MOHAMMAD AMIN NABIAN

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EDUCATION

Ph.D. in Civil Engineering, University of Illinois at Urbana-Champaign 2015-Present
First Concentration: Sustainable and Resilient Infrastructure Systems
Second Concentration: Computational Science and Engineering
Graduate Minor in Statistics
GPA: 3.90

M.Sc. in Civil Engineering, the George Washington University 2013-2015
Concentration: Water Resources Engineering
GPA: 3.96

B.Sc. in Civil Engineering, Sharif University of Technology 2009-2013
GPA: 16.0

RESEARCH INTERESTS

Computer-Aided Civil and Infrastructure Engineering, Machine Learning and Deep Learning, Reliability Engineering, Computational Mechanics, Uncertainty Quantification.

PUBLICATIONS AND PRESENTATIONS

Journals

- **Nabian, M.A.**, and Meidani, H., Deep Learning for Accelerated Seismic Reliability Analysis of Transportation Networks, *Computer-Aided Civil and Infrastructure Engineering*, 33 (6), 443-458 (2018) **(Top journal within Civil Engineering discipline)**.
- **Nabian, M.A.**, and Meidani, H., A Deep Neural Network Surrogate for High-Dimensional Random Partial Differential Equations, arXiv preprint arXiv:1806.02957 (2018) (*Submitted to Probabilistic Engineering Mechanics journal*).
- **Nabian, M.A.**, and Meidani, H., Physics-Informed Regularization of Deep Neural Networks, arXiv preprint arXiv:1810.05547 (2018) (*Submitted to the Engineering Mechanics journal*).
- **Nabian, M.A.**, Alemazkoor, N., and Meidani, H., Predicting Near-Term Train Schedule Performance and Delay Using Bi-Level Random Forests, *Submitted to Transportation Research Records journal.*
- **Nabian, M.A.**, and Farhadi, L., A Mesh-Free Particle Method for Simulation of Granular Flows and Sediment Transport, Journal of Hydraulic Engineering, 143 (4), 04016102 (2016) **(Top journal within Hydraulic Engineering discipline)**.

Conference Proceedings

- **Nabian, M.A.**, and Meidani, H., Accelerating Stochastic Assessment of Post-Earthquake Transportation Network Connectivity via Machine-Learning-Based Surrogates, *Transportation Research Board*, In Press.
- **Nabian, M.A.**, and Meidani, H., Uncertainty Quantification and PCA-Based Dimension Reduction for Parallel Monte Carlo Analysis of Infrastructure System Reliability, *Transportation Research Board* (2017).
- **Nabian, M.A.**, and Farhadi, L., Numerical Simulation of Solitary Wave Using the Fully Lagrangian Method of Moving Particle Semi Implicit. *In ASME 2014 4th Joint US-European Fluids Engineering Division*, American Society of Mechanical Engineers (2014) **(Awarded Paper)**.
- **Nabian, M.A.**, and Farhadi, L., Stable Moving Particle Semi Implicit Method for Modeling Waves Generated by Submarine Landslides. *In Proceedings of the ASME 2014 International Mechanical Engineering Congress and Exposition*, American Society of Mechanical Engineers (2014).
- **Nabian, M.A.**, and Farhadi, L., Simulating Water Waves Generated by Underwater Landslide with MPS and WC-MPS, *In Proceedings of the 11th International Conference on Hydrodynamics (ICHD)*, 859-866. ISBN 978-981-09-2175-0 (2014).

Thesis

- **Nabian, M.A.**, An efficient mesh-free particle method for modeling of free surface and multiphase flows, M.Sc. Thesis, The George Washington University (2015).

Presentations

- **Nabian, M.A.**, and Meidani, H., An Efficient Solution Approach for High-Dimensional Random PDEs Using SGD and Deep Neural Networks, *Engineering Mechanics Institute Conference 2018*, Boston, MA (2018).
- **Nabian, M.A.**, Farhadi, L., Numerical Simulation of Solitary Wave Using the Fully Lagrangian Method of Moving Particle Semi Implicit, *ASME 4th Joint US-European Fluids Engineering Division Summer Meeting*, Chicago, Illinois, USA (2014).
- **Nabian, M.A.**, Farhadi, L., Stable Moving Particle Semi Implicit Method for Modeling Waves Generated by Submarine Landslides, *ASME 2014 International Mechanical Engineering Congress and Exposition*, Montreal, Canada (2014).

Poster Presentations

- **Nabian, M.A.**, and Meidani, H., Accelerating Stochastic Assessment of Post-Earthquake Transportation Network Connectivity via Machine-Learning-Based Surrogates, *Transportation Research Board 97th Annual Meeting*, Washington, DC (2018).
- **Nabian, M.A.**, and Meidani, H., Deep-Learning-Based Surrogates for Fast Prediction of Stochastic Civil Engineering Systems, *13th Coordinated Science Lab (CSL) Student Conference*, Urbana, IL (2018).
- **Nabian, M.A.**, and Meidani, H., Uncertainty Quantification and PCA-Based Model Reduction for Parallel Monte Carlo Analysis of Infrastructure System Reliability, *Transportation Research Board 96th Annual Meeting*, Washington, DC (2017).
- **Nabian, M.A.**, and Meidani, H., Uncertainty Quantification in Patient-Specific Cardiovascular Simulation for Enhanced Health Monitoring and Treatment Planning, *4th Health Care Engineering Systems Symposium*, Champaign, IL (2017).
- **Nabian, M.A.**, and Farhadi, L., A Mesh-Free Particle Model for Simulation of Free-Surface Multiphase Flows, *SEAS Student Research and Development Showcase*, The George Washington University, Washington, DC (2015).
- **Nabian, M.A.**, and Farhadi, L., Numerical Simulation of Complex Free Surface Flows Using a Stable Mesh-Free Lagrangian Method, *SEAS Student Research and Development Showcase*, The George Washington University, Washington, DC (2014).

Invited Talk

- **Nabian, M.A.**, Deep Learning for Accelerating Infrastructure System Reliability Analysis, Kent Seminars, Illinois Center for Transportation, Rantoul, IL (2017).

HONORS AND AWARDS

- Selected as a finalist for the **2018 INFORMS Railway Application Section problem solving competition** (the three finalists will compete in November 2018).
- Natural Hazards Engineering Research Infrastructure (NHERI) **Travel Award**, *for Researchers Workshop: Advanced Simulation for Natural Hazards Mitigation.*, Lehigh University, Bethlehem, PA (2017).
- Natural Hazards Engineering Research Infrastructure (NHERI) **Travel Award**, *for NSF NHERI Wall of Wind (WOW) Experimental Facility User Workshop*, Florida International University, Miami, FL (2017).
- Cited in the **List of Teachers Ranked as Excellent by the Center for Teaching Excellence**, University of Illinois at UrbanaChampaign, Spring 2017.
- **Distinguished Graduate Teaching Assistantship Award**, University of Illinois at Urbana-Champaign, (2016-Present).
- **Graduate Research Assistantship Award**, University of Illinois at Urbana-Champaign, (2015-Present).
- **Graduate Fellowship Award**, University of Illinois at Urbana-Champaign, (2015-2016).
- American Society of Mechanical Engineers (ASME) **Award**, *for the ASME 2015 International Mechanical Engineering Congress and Exposition*, Houston, TX (2015).

- American Society of Mechanical Engineers (ASME) **Award of Excellence for Outstanding Paper**, ASME-JSME-KSME Joint Fluids Engineering Conference, Seoul, Korea (2014).
- **Named ASME Fluids Engineering Division Graduate Scholar of the Year**, Award Received During the ASME 2014 4th Joint US-European Fluids Engineering Division, Chicago, IL (2014).
- **Graduate Research Assistantship Award**, The George Washington University, (2013-2015).
- **Graduate Teaching Assistantship Award**, The George Washington University, (2013-2015).
- Recipient of the National Organization for Educational Testing (NOET) **Certificate of Recognition for Exceptional Talent** (for ranking 342 among 400,000 participants in the nationwide university entrance exam), (2009).

PROFESSIONAL MEMBERSHIPS

- Member and reviewer of the Transportation Research Board (TRB) Artificial Intelligence and Advanced Computing Applications Committee, 2016-Present.
- Member and Reviewer of the American Society of Mechanical Engineers (ASME) Computational Fluid Dynamics (CFD) technical Committee, 2014-Present.
- Member of the American Society of Civil Engineers.
- Member of the Society for Industrial and Applied Mathematics (SIAM).
- Member of the American Physics Society (APS).

ACADEMIC SUPERVISION

Jameel Kaddo (2017), Deep Learning for Accelerated Reliability Analysis of Infrastructure Systems.

Alia Taha (2016), Accelerated Infrastructure System Reliability Analysis Using Dimension Reduction.

TEACHING EXPERIENCE

Teaching Certificate

- Graduate Teaching Assistantship Certificate, the George Washington University (2014).

Instructor

- Engineering Graphics, at Sharif University of Technology, (2012-2013).

Teaching Assistant

- Uncertainty Quantification, Engineering Risk and Uncertainty, and Economics and System Engineering, at the University of Illinois at Urbana-Champaign (2016-Present).
- Analytical Methods in Engineering, Hydraulics, and Hydraulic Lab, at the George Washington University (2013-2015).
- Mechanics of Materials Lab, and Loading of Structures, at the Sharif University of technology (2011-2013).
- Numerical Analysis, at the K.N.Toosi University of Technology, (2013).

SELECTED GRADUATE-LEVEL COURSES

Deep Learning, Applied Machine Learning, Uncertainty Quantification, Computational Statistics, Applied Bayesian Methods, Random Precesses, Numerical Analysis, Analytical Methods in Engineering, Finite Element Methods, Fluid Mechanics, Computational Fluid Dynamics, Free Surface Flow, Groundwater Flow.

PROGRAMMING SKILLS

PYTHON, MATLAB, FORTRAN, R, PASCAL, C++.