

CURRICULUM VITAE

Hessam Yazdani, Ph.D., P.E.

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I. Education

B.Sc.	Civil Engineering, University of Kerman, Iran	2005
M.Sc.	Civil Engineering, University of Kerman, Iran	2008
Ph.D.	Civil Engineering, The University of Oklahoma	2015
Certificate	“Data Science for All (DS4A)/Empowerment” Correlation One. <i>completed 300 hours of data analytics coursework and a data analytics project.</i>	2021

II. Research and Teaching Interests

Geosynthetics; Deep foundations; High-performance, multifunctional materials; Resilient and sustainable infrastructure; Bio-inspired computing and engineering design

III. Grants (total funding secured = \$1.98M [\$1.13M as PI, \$0.85M as Co-PI]) *ordered chronologically*

- Role: PI [link](#)
Title: “CAREER: Multiscale Mechanics of Carbon Nanotube-Polymer Composites”
Sponsor: The National Science Foundation
Period: 2021–2026
Amount: \$562,555
- Role: Co-PI, Howard PI [link](#)
Title: “Planning Grant: Engineering Research Center for Innovative Built and Regenerative Environments for Advancing Timeless Habitability and Equity (I-BREATHE)”
Sponsor: The National Science Foundation
Period: 2021–2022
Amount: \$100,000
- Role: PI
Title: “A Materials Characterization and Testing System for Enhancing Transdisciplinary Research and Education at Howard University”
Sponsor: The Air Force Office of Scientific Research
Period: 2020–2021
Amount: \$569,904
- Role: Co-PI
Title: “Industry-Research Inclusion in STEM Education (I-RISE)”
Sponsor: The US Department of Education
Period: 2019–2022

Amount: \$750,000

Non-federal Support:

- Role: PI

Title: “Resilient and Sustainable Infrastructure Through Computational Simulations”

Sponsor: NVIDIA – The Academic Hardware Grant Program

Period: 2021

Item: One Quadro RTX 6000 GPU

IV. Professional Positions

- Assistant Professor, Department of Civil and Environmental Engineering, Howard University 2016–Present

- *Courses taught (* denotes developed courses)*

- Advanced Geotechnical Engineering* (G)
- Advanced Interdisciplinary Research I, II* (G)
- Foundations (U)
- Soil Mechanics Lecture (U)
- Undergraduate Research (U)
- Civil Engineering Software and Design (U)
- Research Methods* (G)
- Special Topics Geotech. I, II* (G)
- Engineering Economics (U)
- Soil Mechanics Lab (U)
- Introduction to Engineering (U)
- Senior Design

- *Select Services*

- Launched and organizing three initiatives to prepare our students for the future of engineering
 - *The Speaker Series*: guest speakers in interdisciplinary research and practice address topics of contemporary, future, and timeless significance,
 - *The CEE Funspiration Night*: nurtures students’ problem-solving skills through screening and analyzing documentaries about some of the past magnificent or catastrophic civil engineering projects, and
 - *CEE Radiant Insight Sharing Eloquence (CEERISE)*: a venue for students to share the lessons they learned from their internships and demonstrate their achievements through short presentations and Q&A.
- Served on search committees, curriculum assessment panels, student grievance committees
- Serving as the advisor to the HU ASCE Student Chapter and Steel Bridge Team

- *Select Professional Development opportunities*: participated in

- Professional Engineer (PE), Michigan
- Blackboard Certificate
- Distance Learning Certificate
- Harassment and Discrimination Prevention Certificate
- APT Training

- Research Fellow, Arizona State University 2020–Present

V. Inventions and Pending Patents

- VirusTrap, a cationic antiviral coating (25% share, a patent application filed)

VI. Recent Fellowships, Honors, and Awards

- Faculty of the Year Award, Howard University ASCE Student Chapter, 2022
- Advisor of the Year Award, Howard University ASCE Student Chapter, 2022
- CAREER Award, The National Science Foundation, 2021
- DS4A (Data Science for All) Empowerment Fellow with Honors, Correlation One, 2021
- DURIP Award, The Air Force Office of Scientific Research (AFOSR), 2020
- Community Service Award, ASCE National Capital Section, 2020
- Faculty of the Year Award, Howard University ASCE Student Chapter, 2019
- Invited Speaker, “Computational mathematics for model reduction and predictive modelling in molecular and complex systems” workshop, Bernoulli Center, (CIB), EPFL, Switzerland, 2019
- Best Paper Award, Technology Systems & Ships (TSS), Washington, DC, 2018
- Best Teacher Award, Howard University ASCE Student Chapter, 2017
- Best Mentor Award, Howard University ASCE Student Chapter, 2017

VII. Professional Affiliations and Certifications

- Professional Engineer – USA (MI)
- Professional Engineer – Iran

VIII. Publications – *Link* to Google Scholar Profile – † and ‡ denote HU undergraduate and graduate student co-authors, respectively)

A. Books and Book Chapters

[B1] **Yazdani H.**, Smith B. and Hatami K., “Multiscale 3D dispersion characterization of carbon nanotube-filled polymer composites using microscopic imaging and data mining,” in *Carbon Nanotubes*, W.I. Milne (ed.), One Central Press, Manchester, UK, 2016.

B. Published/Accepted Journal Articles

[J31] Ghasemi H.‡ and **Yazdani H.** (2022) “Plastics and sustainability in the same breath: Machine learning-assisted optimization of coarse-grained models for polyvinyl chloride as a common polymer in the built environment,” *Resources, Conservation & Recycling*, 186, 106510.

[J30] Ghasemi H.‡, Hatam-Lee SM, Khodadadi Tirkolaei H. and **Yazdani H.** (2022) “Biocementation of soils of different surface chemistries via enzyme induced carbonate precipitation (EICP): an integrated laboratory and molecular dynamics study,” *Biophysical Chemistry*, 284, 106793.

[J29] Ghasemi H.‡, **Yazdani H.**, Rajib A. and Fini E. (2022) “Toward Carbon-Negative and Emission-Curbing Roads to Drive Environmental Health,” *ACS Sustainable Chemistry & Engineering*, 10, 5, 1857–1862.

[J28] Eliasi H., **Yazdani H.**, Khatibinia M. and Mahmoudi M. (2022) “Optimum design of a sliding mode control for seismic mitigation of structures equipped with active tuned mass dampers,” *Structural Engineering and Mechanics, An International Journal*, 81 (5), 633-645.

- [J27] Ghasemi H.[‡], **Yazdani H.**, Fini E. and Mansourpanah Y. (2021). “Interactions of SARS-CoV-2 with Inanimate Surfaces in the Built Environment,” *Sustainable Cities and Society*, 72, 103031.
- [J26] Mansourpanah Y., Ghanbari A., **Yazdani H.**, Mohammadi A.G. and Rahimpour A. (2021) “Silver-polyamidoamine/graphene oxide thin film nanofiltration membrane with improved antifouling and antibacterial properties for water purification and desalination,” *Desalination*, 511, 115109.
- [J25] Ghasemi H.[‡], Abraham B.[†], Rutledge J.[†] and **Yazdani H.** (2020). “Mechanical properties of C3N nanotubes,” *Diamond and Related Materials*, 109, 108090.
- [J24] Ghasemi H.[‡], Rutledge J.[†] and **Yazdani H.** (2020). “Mechanical properties of defective cyanoethynyl (2D polyaniline – C3N): A comparative molecular dynamics study versus graphene and hexagonal boron nitride,” *Physica E: Low-dimensional Systems and Nanostructures*, 121, 114085.
- [J23] **Yazdani H.**, Ghasemi H.[‡], Wallace C.[†] and Hatami K. (2019) “Mechanical properties of carbon nanotube-filled polyethylene composites: a molecular dynamics simulation study,” *Polymer Composites*, 40(S2), E1850–E1861.
- [J22] Gharehbaghi S., **Yazdani H.** and Khatibinia M. (2019) “Estimating inelastic seismic response of reinforced concrete frame structures using a wavelet support vector machine and an artificial neural network,” *Neural Computing and Applications*, 32, 2975–2988.
- [J21] Ghasemi H.[‡], **Yazdani H.** and Ayyub B.M. (2018) “Graphene Inhibits Corrosion of Metals: A Molecular Dynamics Study,” *Naval Engineers Journal*, 130 (3), 62-64.
- [J20] **Yazdani H.** and Hatami K. (2018) “Laboratory tests on the engineering properties of sensor-enabled geobelts (SEGB) by Cui et al., *Geotextiles and Geomembranes* 46 (2018) 66–76.,” *Geotextiles and Geomembranes*, 46 (5), 678-680.
- [J19] Shayesteh Bilondi M.R., **Yazdani H.** and Khatibinia M. (2018) “Seismic energy dissipation-based optimum design of tuned mass dampers,” *Structural and Multidisciplinary Optimization*, 58 (6), 2517-2531.
- [J18] Khatibinia, M. and **Yazdani H.** (2018) “Accelerated multi-gravitational search algorithm for size optimization of truss structures,” *Swarm and Evolutionary Computation*. 38, 109–119.
- [J17] **Yazdani H.**, Khatibinia M., Gharehbaghi S. and Hatami K. (2017) “Probabilistic performance-based optimum seismic design of RC structures considering effects of soil-structure interaction,” Special Issue on “Interdisciplinary Applications of Reliability Analysis, Risk Analysis and Optimization” in *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*, No. 3 (2). G4016004.
- [J16] **Yazdani H.**, Hatami K. and Eftekhari, M. (2017) “Mechanical properties of single-walled carbon nanotubes: a comprehensive molecular dynamics study,” *Materials Research Express*. 4(5), 055015.

- [J15] **Yazdani H.** and Hatami K., (2016) “Sensor-enabled geogrids for stabilization and performance monitoring of earth structures: the state of development,” *International Journal of Geosynthetics and Ground Engineering*, No. 2 (37).
- [J14] **Yazdani H.**, Smith B. and Hatami K. (2016) “Electrical conductivity and mechanical performance of multi-walled carbon nanotube-filled polyvinyl chloride composites subjected to tensile load,” *Journal of Applied Polymer Science*. 133(29).
- [J13] **Yazdani H.**, Smith B. and Hatami K. (2016) “Multi-walled carbon nanotube-filled polyvinyl chloride composites: influence of processing methods on dispersion quality, electrical conductivity and mechanical properties” *Composites Part A: Applied Science and Manufacturing*, No. 82, 65–77.
- [J12] **Yazdani H.**, Hatami K. and Grady B.P. (2016) “Sensor-enabled geogrids for performance monitoring of reinforced soil structures,” *ASTM Journal of Testing and Evaluation*, No. 44 (1).
- [J11] **Yazdani H.** and Hatami K. (2015) “Failure criterion for graphene in biaxial loading – a molecular dynamics study,” *Modelling and Simulation in Materials Science and Engineering*, 23 (6), 14.
- [J10] Smith B., **Yazdani H.** and Hatami K. (2015) “Three-dimensional imaging and quantitative analysis of dispersion and mechanical failure in filled nanocomposites,” *Composites Part A: Applied Science and Manufacturing*, No. 79.
- [J9] **Yazdani H.**, Hatami K., Khosravi E.[‡], Harper K.[†] and Grady B.P. (2014) “Strain-sensitive Conductivity of Carbon Black-filled PVC Composites Subjected to Cyclic Loading,” *Carbon*, No. 79, 393–405.
- [J8] Hatami K., Hassanikhah A., **Yazdani H.** and Grady B.P. (2014) “Tensoresistive PVC coating for sensor-enabled geogrids,” Invited Paper. *ASCE Journal of Nanomechanics and Micromechanics*, No. 4(4).
- [J7] **Yazdani H.**, Hatami K. and Khosravi E.[‡] (2013) “Ant colony optimization method for design of piled-raft foundations,” *DFI (the Deep Foundations Institute) Journal*, No. 7 (2), pp. 17–27.
- [J6] Khosravi E.[‡], Ghasemzadeh H., Sabour M.H. and **Yazdani H.** (2013) “Geotechnical properties of gas oil-contaminated clays,” *Engineering Geology*, No. 166, pp. 11–16.
- [J5] **Yazdani H.** and Toufigh M.M. (2012) “Nonlinear consolidation of soft soils subjected to cyclic loading. Part I: theory,” *Geomechanics and Engineering*, No. 4 (4), pp. 229–241.
- [J4] **Yazdani H.** and Toufigh M.M. (2012) “Nonlinear consolidation of soft soils subjected to cyclic loading. Part II: verification and application,” *Geomechanics and Engineering*, No. 4(4), pp. 243–249.
- [J3] Yaghobi Moghaddam M., Asgari A. and **Yazdani H.** (2009) “Exact travelling wave solutions for the generalized nonlinear Schrödinger (GNLS) equation with a source by extended tanh-coth, sine-cosine and exp-function methods,” *Applied Mathematics and Computation*, 210 (2), 422–435.

C. Submitted/Under Review Journal Articles

- [J2] Khatibinia M., Akbari S., **Yazdani H.** and Gharehbaghi S. “Damage-based optimal control of steel moment-resisting frames equipped with tuned mass dampers.”
- [J1] Khatibinia M., Akbari S., **Yazdani H.** and Gharehbaghi S. “Optimal distribution of multiple tuned mass dampers for seismic damage control of steel frame buildings.”

D. Refereed Proceedings and Presentations

- [C21] Ghasemi H.‡, **Yazdani H.** and Ayyub B. (2018) “Graphene as a corrosion-inhibiting coating for metals: a molecular dynamics study,” *MegaRust*, San Diego, CA.
- [C20] **Yazdani H.** and Hatami K. (2016) “Sensor-Enabled Geogrids for Stabilization and Instrumentation of Earth Structures,” *Fifth International Symposium on Life-Cycle Civil Engineering, IALCCE2016*, Delft, Netherlands, October 2016.
- [C19] **Yazdani H.**, Khatibinia M. and Hatami K. (2015) “Probabilistic Optimization of Performance-based Seismic Design of Structures Considering Soil-Structure Interaction Effects,” *The Engineering Mechanics Institute (EMI) Conference*, Stanford, CA.
- [C18] **Yazdani H.**, Hatami K. and Khatibinia M. (2014) “Computational Intelligence in Structural Optimization,” *The 10th Annual Conference in Computer Science*, Norman, OK.
- [C17] **Yazdani H.** (2013) “Optimization of Piled-raft Foundations Considering Soil-Pile-Raft Interactions,” *DFI’s 38th Annual Conference on Deep Foundations*, Phoenix, AZ.
- [C16] **Yazdani H.**, Momeni M. and Hatami K. (2013) “Micropiled-raft Foundations for High-rise Buildings on Soft Soils – A Case Study: Kerman, Iran,” *The 7th International Conference on Case Histories in Geotechnical Engineering*, Chicago, US, Paper No. 2.40.
- [C15] **Yazdani H.**, Hatami K., Hawa T. and Grady B.P. (2013) “Atomic-Scale Simulation of Sensor-Enabled Geosynthetics for Health Monitoring of Reinforced Soil Slopes and Embankments,” *ASCE Geo-Congress*, San Diego, pp. 1529 – 1535.
- [C14] Shivafar I., **Yazdani H.** and E’temadi Shad L. (2013) “A Nomograph to Predict the Deflection of Two-way Reinforced Concrete Slabs,” *The 9th International Concrete Conference & Exhibition*, Manama, Bahrain, Paper No. 35.
- [C13] **Yazdani H.**, Hatami K., Hawa T. and Grady B.P. (2012) “Molecular Dynamics Simulation of Sensor-Enabled Geosynthetics,” *The 15th Nanotechnology Conference*, Santa Clara, US, Paper No. 918.
- [C12] Momeni M., **Yazdani H.**, Fakharian K., Shafiee A., Salajegheh J. and Salajegheh E. (2012). “Case Study of a Micropiled-raft Foundation Design in Soft Calcareous Sandy Soil, Kerman–Iran,” *The 4th International Conference on Geotechnical and Geophysical Site Characterization*, Porto de Galinhas, Pernambuco, Brazil, pp. 1063 – 1068.
- [C11] Askari Y., **Yazdani H.**, Yusefi M. and Salajegheh E. (2011) “Optimal Design of Micropiled-raft Foundations by the Ant Colony Optimization Method,” *The 6th National Congress on Civil Engineering*, Semnan, Iran, 205–213.

- [C10] Shivafar I., Salajegheh E. and **Yazdani H.** (2011) “Optimal Design of Concrete Diaphragm Wharfs Using the Artificial Neural Networks and the Genetic Algorithm,” *The 6th National Congress on Civil Engineering*, Semnan, Iran, pp. 235–244.
- [C9] Yusefi M., **Yazdani H.**, Askari Y. and Salajegheh E. (2011) “Application of Numerical Methods in Determination of the Subgrade Modulus of Slabs on Elastic Foundations,” *The 6th National Congress on Civil Engineering*, Semnan, Iran, pp. 286–295.
- [C8] **Yazdani H.**, Toufigh M.M. and Mas’oodzade A. (2010) “Nonlinear Analysis of Land Subsidence Due to Groundwater Level Oscillation by a Finite Difference Method,” *The 8th International Symposium on Land Subsidence*, EISOLS, Queretaro, Mexico, pp. 90–95.
- [C7] Mas’oodzade A., Toufigh M.M. and **Yazdani H.** (2010) “1-D Infiltration, Analysis of Unsaturated Flow and Increase in Land Subsidence,” *The 8th International Symposium on Land Subsidence*, EISOLS, Queretaro, Mexico, pp. 472–475.
- [C6] Mas’oodzade A., Toufigh M.M. and **Yazdani H.** (2010) “1-D Infiltration Influence on the Effective Stress,” *The 17th Congress of the Asia and Pacific Division of the International Association of Hydraulic Engineering and Research*, Auckland, New Zealand, pp. 325–329.
- [C5] **Yazdani H.**, Toufigh M.M. and Khosravi E. (2010) “Analytical Study on the Parameters Affecting the Coefficient of Consolidation of Soft Soils Subjected to Cyclic Loading,” *The 4th International Conference on Geotechnical Engineering and Soil Mechanics*, ICGESM, Tehran, Iran, Paper No. 399.
- [C4] Toufigh M.M. and **Yazdani H.** (2007) “Consolidation Theory for Cyclic Loading,” *The 1st International Congress on Civil Engineering and Quality Improvement*, Gorgan, Iran, pp. 152–163.
- [C3] Toufigh M.M. and **Yazdani H.** (2007) “One-dimensional Consolidation of Soft Clays with Variable Compressibility and Permeability,” *The 9th Conference on Watershed Management and Evaporation Reduction*, Kerman, Iran, pp. 56–63.
- [C2] Toufigh M.M., Vaezi M. and **Yazdani H.** (2007) “Field Study on the Land Subsidence in Kerman, Iran,” *The 3rd Civil Engineering National Congress*, Tabriz, Iran, pp. 134–142.
- [C1] Fadaee M.J., Shivafar I. and **Yazdani H.** (2007). “Presenting a Diagram to Determine Two-way RC Slabs Deflection,” *The 3rd Civil Engineering National Congress*, Tabriz, Iran, pp. 261–269.

E. Non-refereed Publications/Presentations

- [PR17] **Yazdani H.** (2019, invited talk) “Multiscale characterization of carbon nanotube-filled composites for image-based modeling and prediction of their properties using machine learning,” *Computational mathematics for model reduction and predictive modelling in molecular and complex systems workshop*, EPFL, Lausanne, Switzerland.

- [PR16] Ghasemi H.‡ and **Yazdani H.** (2019) “Predicting failure of graphene in biaxial loading using machine learning,” *Computational mathematics for model reduction and predictive modelling in molecular and complex systems workshop*, EPFL, Lausanne, Switzerland.
- [PR15] Ghasemi H.‡, Tilford C.† and **Yazdani H.** (2019) “Atomistic simulation of thermal conductivity of graphene: challenges and recommendations,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR14] Skinner S.†, Tilford C.† and **Yazdani H.** (2019) “Atomistic insight into temperature- and strain rate-dependent mechanical properties of graphene,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR13] Gwerengwe E.†, Ghasemi H.‡ and **Yazdani H.** (2019) “Anisotropic dependency of tensile properties of hexagonal boron nitride to strain rate and temperature: an atomistic simulations study,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR12] Ghasemi H.‡ and **Yazdani H.** (2018) “Atomistic insight into corrosion of metals coated with graphene,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR11] Skinner S.†, Gwerengwe E.† and **Yazdani H.** (2018) “Developing an integrated materials design paradigm using artificial intelligence,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR10] Wallace C.† and **Yazdani H.** (2018) “Atomistic insight into mechanical properties of nanocarbon-filled polymer composites,” *Howard University Research Symposium*, Howard University, Washington, DC.
- [PR9] **Yazdani H.** (2014) “High-performance Computing in Materials Science and Engineering,” *The 10th Annual Conference in Computer Science*, Norman, OK.
- [PR8] **Yazdani H.** (2014) “Sensor-enabled Geosynthetics; where Cutting-edge Science Meets Transportation Infrastructure,” *Oklahoma Department of Transportation (ODOT) Research Day*, OKC, OK.
- [PR7] **Yazdani H.** (2014) “Recent Advances in Sensor-enabled Geosynthetics,” *Research Day*, National Weather Center, Norman, OK.
- [PR6] **Yazdani H.**, Harper K., Hatami K. and Grady B.P. (2013) “Sensor-enabled geogrids for stabilization and instrumentation of transportation infrastructure,” *Oklahoma Department of Transportation (ODOT) Research Day*, OKC, OK.
- [PR5] **Yazdani H.**, Hatami K. and Grady B.P. (2012) “Developing Sensor-enabled Geosynthetics using Conducting Carbon Networks: A Proof-of-Concept Study,” *The NSF CMMI Engineering Research and Innovation Conference*, Boston, Massachusetts.
- [PR4] **Yazdani H.** (2012) “Molecular Dynamics Simulation of Sensor-enabled Geosynthetics,” *USUCGER 1st Early Career Geotechnical Engineering Conference*, Boston, Massachusetts.

[PR3] **Yazdani H.** (2012) "Molecular Dynamics Simulation of Sensor-enabled Geosynthetics," *Oklahoma Department of Transportation (ODOT) Research Day*, OKC, OK.

[PR2] **Yazdani H.** (2011) "The Application of Molecular-scale Simulation in Civil Engineering," *Oklahoma Department of Transportation (ODOT) Research Day*, OKC, OK.

[PR1] **Yazdani H.** (2011) "Molecular-scale Simulations in Civil Engineering," *Research Day of the OU Supercomputing Center for Education & Research (OSCER)*, National Weather Center, Norman, OK.

F. Other Reports

[R1] Hatami K. and **Yazdani H.** (2013) "Fabrication, Cyclic Loading and In-soil Performance of Sensor-Enabled Geosynthetics," *Vice President for Research*, The University of Oklahoma.