Xuyang Li

Engineering Technology and Construction Management
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Google Scholar
LinkedIn

Appointments

Tenure-track Assistant Professor, University of North Carolina at Charlotte — *Aug 2025 - present*

Postdoctoral Researcher, Pennsylvania State University — *Sept 2024 - Aug 2025*

Education

Dual Ph.D. in Civil Engineering & Computer Science, Michigan State University — *Sept 2019 - Aug 2024*

M.S. in Civil Engineering, Michigan State University — *Sept 2017 - Aug 2019*

B.S. in Civil Engineering, Wuhan University of Technology, China — *Sept 2013 - Aug 2017*

Research Interests

- Structural Health Monitoring (SHM), System Identification, Parameter Estimation, Inverse Problems.
- Scientific Machine Learning (SciML), Physics-Informed Machine Learning, Reinforcement Learning.

Awards

- Best Talk Award for 17th Annual Postdoctoral Research Symposium, Penn State University. *Dec 2024*
- Dissertation Completion Fellowship, Michigan State University. *Jan 2024*
- Best Paper Award at SMASIS Conference, organized by ASME. *Sept 2022*
- Graduate School Travel Fellowship, Michigan State University. *2022 & 2023*
- Engineering Recruitment Fellowship, Michigan State University. *2019 & 2020*
- Graduate Office Fellowship, Michigan State University. *2019*

Teaching

Instructor, University of North Carolina at Charlotte
- ETGR-2102: Applied Mechanics II — *Fall 2025*

Guest Lecturer, Pennsylvania State University
- IST-597: Physics-Informed Machine Learning — *Fall 2024*

Teaching Assistant, Michigan State University
- CE-221: Statics — *2020–2024*
- CE-461: Computational Methods in Civil Engineering — *Spring 2020, 2022, & 2024*

Publications Google Scholar

1. *Li, Xuyang*, Masmoudi, M., Gharbi, R., Lajnef, N., Boddeti, V. "Estimating Parameter Fields in Multi-Physics PDEs from Scarce Measurements." arXiv preprint 2025. [Article]

2. *Li, Xuyang*, Maulik, R. "SALSA-RL: Stability Analysis in the Latent Space of Actions for Reinforcement Learning." *arXiv preprint* 2025. [Article]

3. *Li, Xuyang,* Jin, W, Klinger, J., Saha, N., Lajnef, N. "Data-driven Mechanical Behavior Modeling of Granular Biomass Materials." Computers and Geotechnics 2025. [Article]

4. *Li, Xuyang*, Bolandi, H., Masmoudi, M., Salem, T., Lajnef, N., Boddeti, V. "Mechanics-Informed Autoencoder Enables Automated Detection and Localization of Unforeseen Structural Damage." Nature Communications 2024. [Editors' Highlights] [GitHub] [Article] [Blog] [University News] [Media]

5. *Li, Xuyang*, Masmoudi, M., Bolandi, H., Lajnef, N., Boddeti, V. "Structural Parameter Field Identification in Nonlinear Dynamic Systems." *under review*.

6. *Li, Xuyang*, Masmoudi, M., Lajnef, N., Boddeti, V. "Estimating Field Parameters in Multiphysics Governing Equations from Scarce Observations." ICLR 2024 Workshop on AI4DifferentialEquations in Science 2024. [Article]

7. *Li, Xuyang*, Bolandi, H., Salem, T., Lajnef, N., Boddeti, V. "NeuralSI: Structural Parameter Identification in Nonlinear Dynamical Systems." European Conference on Computer Vision–ECCV Workshops 2022. [GitHub] [Article]

8. *Li, Xuyang*, Salem, T., Bolandi, H., Boddeti, V., Lajnef, N. "Methods for the Rapid Detection of Boundary Condition Variations in Structural Systems." Smart Materials, Adaptive Structures and Intelligent Systems. American Society of Mechanical Engineers 2022. [Best Paper Award] [Article]

9. Masmoudi, M., *Li, Xuyang*, Lajnef, N., Boddeti, V. "ParaFIND: Parameter Field Inference on Non-uniform Domains using Neural Network." NeurIPS Workshop on Data-driven and Differentiable Simulations, Surrogates, and Solvers 2024. [Article]

10. Bolandi, H., *Li, Xuyang*, Salem, T., Boddeti, V., Lajnef, N. "Bridging Finite Element and Deep Learning: High-Resolution Stress Distribution Prediction in Structural Components." Frontiers of Structural and Civil Engineering 2022. [Article]

11. Bolandi, H., *Li, Xuyang*, Salem, T., Boddeti, V., Lajnef, N. "Deep learning paradigm for prediction of stress distribution in damaged structural components with stress concentrations." Advances in Engineering Software 2022. [Article]

12. Bolandi, H., Sreekumar, G., *Li, Xuyang*, Lajnef, N., Boddeti, V. "Physics Informed Neural Network for Dynamic Stress Prediction." Applied Intelligence 2023. [Article]

13. Bolandi, H., Sreekumar, G., *Li, Xuyang*, Lajnef, N., Boddeti, V. "Neuro-DynaStress: Predicting Dynamic Stress Distributions in Structural Components." arXiv preprint 2022. [Article]

14. Salem, T., Jiao, P., Zaabar, I., *Li, Xuyang*, Zhu, R., Lajnef, N. "Functionally graded materials beams subjected to bilateral constraints: Structural instability and material topology." International Journal of Mechanical Sciences 2021. [Article]

15. Salem, T., Lajnef, N., Jiao, P., *Li, Xuyang*, Zaabar, I. "Postbuckling of multi-direction anisotropic constrained functionally graded material beams." Behavior and Mechanics of Multifunctional Materials SPIE 2021. [Article]

Contributions to Funded Research Projects

- NERSC AI4Science Proposal, National Energy Research Scientific Computing Center, 2025 (Lead in writing; awarded 32,000 A100 GPU hours and 20,000 CPU node hours on Perlmutter).
- Black-Hole Tomography with Gravitational Waves and Artificial Intelligence, Charles E. Kaufman Foundation.
- Internet of Self-powered Sensors – Towards a Scalable Long-term Condition-based Monitoring and Maintenance of Civil Infrastructure, National Science Foundation.
- Monitoring of Runway and Taxiway Pavement Structures Instrumentation – Procuring, and Installing Self-powered Wireless Sensors at NAPMRC, Federal Aviation Administration.
- Smart Geogrids, Tensar International Co.
- Novel Data-Driven Condition-Based Maintenance Approaches for Bridges Monitoring, Targeted Support Grant for Technology Development.

Professional Service

- *Member*, American Society of Civil Engineers (ASCE).
- *Committee Member*, ASCE Data Sensing and Analytics Committee.
- *Associate Editor,* ASCE Journal of Transportation Engineering, Part B: Pavements.
- *Journal Reviewer*: Journal of Renewable and Sustainable Energy, International Journal of Rock Mechanics and Mining Sciences, Engineering Structures, Engineering Applications of Artificial Intelligence, Journal of Energy Engineering, Journal of Computing in Civil Engineering, Journal of Materials in Civil Engineering, Journal of Fluid Mechanics, Computer-Aided Civil and Infrastructure Engineering, Supercomputing, Neurocomputing, Sensors, Applied Sciences, Buildings, Electronics, Case Studies in Thermal Engineering, Neural Networks, Engineering Structures, Computer Methods in Applied Mechanics and Engineering
- *Conference Reviewer*: AM3P 2025 (Advances in Materials and Pavement Performance Prediction), ICTD 2023 & 2024 (The ASCE International Conference on Transportation and Development).

Mentoring (Co-mentorship)

- Mahdi Masmoudi, Raheel Tariq, Hanan Ahmed (M.S. → Ph.D. transitions)
- Rithvak Pulugu, James Roulo (M.S. students)
- James Morrison (Undergraduate research assistant → M.S. student)
- Rami Gharbi (Undergraduate intern)