

Behnam Jahangiri, PhD, EIT

Post-Doc Fellow
Lyles School of Engineering
Purdue University
550 W Stadium Ave,
West Lafayette, IN 47907

Phone +1 (573) 424-4387
Fax +1 (573) 882-4784
Email: bjahangiri@purdue.edu
bjctn@umsystem.edu

Links: | [G-Scholar](#) | [RG](#) |

ACADEMIC BACKGROUND

Ph.D. , Civil Engineering (Transportation Engineering), University of Missouri-Columbia, Mo, USA	2020
M.Sc. , Civil Engineering (Transportation Engineering), Sharif University of Technology, Tehran, Iran	2014
B.Sc. , Civil Engineering (Structural Engineering), Isfahan University of Technology, Isfahan, Iran	2012

WORKING EXPERIENCE

Post-Doctoral Research Assistant at Purdue University 2020-Present

- Material Characterization and Determination of MEPDG Input Parameters for Indiana Superpave 5 Asphalt Mixtures, Sponsored by INDOT

Research Assistant at University of Missouri-Columbia, USA 2017-2020

- Development of a Performance-related Asphalt Mixed Design Specification for Tollway, Illinois, Sponsored by Illinois Tollway
- Support for balanced Asphalt Mixture Design Specification Development in Missouri, Sponsored by MoDOT
- Machine Learning-based Prediction Models for Performance of Asphalt Mixtures
- Smartphone-based Molecular Sensing for Advanced Characterization of Construction Materials
- Performance Characteristics of Modern Recycled Asphalt Mixes in Missouri, Including Ground Tire Rubber, Recycled Roofing Shingles, and Rejuvenators, Sponsored by MoDOT

Consulting Engineer at Tarh Afarinan Pars Co., Isfahan, Iran 2015-2017

- *Asphalt and concrete pavement design, treatment strategies of pavement layers*
- *Stabilization of pavement layers using cement, bitumen and lime*
- *Geometric design of interstates interchanges and railroads*

PUBLICATIONS

Journal Papers

- **Jahangiri, B.**, Barri, K., Buttlar, W. G., Alavi, A. H., *In Press*. A Molecular Sensing Method Integrated with Machine Learning to Detect Modified Asphalt Binders and Mixtures, *Measurement*.
- **Jahangiri, B.**, Rath, P., Majidifard, H., Buttlar, W. G., 2021. Development of a Performance-Related Framework for Asphalt Mixture Design for the Illinois Tollway, *Transportation Research Record*.
- **Jahangiri, B.**, Rath, P., Majidifard, H., Urrea, L., Buttlar, W. G., 2021. A comprehensive performance investigation of asphalt mixtures: laboratory, field, and modeling, *Road Materials and Pavement Design*.
- **Jahangiri, B.**, Karimi, M.M., Giraldo, O., Buttlar, W. G., *In Press*. Characterization of Viscoelastic Behavior of Asphalt Concrete at Low Temperatures using DC(T) Creep Test, *Construction and Building Materials*.
- Majidifard, H., **Jahangiri, B.**, Rath, P., Alavi, A.H., Buttlar, W.G., 2021. A Deep Learning Approach to Predict Hamburg Rutting Curve, *Road Materials and Pavement Design*.
- Rath, P., Majidifard, H., **Jahangiri, B.**, Buttlar, W.G., 2021. Laboratory and Field Evaluation of Pre-Treated Dry-Process Rubber Modified Asphalt Binders and Dense-Graded Mixtures, *Transportation Research Record*.

- Rath, P., Urra, L. **Jahangiri, B.**, Majidifard, H., Buttlar, W.G., *In Press*. Performance Grade of Asphalt Mixtures Based on Mixture Performance Test Thresholds, *Construction and Building Materials*.
- Karimi, M.M., Amani, S., Jahanbakhsh, H., **Jahangiri, B.**, Alavi, A.H., *Under Review*. A Critical State-of-the-Art of Induced Heating-Healing of Asphalt Concrete, *Journal of Cleaner Production*.
- Majidifard, H., **Jahangiri, B.**, Rath, P., Buttlar, W.G., 2020. Development of a Balanced Cracking Index for Asphalt Mixtures Tested in Semi-Circular Bending with Load-LLD measurement, *Measurements*.
- Barri, K., **Jahangiri, B.**, Davami, O., Buttlar, W. G., Alavi, A. H., 2020. Smartphone-Based Molecular Sensing for Advanced Characterization of Asphalt Concrete Materials, *Measurement*, 151.
- Majidifard, H., **Jahangiri, B.**, Rath, P., Urra, L., Buttlar, W.G., Alavi, A.H., 2020. Developing a Prediction Model for Rutting Depth of Asphalt Mixtures Using Gene Expression Programming, *Construction and Building Materials*.
- Kang, A., Mao, H., Li, B., Kou, C., Xu, X. and **Jahangiri, B.**, 2019. Investigation of selective filtration characteristics of filter media for pavement runoff treatment. *Journal of Cleaner Production*, 235, pp.590-602.
- **Jahangiri, B.**, Majidifard, H., Meister, J., Buttlar, W. G., 2019. Performance Evaluation of Asphalt Mixtures with Reclaimed Asphalt Pavement and Recycled Asphalt Shingles in Missouri. *Transportation Research Record*.
- Karimi, M.M., Darabi, M.K., Jahanbakhsh, H., **Jahangiri, B.**, Rushing, J, 2019. Effect of steel wool fibers on mechanical and induction heating response of conductive asphalt concrete. *International Journal of Pavement Engineering*, <https://doi.org/10.1080/10298436.2019.1567918>.
- Majidifard, H., **Jahangiri, B.**, Buttlar, W.G., Alavi, A.H., 2019. New Machine Learning-based Prediction Models for Fracture Energy of Asphalt Mixtures, <https://doi.org/10.1016/j.measurement.2018.11.081>, *Measurement*.
- Jahanbakhsh, H., Karimi, M.M., **Jahangiri, B.**, Nejad, F.M., 2018. Induction heating and healing of carbon black modified asphalt concrete under microwave radiation. *Construction and Building Materials*, 174, pp.656-666.
- Karimi, M.M., Jahanbakhsh, H., **Jahangiri, B.**, Nejad, F.M., 2018. Induced Heating-Healing Characterization of Activated Carbon Modified Asphalt Concrete under Microwave Radiation, *Construction and Building Materials*, 178, pp.254-271.
- Karimi, M.M., Tabatabaee, N., **Jahangiri, B.**, Darabi, M.K., 2017. Constitutive modeling of hardening-relaxation response of asphalt concrete in cyclic compressive loading. *Construction and Building Materials*, 137, pp.169-184.
- Karimi, M.M., Tabatabaee, N., Jahanbakhsh, H., **Jahangiri, B.**, 2017. Development of a stress-mode sensitive viscoelastic constitutive relationship for asphalt concrete: experimental and numerical modeling. *Mechanics of Time-Dependent Materials*, 21 (3), pp.383-417.
- **Jahangiri, B.**, Karimi, M.M. and Tabatabaee, N., 2016. Relaxation of hardening in asphalt concrete under cyclic compression loading. *Journal of Materials in Civil Engineering*, 29(5), p.04016288.
- Jahanbakhsh, H., Karimi, M.M., Nejad, F.M., **Jahangiri, B.**, 2016. Viscoelastic-based approach to evaluate low temperature performance of asphalt binders. *Construction and Building Materials*, 128, pp.384-398.

Conference Papers

- **Jahangiri, B.**, Rath, P., Urra, L., Behnke, J., Lavalley, J., Bentsen, R., Buttlar, W. G., 2020. Asphalt Mixture Performance Grading and Application to Illinois Tollway Performance Design. *Association of Asphalt Pavement Technologists*, San Diego, California.
- **Jahangiri, B.**, Majidifard, H., Rath, P., Buttlar, W.G., 2020, Investigation of Cracking Performance of Asphalt Mixtures in Missouri, *Advances in Materials and Pavement Performance Prediction (AM3P)*, San Antonio, TX.
- Rath, P., Meister, J, **Jahangiri, B.**, Majidifard, H., Buttlar, W.G., 2020. Evaluation of Engineered Crumb Rubber (ECR) Performance Characteristics, Including Warm-Mix Equivalence with Polymer, Draindown Prevention, and Release Enhancement, *RILEM International Symposium on Bituminous Materials - ISBM Lyon* (Under Review).
- Majidifard, H., **Jahangiri, B.**, Buttlar, W.G., Alavi, A.H., 2019. A machine learning approach for the prediction of fracture energy in asphalt mixture. *Association of Asphalt Pavement Technologists*.
- Rath, P., Majidifard, H., **Jahangiri, B.**, Buttlar, W.G., 2019. Recent advances in ground tire rubber recycling in midwest pavements. *Association of Asphalt Pavement Technologists*.
- Mohammadkarimi, M., Tabatabaee, N., **Jahangiri, B.**, Jahanbakhsh, H., 2016. Effects of Rest and Load Time on Asphalt Mixture Compaction. *ISAP 2016 Symposium, Wyoming, USA*.
- **Jahangiri, B.**, Mohammadkarimi, M., Tabatabaee, N., 2015. Evaluating Relaxation of Hardening of Asphalt Concrete. Paper#155029, *94th Annual Meeting of the Transportation Research Board, Washington, USA*.

Reports

- Buttlar, W. G., Meister, J., **Jahangiri, B.**, Majidifard, H., Rath, P., 2019. Performance Characterization of Modern Recycled Asphalt Mixes in Missouri, Including Ground Tire Rubber, Recycled Roofing Shingles and Rejuvenators. Project no. TR201712, *MoDOT Research Report no. cmr 19-002*.
- Buttlar, W. G., **Jahangiri, B.**, Rath, P., Majidifard, Urta, L., In Press. Development of a Performance-related Asphalt Mix Design Specification for Tollway, Illinois.
- Buttlar, W. G., Urta, L., **Jahangiri, B.**, Rath, P., Majidifard, H., 2020. Support for balanced Asphalt Mixture Design Specification Development in Missouri, Project number TR201811, *MoDOT Research Report number cmr 20-010*.

TEACHING EXPERIENCE

Teaching Assistant

Asphalt Materials, Prof. W.G. Buttlar, University of Missouri	2019, 2020
Pavement Materials and Design, Prof. W.G. Buttlar, University of Missouri	2019, 2018
Pavement Design, Prof. N. Tabatabaee., Sharif University of Technology	2013
Pavement Lab, Prof. N. Tabatabaee., Sharif University of Technology	2013
Analysis and Design of Concrete Structures, Dr. K. Behfarnia, Isfahan University of Technology	2010, 2011

Lecturer

Matlab for structural engineering students, Private Tutoring, Isfahan, Iran,	2015
Land desktop software for civil engineers, Atigh university, Shahinshar, Iran	2015

RESEARCH EXPERIENCE

- Performance evaluation of asphalt materials
 - *Asphalt mixture tests: DC(T), I-FIT, IDEAL-CT, IDT, E*, Hamburg, TSR*
 - *Asphalt binder tests: Customized cyclic testing, Superpave test suite, Binder compact tension (CT)*
- Deployment of soft computing techniques for performance prediction of asphalt mixtures
- Application of sensors for material characterization and damage detection
- Application of Digital Image Correlation (DIC) and Finite Element Method (FEM)
- Analysis of micromechanical strain and displacement distribution

RESEARCH INTERESTS

- Performance-based design of asphalt and concrete pavements
- Incorporation of sustainable materials in roads and pavements
- Pavement management and structural health monitoring
- Induced heating-healing of asphalt pavements
- Macro and micro-mechanical modeling of composite material behavior
- Infrastructure health monitoring and condition assessment
- Experimental and numerical investigation of pavement materials

PROFESSIONAL SKILLS

- MEPDG
- Programming Language: MATLAB, Python, R, FORTRAN
- Finite Element Analysis and Civil Software: Abaqus, ETABS, SAP, SAFE
- Graphical and Office Software: AutoCAD, Photoshop, Civil 3D, Land, Trans Cad.
- Languages: Persian (Native), English (Fluent), German (Intermediate), Arabic (Elementary)

AWARDS AND HONORS

- Association of Asphalt Paving and Technologists (AAPT) scholarship award winner (Late PhD category), 2019
- Dr. David R. Jones IV (AMAP) annual scholarship award winner, 2019
- Missouri Asphalt Pavement and Association (MAPA) scholarship award winner, 2019
- Graded license from Iran Construction Engineering Organization; Calculation, Design, and Supervision of Civil engineering projects, 2015
- Ranked 128th (Top 1%) among approximately 25,000 participants in the national university entrance exam for M.Sc. (Civil Eng.), 2012

Reviews

- Road Materials and Pavement Design
- International Conference on Soft Computing & Machine Learning
- Journal of Materials in Civil Engineering
- Construction and Building Materials
- International Journal of Fatigue
- Cogent Engineering
- IEEE International Symposium on Cloud and Service Computing
- Proceedings of the International Conference on Machine Learning and Soft Computing
- Computers & Electrical Engineering
- International Journal of Pavement Research and Technology (2 reviews)
- Remote Sensing
- Journal of Testing and Evaluation
- Materials
- Automation in Construction
- Heliyon