The 2020 Oklahoma Transportation Research Day (OTRD). Oklahoma City, OK. (Poster presentation)

6. **Wenyao Liu**, Qiang Joshua Li, Wenying Yu, Guangwei Yang (2019). “Evaluation of Change Point Detection Approaches for Pavement Dynamic Segmentation.” The 15th Annual Inter-University Symposium on Infrastructure Management (AISIM), Rutgers University, Piscataway, NJ. (Presentation only)
7. Xue Yang, Joshua Qiang Li, **Wenyao Liu**, Guangwei Yang, Kelvin Wang (2020). “Accident Prediction Modeling for At-Grade Highway-Rail Crossings.” International Airfield & Highway Pavements Conference, American Society of Civil Engineers (ASCE), Austin TX. (Full Paper Under Preparation)
8. Xue (Helen) Yang, Joshua Q. Li, **Wenyao Liu** (2020). “Considering Grade Separation of Rail-Highway Crossings in Oklahoma.” The 2020 Oklahoma Transportation Research Day (OTRD). Oklahoma City, OK. <https://www.youtube.com/watch?v=ACLEDy69AmU>. (Poster presentation)
9. Guolong Wang, Guangwei Yang, Kelvin C. P. Wang, Joshua Q. Li, and **Wenyao Liu** (2020). “Ground Tire Rubber (GTR) Dry Process: Experiment Pavement Surface Evaluation.” The 2020 Oklahoma Transportation Research Day (OTRD). Oklahoma City, OK. <https://www.youtube.com/watch?v=YvK2qeYghh4>. (Poster presentation)

RESEARCH PROJECTS

1. Utilizing Pavement Friction and Texture Data for The Reduction of Traffic Crashes and Delays (2018-2020)

PI: Joshua Q. Li

Sponsor: *Oklahoma Department of Transportation*

- Analyzed friction demands and influencing factors of roadway friction
- Developed spreadsheet software for integrating safety cost in life cycle cost analysis (LCCA)

2. Long Term Performance Monitoring of High Friction Surfacing Treatments (HFST) Sites (2016-2020)

PI: Kelvin C.P. Wang

Sponsor: *Federal Highway Administration, U.S. Department of Transportation*

- Collected field performance data on 36 HFST sites over 12 states in U.S.
- Evaluated the variation of HSFT site over 3 years of observation

3. Ground Tire Rubber (GTR) Dry Process Experiment Pavement Surface Evaluation (2019-2020)

PI: Kelvin C.P. Wang

Sponsor: *Oklahoma Department of Transportation*

- Collected field data on Ground Tire Rubber (GTR) treated pavement in Oklahoma

4. Continuous Friction Measurement Equipment (CFME) For Highway Safety Management in Oklahoma (2017-2019)

PI: Joshua Q. Li

Sponsor: *Oklahoma Department of Transportation*

- Applied change point methods in dynamic segmentation based on CFME measurements

5. Laboratory Performance of Compound Modified Asphalts Using Waste Tire Rubber (WTR) and Amorphous Poly Alpha Olefin (APAO) (2016-2018)

PI: Kezhen Yan

Sponsor: The Hunan Provincial Department of Education of China

- Evaluated the performance of compound modified asphalt with WTR and APAO

6. Anisotropic mechanical behavior of the pavement structure and intelligent retrieval of its parameters (2014-2016)

PI: Kezhen Yan

Sponsor: The National Natural Science Foundation of China

- Conducted experimental tests for providing parameters for mechanical simulation

TECHNICAL REPORTS

1. Joshua Q. Li, Kelvin C. P. Wang, **Wenyao Liu**, and Wenying Yu (2021). "Utilizing Pavement Friction and Texture Data for the Reduction of Traffic Crashes and Delays." Final Report FHWA-OK-21-xx (SP&R 2309). Oklahoma Department of Transportation (ODOT), Oklahoma City OK.
2. Qiang Joshua Li, Kelvin C. P. Wang, Wenying Yu, **Wenyao Liu** (2020). "Continuous Friction Measurement Equipment (CFME) for Highway Safety Management in Oklahoma." Final Report FHWA-OK-20-02 (SP&R 2306). Oklahoma Department of Transportation (ODOT), Oklahoma City OK.

Professional Services and Affiliation

1. Reviewer for
 - Journal of Transportation Engineering, Part B: Pavements
 - Automation in Construction
 - Transportation Research Record
2. American Society of Civil Engineers (ASCE): Student Member