HESSAM YAZDANI, PhD

Assistant Professor, Department of Civil and Environmental Engineering, Howard University
2300 Sixth St NW #1026, Washington, DC 20059
O: (202) 806-6199, F: (202) 806-5271, E: hessam.yazdani@howard.edu, URL: www.husigmalab.com

EDUCATION

PhD in Civil/Geotechnical Engineering 2011–2015

The University of Oklahoma, Norman, OK GPA: 4.00/4.00

Dissertation: "Laboratory development and molecular-scale simulation of sensor-enabled geogrids (SEGG)". The SEGG technology holds promise to provide a viable and economical alternative to the existing methods for the instrumentation and monitoring of structural performance in transportation and geotechnical engineering projects. Advisor: Dr. Kianoosh Hatami (kianoosh@ou.edu)

Coursework: Support vector machines, preparing for a life in academia, designing with geosynthetics, unsaturated soil mechanics, constitutive modeling of geomaterials, technical communications, and technical writing.

MSc in Civil/Geotechnical Engineering 2008

University of Kerman, Iran

Thesis: "Nonlinear consolidation of soft clays subjected to cyclic loading". Advisor: Professor Mohammad Mohsen Toufigh (toufigh@mail.uk.ac.ir). A set of differential equations governing the nonlinear consolidation of soft clays was developed, experimentally validated, and numerically solved. Results were published in two journal and four conference papers.

Coursework: Finite elements method, advanced soil mechanics, advanced engineering mathematics, design of earth dams, advanced foundation engineering, soil dynamics, design of marine structures, advanced engineering geology and advanced rock mechanics.

Post-MSc audited courses: Optimization, advanced finite elements analysis, geotechnical earthquake engineering.

BSc, *magna cum laude*, in Civil Engineering 2005

University of Kerman, Iran

Thesis: "Flexural ductility of reinforced concrete structures". Advisor: Professor Ali Akbar Maghsoudi (maghsoudi.a.a@mail.uk.ac.ir). The nonlinear flexural behavior of reinforced concrete structures located in seismically active areas and designed according to different consensus-based standards was evaluated by means of computer modeling.

Core coursework: Mechanics of materials, soil mechanics, foundation engineering, earthquake engineering, fluid mechanics, steel structures design and design of reinforced concrete structures.

ACADEMIC APPOINTMENTS

Assistant Professor 01/16–

Department of Civil and Environmental Engineering, Howard University, Washington, DC

Courses taught:

- Advanced Geotechnical Engineering (G)
- Advanced Interdisciplinary Research I and II (G)
- Foundation Engineering (U)
- Engineering Economics (U)
- Soil Mechanics Lecture (U)
- Soil Mechanics Lab (U)
- Undergraduate Research (U)
- Introduction to Engineering (U)
- Civil Engineering Software and Design (U)

Research Includes:

- Multiscale design and simulation of bio-inspired materials
- Sustainability and resilience of civil infrastructure
- Geosynthetic reinforced soil–integrated bridge system modeling and design
- Nature-inspired algorithms for risk assessment and structural response prediction
- Analysis and design of offshore foundations

Graduate Research Assistant 06/11–12/15

School of Civil Engineering and Environmental Science, University of Oklahoma, OK

Research Included:

- Laboratory development of sensor-enabled geosynthetics as smart, multifunctional materials for simultaneous stabilization of instrumentation of earth structures.
- Advanced molecular-scale simulation of nanoparticle-filled polymer composites for sensor applications

Advisors:

- Dr. Kianoosh Hatami (PI)
- Dr. Brian P. Grady (Co-PI), School of Chemical, Biological & Materials Engineering

Funding Agencies:

- National Science Foundation (NSF)
- Carbon Nanotube Technology Center (CaNTeC), The University of Oklahoma
- The U.S. Department of Energy (DOE)

Outcome and Value:

My passion to work on new and challenging projects helped me to acquire the knowledge and skills required to carry out the projects relatively fast. I was expected to develop a polymer composite to impart sensing capability to conventional geosynthetics by means of laboratory tests and microscale simulations. The formulation of a polymer composite exhibiting satisfactory in-isolation strain sensitivity and mechanical properties was developed [J3–J5, J8 and J9 in Publications]. The mechanical and electrical behavior of the composite under different cyclic loading régimes expected from traffic and earthquake loadings was also investigated [J5]. Through the course of the nanoscopic and microscopic imaging of my

specimens and mining the corresponding data using advanced statistical methods, we managed to develop an innovative technique for the multiscale 3-D characterization of the dispersion and failure mechanism of filled autofluorescent materials using laser scanning confocal microscopy, SEM and TEM [B1, J6]. Atomistic-scale simulations were also carried out to understand and interpret the laboratory data and to extend the experimental results to a wider range of factors and parametric values that would otherwise be difficult to investigate in the laboratory [J7, C5 and C7].

Additional Research Included:

- Probabilistic Optimal Seismic Design of Interacting Geotechnical–Structural Systems

Outcome and Value:

As a PhD candidate, challenging coursework has helped me hone my professional skills and align my post-graduation research plans. As an outset, I used my software skills and the knowledge learned during the courses Support Vector Machines and Optimization on two research studies described below:

Ant colony optimization method for design of piled-raft foundations

This research, published in the DFI (Deep Foundations Institute) Journal, won the Best Paper Award in the DFI Educational Trust 2013 Student Paper Competition [J10].

The capability of the ant colony optimization (ACO) algorithm to optimize piled-raft foundations was examined. The soil-pile interactions were taken into account by modeling the side and tip capacities of the piles using the nonlinear p-y, t-z and Q-z springs in the OpenSees platform. The soil-raft interaction was taken into consideration using the Winkler springs beneath the raft. The objective of the optimization problem was to minimize the volume of the foundation by taking the number, configuration and penetration depth of the piles, as well as the thickness of the raft as design variables. The side and tip forces of the piles, the pressure applied on the underlying soil and the total and differential movements of the foundation under the serviceability limit state were the constraints adopted for the optimization problem. Results indicated that the ACO algorithm is a suitable method for optimal design of piled-raft foundations. Findings of the study also indicated that including soil nonlinearity in the analysis (as opposed to a linear elastic soil model) can lead to a more economical design for these foundation systems.

Probabilistic performance-based optimum seismic design of RC structures considering SSI effects

In this study, a modified discrete gravitational search algorithm and a metamodel were proposed for the probabilistic PBD of RC structures subjected to seismic loading considering nonlinear soil–structure interaction effects. The objective function was to minimize the cost of an RC structure with both deterministic and probabilistic constraints. The annual probabilities of non-performance for each performance level were considered as the probabilistic constraints in the probabilistic PBD procedure. The metamodel was a weighted least squares support vector machine with the Morlet wavelet as the kernel function. Numerical examples were provided to illustrate the efficiency and effectiveness of the proposed optimization algorithm and metamodel.

A paper reporting this research has been submitted to a Special Issue on "Interdisciplinary Applications of Reliability Analysis, Risk Analysis and Optimization" to be published by ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering [J2].

Graduate Teaching Assistant 08/14–05/15

School of Civil Engineering and Environmental Science, University of Oklahoma, OK

Courses Included:

- Statics
- Mechanics of Materials

Graduate Research Assistant 09/04–09/07

Civil Engineering Department; University of Kerman, Iran

Research Included:

- Zoning and Prediction of Land Subsidence in Kerman, Iran

Advisor:

- Professor Mohammad Mohsen Toufigh (PI)

Funding Agency:

- Kerman Water & Wastewater District Inc., Kerman, Iran

Outcome and Value:

Land subsidence is the lowering of the land-surface elevation due to the changes that take place underground. It is a silent disaster damaging buildings, aqueducts, well casings, bridges and highways. Common causes include pumping water, oil or gas, dissolution of limestone aquifers, drainage of organic soils and initial wetting of dry soils. An extensive research program was carried out in order to study land subsidence in the semi-arid district of Kerman, Iran. The program included annual field survey, laboratory tests to assess the collapsibility and compressibility of the district's soil and theoretical and numerical investigation on the consolidation of fine-grained soils due to oscillation in groundwater level as a result of periodic withdrawals and precipitations/infiltrations. I helped to manage the field surveys for two consecutive years [C18]. In my Master's thesis, I used theoretical methods and experimentally-validated numerical modeling to investigate the consolidation settlement of fine-grained soils [C12–C17]. Results were used to zone ground subsidence over a 400 km^2 area which was primarily ascribed to aquifer exploitation and initial wetting of dry soils. The results were disseminated through many publications of which I am the co-author of two journal and seven conference papers [J12, J13, C12–C18].

Adjunct Advisor ..... Since 09/10

Civil Engineering Department; Kerman Graduate University of Technology, Kerman, Iran

Research Includes/included:

- Probabilistic Analysis of the Coupled Consolidation of Clays. Student: M. Afsharipour (MSc). Co-advised by Drs. M.H. Bagheripour and F. Soltani. Since 06/13.

Outcome and Value:

Uncertainty is incorporated into the set of differential equations derived in my MSc thesis so as to investigate the probabilistic consolidation of heterogeneous soil deposits. The soil

compressibility and permeability are assumed to be random variables and are generated by the local average subdivision method which fully takes account of spatial correlation, local averaging and cross correlations. The generated random variables are mapped onto a finite-difference mesh and Monte Carlo simulations follow. Results are expected to describe the influence of standard deviation, spatial correlation length and cross correlation coefficient on the consolidation of heterogeneous soils.

- Optimal Design of Micropiled-raft Foundations by the Ant Colony Optimization Method. Student: Y. Askari (MSc). Co-advised by Professor E. Salajegheh. 09/10–09/11.

  Outcome and Value:

  The capability of the ant colony optimization (ACO) algorithm to optimize piled-raft foundations was examined. The soil-pile interactions were taken into account by modeling the side and tip capacities of the piles using the nonlinear p-y, t-z and Q-z springs in the OpenSees platform. The soil-raft interaction was taken into consideration using the Winkler springs beneath the raft. The objective of the optimization problem was to minimize the volume of the foundation by taking the number, configuration and penetration depth of the piles, as well as the thickness of the raft, as design variables. The side and tip forces of the piles, the pressure applied on the underlying soil and the total and differential movements of the foundation under the serviceability limit state were the constraints adopted for the optimization problem. Results indicated that the ACO algorithm is a suitable method for optimal design of piled-raft foundations. Findings of the study also indicated that including soil nonlinearity in the analysis (as opposed to a linear elastic soil model) can lead to a more economical design for these foundation systems. This study was published in the 6th National Congress on Civil Engineering, Iran, 2011 [C9].

- A Formulation to Determine the Subgrade Elastic Modulus of Slabs Underlain by Sandy and Cleyey Soils. Student: M. Yusefi (MSc). Co-advised by Professor E. Salajegheh. 09/10–09/11.

  Outcome and Value:

  An extensive numerical modeling in FLAC 3D was carried out in order to establish a correlation among the geometry of shallow foundation, compressibility characteristics of the underlying soil and the subgrade elastic modulus with the aim of improving the accuracy of the settlements calculated by the computer packages using the subgrade elastic modulus. Both fine-grained and coarse-grained soils were studied along with the influence of foundations' depth on their settlements. A large data set was developed and the genetic programming was implemented to establish a pattern/correlation among the parameters involved. Results indicated that using the subgrade elastic modulus suggested by the developed correlation can significantly improve the accuracy of the settlements calculated by finite element packages. This study was published in the 6th National Congress on Civil Engineering, Iran, 2011 [C11].

Co-advised 02/10–02/11

Civil Engineering Department; Azad University of Kerman, Iran

Research included:

- Optimum Design of Concrete Diaphragm Wharfs Implementing the Artificial Neural Networks and the Genetic Algorithm. Student: Shivafar I. (MSc). Co-advised by Professor E. Salajegheh.

Outcome and Value:

The genetic algorithm and particle swarm optimization methods were utilized to optimize an existing anchored diaphragm quay wall subjected to static and seismic loadings with soil-structure interactions taken into account. The quay wall was modeled in FLAC 2D. The objective was to minimize the material volume of the structure taking the configuration, cross-sectional dimensions of the quay wall and anchor block, the wall to block distance and the pretension force in tie-rod as design variables. The compressive and tensile stresses in structural components and the residual horizontal displacement of the quay wall under two performance levels of fully functional and operational were considered as the constraints for the optimization problem. The nonlinear dynamic analysis of the structure under a given earthquake is computationally expensive when coupled with minimization of a cost function. This difficulty was countered using the GBRF artificial neural network. The optimization results matched the engineering expectations and indicated the effectiveness and capability of the adopted methods to minimize the construction cost. This study was published in the 6th National Congress on Civil Engineering, Iran, 2011 [C10].

Co-advised 09/08–09/09

Civil Engineering Department; University of Kerman, Iran

Research included:

-Land Subsidence Due to 1-D Infiltration in Unsaturated Media. Student: S.A. Mas'oodzade (MSc). Co-advised by Professor M.M. Toufigh.

Outcome and Value:

This study was part of an extensive project on land subsidence in the semi-arid district of Kerman, Iran. Water and wastewater infiltration in unsaturated, collapsible soils decreases the matric suction holding the soil particles together and results in ground settlement over an extensive area. The principles of unsaturated soil mechanics were used to calculate the inundation-induced settlements as well as those occurring due to the wet front propagation from a number of randomly distributed sinkholes. Results were combined with those obtained from other parts of the project to control the rate of settlement through a strategic water withdrawal/infiltration plan. Two papers extracted from this thesis were published in the 8th International Symposium on Land Subsidence, EISOLS, Queretaro, Mexico, and the 17th Congress of the Asia and Pacific Division of the International Association of Hydraulic Engineering and Research, Auckland, New Zealand [C13, C14].

Lecturer 02/06–02/11

Civil Engineering Department, University of Kerman, Iran

-Instructed Engineering Geology; 02/10–02/11.

-Instructed Soil Mechanics (II); 02/06–06/07.

ON-LINE LEARNING

Reservoirs Geomechanics (by Professor Mark Zoback)

School of Earth Science, Stanford University, CA

Grade: 100/100

PROFESSIONAL AFFILIATIONS AND CERTIFICATIONS

Engineer in Training (NCEES)

American Society of Civil Engineers (ASCE), Reston, VA

Deep Foundations Institute (DFI), Hawthorne, NJ (Honorary Member)

North American Geosynthetics Society (NAGS), Albany, NY

Professional Engineer – Iranian Structural and Construction Engineering Organization, Iran

ACADEMIC SERVICES

Technical Reviewer of

Geotextiles & Geomembranes

Expert Systems with Applications

Construction and Building Materials

Physica E Low-dimensional Systems and Nanostructures

Structural Engineering and Mechanics, An International Journal

International Journal of Geosynthetics and Ground Engineering

Applied Mathematical Modelling

ASCE Journal of Nanomechanics and Micromechanics

Geomechanics and Engineering

Civil Engineering Infrastructures Journal

Journal of Civil Engineering and Architecture

RESEARCH INTERESTS

Multiscale design, simulation, and characterization of materials with emphasis on bio-inspired materials

Sustainability and resilience of civil infrastructure

Modeling and design of geosynthetic reinforced soil–integrated bridge systems

Experimental and computational geomechanics related to energy production

Using nature-inspired algorithms for risk assessment and structural response prediction

HONORS

Faculty of the Year Award, ASCE Howard University Student Chapter, 2019

Best Paper Award, Technology Systems & Ships (TSS), Washington, DC, 2018

Best Teacher Award, ASCE Howard University Student Chapter, 2017

Best Mentor Award, ASCE Howard University Student Chapter, 2017

Dissertation was selected by the Dean's Office to represent GCoE for 2015 Provost's PhD Dissertation Prize in Science and Engineering

NSF Travel Award to participate in the EMI 2015 Conference, Stanford University, 2015

OU Graduate Student Senate Travel Grant award to participate in the EMI 2015 Conference, Stanford University, 2015

Best Paper Award, the 10th Annual Conference in Computer Science, Norman, OK, December 2014

Elected Member of the Civil Engineering Honor Society, Chi Epsilon (χε), 2014

Elected Member of the Honor Society of Phi Kappa Phi (ΦΚΦ), 2013

ASTM International Project Grants Awardee, 2013

Honorary Member, the Deep Foundations Institute, since 2013

Best Paper Award/Grand Prize Winner, the DFI Educational Trust 2013 Student Paper Competition

The Robberson Grantee, the Graduate College, University of Oklahoma, February 2013

Participation Grantee for the NSF CMMI Engineering Research and Innovation Conference, Boston, 2012

Third place for the GeoWall design paper in GeoChallenge 2012 Student Competition - GeoCongress 2012, Oakland, CA, March 2012

First place in the Professional Licensure Examination for Engineers held by the Iranian Structural and Construction Engineering Organization in Kerman, Iran, 2008 (participants exceeding 1,000)

PUBLICATIONS († and ‡ denote HU undergraduate and graduate student co-authors, respectively)

Peer-reviewed Book Chapters

B1. **Yazdani H.**, Smith B. and Hatami K. (2016) "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.

Peer-reviewed Journal Papers

J1. **Yazdani H.**, Wallace C.† and Hatami K. (2019) "Mechanical properties of carbon nanotube-filled polyethylene composites: a molecular dynamics simulations study", *Polymer Composites.*

J2. 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.*

J3. **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*. 45 (5), 678–680.

J4. Ghasemi H., **Yazdani H.** and Ayyub B. (2018) "Graphene Inhibits Corrosion of Metals: A Molecular Dynamics Study", *Naval Engineers Journal*, 130 (3), 62-64.

J5. 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.

J6. Khatibinia M. and **Yazdani H.** (2018) "Accelerated multi-gravitational search algorithm for size optimization of truss structures", *Swarm and Evolutionary Computation*, 38, 109–119.

J7. **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).

J8. **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).

J9. **Yazdani H.**, 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).

J10. **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, 43665.

J11. **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*, 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*, 44 (1).

J13. 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*, 79, 23–29.

J14. **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), 065004.

J15. **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*, 79, 393–405.

J16. 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*, A4013016.

J17. **Yazdani H.**, Hatami K. and Khosravi E., (2013). "Ant Colony Optimization Method for Design of Piled-raft Foundations." *DFI (the Deep Foundations Institute) Journal*, 7 (2), 17–27. [1]

J18. Khosravi E., Ghasemzadeh H., Sabour M.H. and **Yazdani H.**, (2013). "Geotechnical Properties of Gas Oil-contaminated Clays." *Engineering Geology*, 166, 11–16.

[1] Won the Best Paper Award in the DFI Educational Trust 2013 Student Paper Competition.

J19. **Yazdani H.** and Toufigh M.M., (2012). "Nonlinear Consolidation of Soft Soils Subjected to Cyclic Loading. Part I: Theory." *Geomechanics and Engineering*, 4 (4), 229–241.

J20. **Yazdani H.** and Toufigh M.M., (2012). "Nonlinear Consolidation of Soft Soils Subjected to Cyclic Loading. Part II: Verification and Application." *Geomechanics and Engineering*, 4 (4), 243–249.

J21. 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.

Conference Papers

C1. Ghasemi H., **Yazdani H.** and Ayyub B. (2018) "Graphene as a corrosion-inhibiting coating for metals: a molecular dynamics study", *MegaRust*, San Diego, CA. [2]

C2. **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.

C3. **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.[3]

C4. **Yazdani H.**, Hatami K. and Khatibinia M., (2014). "Computational Intelligence in Structural Optimization." *The 10th Annual Conference in Computer Science*, Norman, OK.[4]

C5. **Yazdani H.**, (2013). "Optimization of Piled-raft Foundations Considering Soil-Pile-Raft Interactions." *DFI's 38th Annual Conference on Deep Foundations*, Phoenix, AZ.

C6. **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.

C7. **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, 1529–1535.

C8. 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.

C9. **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.

C10. 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, 1063–1068.

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[2] Won the best research award in Technology Systems & Ships (TSS) 2018.

[3] Won an NSF Travel Award for participation in the corresponding conference.

[4] Won the Best Paper Award in the corresponding conference.

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.

C12. 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, 235–244.

C13. 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, 286–295.

C14. **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, 90–95.

C15. 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, 472–475.

C16. 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, 325–329.

C17. **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.

C18. Toufigh M.M. and **Yazdani H.**, (2007). "Consolidation Theory for Cyclic Loading." *The 1st International Congress on Civil Engineering and Quality Improvement*, Gorgan, Iran, 152–163.

C19. 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, 56–63.

C20. 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, 134–142.

C21. 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, 261–269.

Professional Presentations

P1. **Yazdani H.** and Ghasemi H.‡ (2019) "Probabilistic integrated computational materials engineering models for polymer nanocomposites using image-based multiscale modeling and machine learning", *Computational mathematics for model reduction and predictive modelling in molecular and complex systems* workshop, the Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland.

P2. Ghasemi H.‡ and **Yazdani H.** (2019) "Developing failure criteria for nanomaterials using atomistic simulations and machine learning", *Computational mathematics for model reduction and predictive modelling in molecular and complex systems* workshop, the Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland.

P3. 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.

P4. 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.

P5. 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.

P6. Ghasemi H.‡ and **Yazdani H.** (2018) "Atomistic insight into corrosion of metals coated with graphene", Howard University's Research Symposium, Howard University, Washington, DC.

P7. Skinner S.†, Gwerengwe E.† and **Yazdani H.** (2018) "Developing an integrated materials design paradigm using artificial intelligence", Howard University's Research Symposium, Howard University, Washington, DC.

P8. Wallace C.† and **Yazdani H.** (2018) "Atomistic insight into mechanical properties of nanocarbon-filled polymer composites", Howard University's Research Symposium, Howard University, Washington, DC.

P9. **Yazdani H.**, (2014). "High-performance Computing in Materials Science and Engineering." *The 10th Annual Conference in Computer Science*, Norman, OK.

P10. **Yazdani H.**, (2014). "Sensor-enabled Geosynthetics; where Cutting-edge Science Meets Transportation Infrastructure." *Oklahoma Department of Transportation (ODOT) Research Day*, OKC, OK.

P11. **Yazdani H.**, (2014). "Recent Advances in Sensor-enabled Geosynthetics." *Research Day*, National Weather Center, Norman, OK.

P12. **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.

P13. **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.

P14. **Yazdani H.**, (2012). "Molecular Dynamics Simulation of Sensor-enabled Geosynthetics." *USUCGER 1st Early Career Geotechnical Engineering Conference*, Boston, Massachusetts.

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