



Northeastern University
College of Engineering

Engineering for Society

Boldly innovating to better our world

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2017 | 2018
SCHOLARSHIP REPORT
Civil and Environmental Engineering

**WE ARE A LEADER IN
EXPERIENTIAL EDUCATION
AND INTERDISCIPLINARY
RESEARCH, FOCUSED
ON ENGINEERING
FOR SOCIETY**

Dear Friends,

Our department is on the move. As new opportunities impact our discipline, Northeastern University's Department of Civil and Environmental Engineering is meeting them with timely innovation, vital research, and experiential education for our students.

Our department is strategically focused on urban engineering, preparing students for the great challenges of our time by exploring the unique ways in which the built and natural environment interact. Utilizing the latest advances in simulation, smart sensing, data and network science, and urban informatics, our faculty are conducting critical research in civil infrastructure security, environmental health, and sustainable resource engineering.

The department is expanding its research presence across all fields, and is currently leading the PROTECT Center, funded by the National Institute of Environmental Sciences (NIEHS) of the National Institutes of Health, and the CRECE Center, funded by the NIEHS and the Environmental Protection Agency, to study the relationship between environmental contamination and preterm births.

Over the last eight years, we have seen dramatic growth. The department's faculty and graduate populations have both more than doubled, and we continue to expand our degree offerings at both the undergraduate and graduate levels. Our newly opened 220,000 square-foot Interdisciplinary Science and Engineering Complex advances our commitment as a top tier research institution, providing faculty and students with access to the highest quality, state-of-the-art laboratories.

Our scholars are engineering a resilient and sustainable future through leading-edge research. This fifth annual scholarship report details the exceptional academic and professional accomplishments of our faculty and Ph.D. candidates for the 2017-2018 year. For the latest highlights, please visit us at northeastern.edu/tomorrow. We look forward to building a better world together.

Sincerely,

Jerome F. Hajjar, Ph.D., P.E.
CDM Smith Professor
Chair of Civil and Environmental Engineering
jf.hajjar@northeastern.edu



QUICK FACTS — Civil and Environmental Engineering

3
**FEDERALLY
FUNDED
RESEARCH
CENTERS**

PROTECT, The Puerto Rico Testsite for Exploring Contamination Threats, funded by NIEHS

CRECE, The Center for Research on Early Childhood Exposure and Development, funded by EPA and NIEHS

ECHO, Environmental Influences on Child Health Outcomes, funded by NIH

8
**NATIONAL SCIENCE
FOUNDATION CAREER
Awards**

2018 WINNER:
Ameet Pinto for “Developing a Spatial-Temporal Predictive Framework for the Drinking Water Microbiome.”

45
**TENURED/
TENURE-TRACK**
Including
Affiliated Faculty

RECENT HIRES:

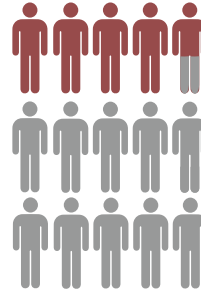
Qin Jim Chen
PhD, Old Dominion University

Aron Stubbins
PhD, Newcastle University

Hao Sun
PhD, Columbia University

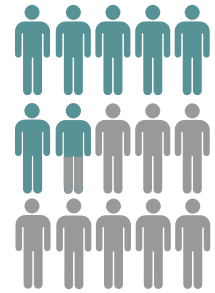
179
masters students

28% female



67
doctoral students

40% female



QUICK FACTS — College of Engineering

13 STATE-OF-THE-ART RESEARCH CENTERS
funding by eight federal agencies



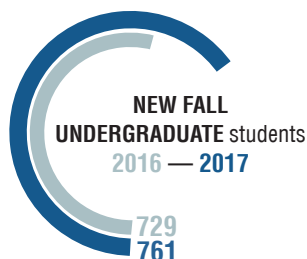
179
**TENURED/
TENURE-TRACK
Faculty**

43
**NSF CAREER
Awards**

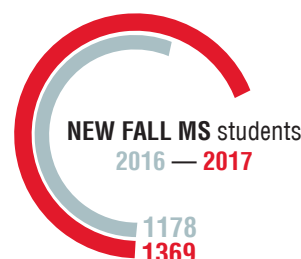
5 **ENGINEERING
DEPARTMENTS**

Bioengineering
Chemical Engineering
Civil and Environmental Engineering
Electrical and Computer Engineering
Mechanical and Industrial Engineering

3819
UNDERGRADUATE
students



3717
GRADUATE
students



83
**YOUNG
INVESTIGATOR
Awards**

FACULTY BY RESEARCH THRUSTS



CIVIL INFRASTRUCTURE SECURITY

George Adams
Joseph Ayers
Dionisio Bernal
Luca Caracoglia
Qin Jim Chen
Daniel Dulaski
Stephen Flynn
Peter Furth
Auroop Ganguly
Jerome Hajjar
Michael Kane
Haris Koutsopoulos
Yiannis Levendis
Sinan Müftü
Andrew Myers
Mark Patterson
Mehrdad Sasani
Thomas Sheahan
Craig Shillaber
Michael B. Silevitch
Hao Sun
Ali Touran
Sara Wadia-Fascetti
Ming Wang
Qi Ryan Wang
Mishac Yegian



ENVIRONMENTAL HEALTH

Akram Alshawabkeh
R. Edward Beighley
Qin Jim Chen
Matthew Eckelman
Loretta Fernandez
Auroop Ganguly
Edgar Goluch
Tarik Gouhier
Jonathan Grabowski
Brian Helmuth
A. Randall Hughes
Philip Larese-Casanova
Amy Mueller
Samuel Muñoz
Annalisa Onnis-Hayden
Mark Patterson
Ameet Pinto
Thomas Sheahan
Aron Stubbins
Geoffrey Trussell
Kai-Tak Wan



SUSTAINABLE RESOURCE ENGINEERING

Luca Caracoglia
Daniel Dulaski
Matthew Eckelman
David Fannon
Peter Furth
Auroop Ganguly
Tarik Gouhier
Jonathan Grabowski
Jerome Hajjar
Brian Helmuth
A. Randall Hughes
Michael Kane
Haris Koutsopoulos
Michelle Laboy
Mark Patterson
Craig Shillaber
Jennie C. Stephens
Ali Touran
Geoffrey Trussell
Ming Wang
Qi Ryan Wang

FACULTY HONORS AND AWARDS



Assistant Professor **Loretta Fernandez's** pilot study on using polyethylene passive samplers to monitor potential PCB transport across the engineered cap at the Grasse River Superfund site has

received a \$405K grant in collaboration with the U.S. Army Engineer Research and Development Center from the Environmental Protection Agency.

Assistant Professor **Amy Mueller**, in collaboration with the University of Washington and California Institute of Technology, will work on a \$2.7M grant, titled "Implementation of a synthetic



Anammox bio-granular technology in the main wastewater treatment line" and funded by DARPA's Biological Robustness in Complex Settings program to increase the robustness of Anammox technology for municipal scale-applications in the main processing stream.



Professor **Ming Wang** received a patent for creating a "Real-time pavement profile sensing system using air-coupled surface wave," and a patent for "Conformal &

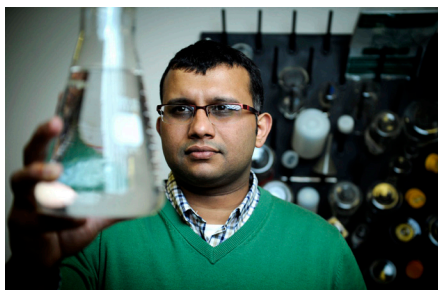
configurable millimeter-wave integrated array radar in a compact package."

Associate Professor **Matt Eckelman** and his former PhD student **Mithun Saha** won the Clemens Herschel Award from the Boston Society of Civil Engineers section of the American Society of Civil Engineers, for their paper, entitled "Urban Scale Mapping of Concrete Degradation from Projected Climate Change."



Associate Teaching Professor **Annalisa Onnis-Hayden** won the 2017 Clair N. Sawyer Award from the New England Water Environmental Association (NEWEA) for her distinguished service

to the association such as chairing the NEWEA Student Activity Committee, being a member of the Public Education Committee, and serving as the advisor for the Northeastern NEWEA student chapter.



Assistant Professor **Ameet Pinto** was awarded a National Science Foundation CAREER award for "Developing a Spatial-Temporal Predictive Framework for the Drinking Water Microbiome." His project seeks to revolutionize the current United States drinking water monitoring system of "detect and mitigate" toward a proactive one of "predict and correct." Pinto was also selected as the recipient of the 2018 International Society of Microbial Ecology/ International Water Association Bio Cluster Award in the Rising Star Category.

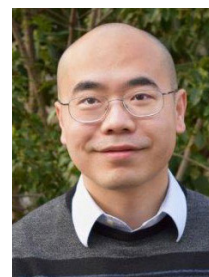
Chair and Professor **Jerome Hajjar** was selected by Northeastern University for the prestigious annual Robert D. Klein Lecture where he presented his research on the need for "Urban Engineering: New Designs for a Resilient and Sustainable Future."



Professor **Auroop Ganguly's** climate analytics spinout company from his Sustainability and Data Sciences Laboratory, risQ, received a \$750K Small Business Innovation Research

Phase II grant from the National Science Foundation for continued research and development of its Climate Risk Analytics Platform. In addition, Ganguly was selected as a United Nations Environmental Effects Assessments Panel (UN EEAP) review member to the upcoming 2018 quadrennial assessment report.

Assistant Professor **Samuel Munoz** was awarded a \$595K grant from the National Science Foundation for "Extreme Floods on the Lower Mississippi River in the Context of Late Holocene Climatic Variability" in collaboration with the Woods Hole Oceanographic Institution and Coastal Carolina University.



Assistant Professor **Qi "Ryan" Wang** and Associate Professor Yingzi Lin, mechanical and industrial engineering, were awarded a grant from the National Science Foundation for "Personalized Systems for

Wayfinding for First Responders." The project will test the theoretical foundation of personalized wayfinding information systems that can effectively minimize the cognitive load of first responders on the individual level.

Professor **Auroop Ganguly**, civil and environmental engineering (CEE), Professor Edmund Yeh, electrical and computer engineering, and affiliated CEE Professor **Stephen Flynn** in collaboration with the College of Science and College of Computer and Information Science were awarded a \$2.5 million National Science Foundation CRISP grant for "Interdependent Network-based Quantification of Infrastructure Resilience (INQUIRE)."



Interdisciplinary Engineering PhD student **Lizzy Warner** was part of a two-person team that

won the top prize at the Department of Homeland Security Center of Excellence Summit for their interactive map that illustrates how critical infrastructure in Boston are connected to each other.

Erin Dillmann, E'20 and **Michael Tormey**, E'20, received the prestigious 2018 President's Scholarship awarded by the American Council of Engineering Companies of Massachusetts Education Corporation. They were one of only eight nationwide that received an ACEC scholarship in 2018.

GEORGE ADAMS



COE Distinguished Professor, Mechanical and Industrial Engineering; affiliated faculty, Civil and Environmental Engineering, Electrical and Computer Engineering

PhD, University of California at Berkeley, 1975
mie.neu.edu/people/adams-george

Scholarship focus: contact mechanics including adhesion, friction, and plasticity; modeling and analysis of MEMS; modeling and analysis in nanomechanics

Honors and awards: Fellow, American Society of Mechanical Engineers; Fellow, Society of Tribologists and Lubrication Engineers; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

G.G. Adams

A Semi-Infinite Strip Pressed Against an Elastic Half-Plane With Frictional Slip, *Journal of Applied Mechanics*, 85(2), 2018

N.K. Mohammadi and G.G. Adams

Self-Excited Oscillations of a Finite-Thickness Elastic Layer Sliding Against a Rigid Surface With a Constant Coefficient of Friction, *Journal of Applied Mechanics*, 85(2), 2018

D. Hu and G.G. Adams

A Boundary Condition Correction for the Clamped Constraint of Elastic Plate/Beam Theory, *International Journal of Solids and Structures*, 124, 2017, 229-234

A. Basu, G.G. Adams, N.E. McGruer

A Review of Micro-Contact Physics, Materials, and Failure Mechanisms in Direct-Contact RF MEMS Switches, *Journal of Micromechanics and Microengineering*, 26, 2016

F. Oweiss, G.G. Adams

Adhesion of an Axisymmetric Elastic Body: Ranges of Validity of Monomial Approximations and a Transition Model, *Tribology International*, 100, 2016, 287-292

G. Stan, G.G. Adams

Adhesive Contact Between a Rigid Spherical Indenter and an Elastic Multi-Layer Coated Substrate, *International Journal of Solids and Structures*, 87, 2016, 1-10

D. Hu, G.G. Adams

Adhesion of a Micro-/Nano- Beam/Plate to a Sinusoidal/Grooved Surface, *International Journal of Solids and Structures*, 99, 2016, 40-47

G.G. Adams

Frictional Slip of a Rigid Punch on an Elastic Half-Plane, *Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences*, A 472, 2016

AKRAM ALSHAWABKEH



George A. Snell Professor of Engineering, Civil and Environmental Engineering; Associate Dean for Research; Director, PROTECT Superfund Research Center;

PhD, Louisiana State University, 1994
civ.neu.edu/people/alshawabkeh-akram

Scholarship focus: geoenvironmental engineering, soil and groundwater remediation; electrokinetic and electrochemical processes; contaminant fate and transport; environmental restoration

Honors and awards: Fellow, American Society of Civil Engineers; ASCE Thomas A. Middlebrooks Award; National Science Foundation CAREER Award; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

A. Cathey, K.K. Ferguson, T.F. McElrath, D.E. Cantonwine, G. Pace, A.N. Alshawabkeh, J.F. Cordero, J.D. Meeker,

Distribution and Predictors of Urinary Polycyclic Aromatic Hydrocarbon Metabolites in Two Pregnancy Cohort Studies, *Environmental Pollution*, 232, 2018, 556-562

W. Zhou, L. Rajic, Y. Zhao, J. Gao, Y. Qin, A.N. Alshawabkeh Rates of H₂O₂ Electrogenation by Reduction of Anodic O₂ at RVC Foam Cathodes in Batch and Flow-Through Cells, *Electrochimica Acta*, 277, 2018, 185-196

N.I. Torres, X. Yu, I.Y. Padilla, R.E. Macchiavelli, R. Ghasemizadeh, D. Kaeli, J.F. Cordero, J.D. Meeker, A.N. Alshawabkeh

The Influence of Hydrogeological and Anthropogenic Variables on Phthalate Contamination in Eogenetic Karst Groundwater Systems, *Environmental Pollution*, 237, 2018, 298-307

J. Lan, S.M. Rahman, N. Gou, T. Jiang, M.J. Plewa, A.N. Alshawabkeh, A.Z. Gu

Genotoxicity Assessment of Drinking Water Disinfection Byproducts by DNA Damage and Repair Pathway Profiling Analysis, *Environmental Science & Technology*, 52(11), 2018, 6565-6575

S. Hojabri, L. Rajic, A.N. Alshawabkeh

Transient Reactive Transport Model for Physico-Chemical Transformation by Electrochemical Reactive Barriers, *Journal of Hazardous Materials*, 358, 2018, 171-177

SELECTED RESEARCH PROJECTS

Puerto Rico Testsite for Exploring Contamination Threats (PROTECT)

Principal Investigator, National Institutes of Health

The Center for Research on Early Childhood Exposure and Development in Puerto Rico (CRECE)

Director and Principal Investigator, National Institutes of Health/ Environmental Protection Agency

Induced Partial Saturation (IPS) Through Transport and Reactivity for Liquefaction Mitigation

Co-Principal Investigator, National Science Foundation

JOSEPH AYERS



Professor, Marine and Environmental Sciences;
affiliated faculty: Bioengineering, Civil and
Environmental Engineering, Electrical and
Computer Engineering

PhD, University of California, Santa Cruz, 1975
coe.neu.edu/people/ayers-joseph

Scholarship focus: development of
underwater robots for civil infrastructure and explosive sensing;
neurophysiology and behavior biomimetics

SELECTED PUBLICATIONS

- L.L. McGrath, S.V. Vollmer, S.T. Kaluziak, J. Ayers
De Novo Transcriptome Assembly for the Lobster *Homarus americanus* and Characterization of Differential Gene Expression Across Nervous System Tissues, *BMC Genomics*, 17, 2016, 3-12
- J. Ayers
Underwater Vehicles Based on Biological Intelligence, *ASME Journal of Dynamic Systems, Measurement and Control*, 138, 2016, 1-5
- L. Zhu, A.I. Selverston, J. Ayers
The Role of Ih in Differentiating the Dynamics of the Gastric Mill and Pyloric Neurons in the Stomatogastric Ganglion of the Lobster, *Homarus americanus*, *Journal of Neurophysiology*, 115(5), 2016, 2434-45
- J. Lu, J. Yang, Y.-B. Kim, J. Ayers, K.K. Kim
Implementation of Excitatory CMOS Neuron Oscillator for Robot Motion Control Unit, *Journal of Semiconductor Technology and Science*, 14(4), 2014, 383-390
- L. Lewis, J. Ayers
Temperature Preference and Acclimation in the Jonah Crab, *Cancer Borealis*, *Journal of Experimental Marine Biology and Ecology*, 455, 2014, 7-13
- J. Ayers, D. Blustein, A. Westphal
A Conserved Biomimetic Control Architecture for Walking, Swimming and Flying Robots, *Lecture Notes in Artificial Intelligence*, 2012, 1-12

SELECTED RESEARCH PROJECTS

- Biomimetics of Jellyfish Tentacles
Principal Investigator, Schlumberger Doll, Inc
- RoboBees: A Convergence of Body, Brain and Colony
Principal Investigator, National Science Foundation
- Modernization and Enhancement of the Seawater System and Research Infrastructure at Northeastern University's Marine Science Center
Co-Principal Investigator, National Science Foundation
- Utilizing Synthetic Biology to Create Programmable Micro-Bio-Robots
Co-Principal Investigator, Office of Naval Research

R. EDWARD BEIGHLEY



Associate Professor and Associate Chair for
Undergraduate Studies, Civil and Environmental
Engineering; affiliated faculty, Marine and
Environmental Sciences

PhD, University of Maryland, 2001
civ.neu.edu/people/beighley-edward

Scholarship focus: hydrologic and hydraulic
modeling; remote sensing of the hydrologic
cycle; hydrologic impacts of climate and/or land use change;
flood hazard and risk assessment

Honors and awards: College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

- F. Schenck, T.C. Hanley, R.E. Beighley, A.R. Hughes
Phenotypic Variation Among Invasive *Phragmites Australis* Populations Does Not Influence Salinity Tolerance, *Estuaries and Coasts*, 41(3), 2018, 896-907
- R. Raoufi, and R.E. Beighley,
Estimating Daily Global Evapotranspiration Using Penman-Monteith Equation and Remotely Sensed Land Surface Temperature, *Remote Sensing*, 9(11), 2017, 1138
- T. Yuan, H. Lee, H.C. Jung, A. Aierken, E. Beighley, D.E. Alsdorf, R.M. Tshimanga, D. Kim
Absolute water storages in the Congo River floodplains from integration of InSAR and satellite radar altimetry, *Remote Sensing of the Environment*, 201, 2017, 57-72
- Kim, D., H. Lee, A. Laraque, R.M. Tshimanga, T. Yuan, H.C. Jung, E. Beighley, C.H. Chan,
Mapping Spatio-Temporal Water Level Variations Over the Central Congo River using PALSAR ScanSAR and Envisat Altimetry Data, *International Journal of Remote Sensing*, 38(23), 2017, 7021-7040
- F. Hossain, E. Beighley, S. Burian, J. Chen, A. Mitra, D. Niyogi, R. A. Pielke, D. Wegner
A Review of Approaches and Recommendations for Improving Resilience of Water Management Infrastructure: The Case for Large Dams, *ASCE Journal of Infrastructure Systems*, 23(4), 2017

SELECTED RESEARCH PROJECTS

- Integrating Lateral Contributions and Longitudinal Controls Along River Reaches to Improve SWOT Discharge Estimates
Principal Investigator, National Aeronautics and Space Administration, SWOT Science Team
- Integration of SWOT Measurements into Global Hydrologic Models
Co-Principal Investigator, National Aeronautics and Space Administration, SWOT Science Team
- Collaborative Research: Reevaluating precipitation extremes and flood hazard in the wake of Hurricane Harvey
Co-Principal Investigator, National Science Foundation, Hydrologic Sciences

DIONISIO BERNAL



Professor, Civil and Environmental Engineering

PhD, University of Tennessee, 1979
civ.neu.edu/people/bernal-dionisio

Scholarship focus: system identification, fault detection and fault localization, earthquake engineering, soil structure interaction, structural stability

Honors and awards: Moisseiff Award, American Society of Civil Engineers

SELECTED PUBLICATIONS

- D. Bernal
 Eigenvalue Sensitivity of Sampled Systems Operating in Closed-Loop, *Mechanical Systems and Signal Processing*, 105, 2018, 481-487
- D. Bernal
 State Observers in the Design of Eigenstructures for Enhanced Sensitivity, *Mechanical Systems and Signal Processing*, 110, 2018, 122-129
- D. Bernal, M.R. Ulriksen
 Output Feedback in the Design of Eigenstructures for Enhanced Sensitivity, *Mechanical Systems and Signal Processing*, 112, 2018, 22-30
- M.D. Ulriksen, D. Bernal, L. Damkilde
 Shaped Input Distributions for Structural Damage Localization, *Mechanical Systems and Signal Processing*, 110, 2018, 499-508
- D. Bernal
 Analytical Minimization of Synchronicity Errors in Stochastic Identification, *Mechanical Systems and Signal Processing*, 98, 2017, 415-424
- Y. Zhang, D. Bernal
 Non-recursive Sequential Input Deconvolution, *Mechanical Systems and Signal Processing*, 2016

SELECTED RESEARCH PROJECTS

Monitoring the Health of Structural Systems from the Geometry of Sensor Traces
 Principal Investigator, National Science Foundation

LUCA CARACOGLIA



Associate Professor, Civil and Environmental Engineering; affiliated faculty, Mechanical and Industrial Engineering

PhD, University of Trieste, 2001
civ.neu.edu/people/caracoglia-luca

Scholarship focus: structural dynamics; wind engineering; wind energy; wind-induced vibration, cable dynamics; climate change

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

- L. Caracoglia
 Modeling the Coupled Electro-Mechanical Response of a Torsional-Flutter-Based Wind Harvester with a Focus on Energy Efficiency Examination, *Journal of Wind Engineering and Industrial Aerodynamics*, 174, 2018, 437-450
- V. Le, L. Caracoglia
 Computationally Efficient Stochastic Approach for the Fragility Analysis of Vertical Structures Subjected to Thunderstorm Downburst Winds, *Engineering Structures*, 176, 2018, 152-169
- W. Cui, L. Caracoglia
 A Unified Framework for Performance-Based Wind Engineering of Tall Buildings in Hurricane-Prone Regions Based on Lifetime Intervention-Cost Estimation, *Structural Safety*, 73, 2018, 75-86
- W. Cui, L. Caracoglia
 A Fully-Coupled Generalized Model for Multi-Directional Wind Loads on Tall Buildings: A Development of the Quasi-Steady Theory, *Journal of Fluids and Structures*, 78, 2018, 52-68
- F. Rizzo, L. Caracoglia
 Examination of Experimental Errors in Scanlan Derivatives of a Closed-Box Bridge Deck, *Wind and Structures*, 26(4), 2018, 231-251
- L. Ierimonti, I. Venanzi, L. Caracoglia
 Life-Cycle Damage-Based Cost Analysis of Tall Buildings Equipped with Tuned Mass Dampers, *Journal of Wind Engineering and Industrial Aerodynamics*, 176, 2018, 54-64
- G. Abbiati, V. La Salandra, O.S. Bursi, L. Caracoglia
 A Composite Experimental Dynamic Substructuring Method Based on Partitioned Algorithms and Localized Lagrange Multipliers, *Mechanical Systems and Signal Processing*, 100, 2018, 85-112
- T.H. Le, L. Caracoglia
 Computer-based Model for the Transient Dynamics of a Tall Building during Digitally Simulated Andrews AFB Thunderstorm, *Computers and Structures*, 193, 2017, 44-72

SELECTED RESEARCH PROJECTS

Collaborative Research: Active Control of Nonlinear Flow-Induced Instability of Wind Turbine Blades under Stochastic Perturbations
 Principal Investigator, National Science Foundation

QIN JIM CHEN



Professor, Civil and Environmental Engineering;
jointly appointed, Marine and Environmental
Sciences

PhD, Old Dominion University, 1997
civ.neu.edu/people/chen-qin-jim

Scholarship focus: coastal engineering and science, particularly in coastal hydrodynamics, fluid-structure interactions, natural and nature-based solutions, coastal hazard assessment and mitigation, and numerical modeling for coastal resiliency and sustainability

Honors and awards: James M. Todd Technological Accomplishment Medal, LES-BTR, 2018; Best Paper Award, Louisiana Association of Professional Biologists, 2017; LSU Rainmakers Award for innovative research, 2009; National Science Foundation (NSF) CAREER Award, 2006

SELECTED PUBLICATIONS

- K. Liu, Q. Chen, K. Hu, K. Xu, R. Twilley
Modeling Hurricane-Induced Wetland-Bay and Bay-Shelf Sediment Fluxes, *Coastal Engineering*, 135, 2018, 77-90
- K. Hu, Q. Chen, H. Wang, E.K. Hartig, P.M. Orton
Numerical Modeling of Salt Marsh Morphological Change Induced by Hurricane Sandy, *Coastal Engineering* 132, 2018, 63-81
- L. Zhu, Q. Chen, Y. Ding, N. Jafari J.D. Rosati,
A Semi-Analytical Model of Depth-Integrated Vegetal Drag Force Based on Stokes Second-Order Wave Theory, *Journal of Waterway, Port, Coastal and Ocean Engineering*, 2018
- Q. Chen, W. Wu, L. Zhu
Recent Developments in Numerical Modeling of Coastal Hydrodynamics and Sediment Transport, *Advances In Coastal Hydraulics*, 2018, 145-198
- T. Everett, Q. Chen, K. Karimpour, R. Twilley
Quantification of Swell Energy and its Impact on Wetlands in a Deltaic Estuary, *Estuaries and Coasts*, 2018

SELECTED RESEARCH PROJECTS

- A Coastal Resilience Collaboratory: Cyber-enabled Discoveries for Sustainable Deltaic Coasts
Principal Investigator, National Science Foundation
- Collecting Ecological Data and Models of Living Shoreline Restoration Projects (MD, NJ, NY, VA).
Principal Investigator, U.S. Geological Survey
- Updating USACE's Nearshore Coastal Numerical Model to Calculate Benefits of Vegetated Shorelines
Principal Investigator, U.S. Army Corps of Engineers
- Integrating High-Fidelity Models with New Remote Sensing Techniques to Predict Storm Impacts on Louisiana Coastal and Deltaic Systems.
Principal Investigator, Department of the Treasury RESTORE Act Center of Excellence for Louisiana
- Coastal Flood Prediction and Mitigation: Integrating High-Fidelity Computer Models with Field Observations.
Principal Investigator, Global Resilience Institute

MATTHEW ECKELMAN



Associate Professor and Associate Chair for
Research, Civil and Environmental Engineering;
affiliated faculty, Chemical Engineering, Marine and
Environmental Sciences, Public Policy and Urban
Affairs

PhD, Yale University, 2009
civ.neu.edu/people/eckelman-matthew

Scholarship focus: environmental engineering and sustainability; life cycle assessment; energy efficiency and emissions modeling; environmental assessment of bio and nanomaterials; material and energy use in urban buildings and infrastructure

Honors and awards: National Science Foundation CAREER Award; International Laudise Prize in Industrial Ecology

SELECTED PUBLICATIONS

- R. Phillips, L. Troup, D.J. Fannon, M.J. Eckelman
Do Resilient and Sustainable Design Strategies Conflict in Commercial Buildings?, *Building and Environment*, 146, 2017, 295-311
- M.J. Eckelman, J.S. Sherman
Environmental Impacts of the US Healthcare System and Effects on Public Health, *PLoS ONE*, 11(6), 2016, e0157014
- Q. Tu, M.J. Eckelman, J.B. Zimmerman
Meta-analysis and Harmonization of Life Cycle Assessment (LCA) Studies for Algae Biofuels, *Environmental Science & Technology* 51(17), 2017, 9419-9432
- L. Pourzahedi, M. Vance, M.J. Eckelman
Life Cycle Assessment and Release Studies for 15 Nanosilver-Enabled Consumer Products: Investigating Hotspots and Patterns of Contribution, *Environmental Science & Technology* 51(12), 2017, 7148-7158
- M. Saha, M.J. Eckelman
A Geospatial Assessment of Ground Level and Rooftop Urban Agriculture Potential in Boston, USA, *Landscape and Urban Planning* 165, 2017, 130-141

SELECTED RESEARCH PROJECTS

- Air Climate and Energy Center—SEARCH: Solutions for Energy Air Climate and Health
Senior Personnel, Environmental Protection Agency
- CAREER: Building Chemical Synthesis Networks for Life Cycle Hazard Modeling
Principal Investigator, National Science Foundation
- Ethics Education in Life Cycle Design, Engineering, and Management
Principal Investigator, National Science Foundation
- RSB: A Decision and Design Framework for Multi-Hazard Resilient and Sustainable Buildings
Co-Principal Investigator, National Science Foundation

DAVID FANNON



Assistant Professor, School of Architecture; jointly appointed, Civil and Environmental Engineering

MS, University of California, Berkeley, 2015
civ.neu.edu/people/fannon-david

Scholarship focus: sustainable and high performance building design; resilient buildings; human comfort within the

built environment

SELECTED PUBLICATIONS

H. Deng, D. Fannon, M. Eckelman

Predictive Modeling for US Commercial Building Energy Use: A Comparison of Existing Statistical and Machine Learning Algorithms using CBECS Microdata, *Energy and Buildings*, 163, 2018, 34-43

R. Philips, L. Troup, D. Fannon, M. Eckelman

Do Resilient and Sustainable Design Strategies Conflict in Commercial Buildings? A Critical Analysis of Existing Resilient Building Frameworks and Their Sustainability Implications, *Energy and Buildings*, 146, 2017, 295-311

M. Laboy, D. Fannon

Theory and Praxis: a Critical Framework for Architecture, *Enquiry the Architectural Research Centers Consortium Journal*, 13(2), 2016

D. Fannon, M. Laboy

Teaching Building Science in Design Studio, *Journal of the National Institute of Building Science*, 4(6), 2016, 22-25

SELECTED RESEARCH PROJECTS

Building Resilience: A Tool for Adaptability Planning and Decision-Making

Co-Principal Investigator, Northeastern University

Decision Frameworks for Resilient and Sustainable Buildings

Co-Investigator, National Science Foundation

Future-Use Architecture: Design for Persistent Change

Principal Investigator, Latrobe Prize, American Institute of Architects, College of Fellows

LORETTA FERNANDEZ



Assistant Professor, Civil and Environmental Engineering; jointly appointed, Marine and Environmental Sciences

PhD, MIT, 2010

civ.neu.edu/people/fernandez-loretta

Scholarship focus: environmental organic chemistry; passive sampling methods

for organic contaminants in water and sediments; transport, transformation, and biological exchange of organic contaminants in the environment

Honors and awards: Research Associateship, National Research Council; Graduate Research Fellowship, National Science Foundation

SELECTED PUBLICATIONS

S.N. Schmidt, A.P. Wang, P.T. Gidley, A.H. Wooley, G.R. Lotufo, R.M. Burgess, U. Ghosh, L.A. Fernandez, P. Mayer

Cross Validation of Two Partitioning-Based Sampling Approaches in Mesocosms Containing PCB Contaminated Field Sediment, Biota, and Activated Carbon Amendment, *Environmental Science & Technology*, 51(17), 2017, 9996-10004.

T.S. Bridges, A.J. Kennedy, G.R. Lotufo, J.G. Coleman, C.E. Ruiz, J.H. Lindsay, J.A. Steevens, A. Wooley, G. Matisoff, P. McCall, E. Kaltenberg, R.M. Burgess, and L.A. Fernandez

The Biology of Bioavailability: The Role of Functional Ecology in Exposure Processes, *U.S. Army Research and Development Center*, 17(2), 2017

L. Fernandez, P.M. Gschwend

Predicting Bioaccumulation of Polycyclic Aromatic Hydrocarbons in Soft-Shell Clams (*Mya arenaria*) Using Field Deployments of Polyethylene Passive Samplers, *Environmental Toxicology and Chemistry*, 34(5), 2015, 993-1000

SELECTED RESEARCH PROJECTS

Tide Gate Modulation of Wetland Function: Decision Support Through Engineering Best Practices

Co-Investigator, National Science Foundation

Laboratory and Field Pilot Study on Using Polyethylene Passive Samplers to Monitor Potential PCB Transport Across the Engineered Cap at the Grasse River Superfund Site

Principal Investigator, U.S. EPA

STEPHEN FLYNN



Professor, Political Science; Founding Director, Global Resilience Institute; affiliated faculty, Civil and Environmental Engineering

PhD, Tufts University, 1991
civ.neu.edu/people/flynn-stephen

Scholarship focus: critical infrastructure resilience; public policy

SELECTED PUBLICATIONS

S. Flynn

Boston Under Snow: Resilience Lessons for the Nation, A Center for Resilience Studies Assessment, Northeastern University, 2016

S. Flynn

The South Carolina Deluge: Lessons from a Watershed Disaster, A Center for Resilience Studies Assessment, Northeastern University, 2016

S. Flynn

The Role of Community Resilience in Advancing Security, State, Society, and National Security: Challenges and Opportunities in the 21st Century, Jayakumar, S. (Ed.) Singapore: World Scientific Publishing, 2016

S. Flynn

Bolstering Critical Infrastructure Resilience After Superstorm Sandy: Lessons for New York and the Nation, Northeastern University, 2015

S. Flynn

International Resilience Symposium: Understanding Standards for Communities and Built Infrastructure Resilience, National Institute of Standards and Technology, 2015

I. Linkov, D. Eisenberg, M. Bates, D. Chang, M. Convertino, J. Allen, S. Flynn, T. Seager

Measurable Resilience for Actionable Policy, Environmental Science and Technology, 47(18), 2013, 10108-10110

SELECTED RESEARCH PROJECTS

Bolstering Counter-Proliferation Efforts within Global Supply Chains

Principal Investigator, MacArthur Foundation

CRISP Type 2: Interdependent Network-based Quantification of Infrastructure Resilience (INQUIRE)

Co-Principal Investigator, National Science Foundation

Learning from Major Disasters that Disrupt Lifeline-infrastructure

Principal Investigator, U.S. Department of Homeland Security

Resilience Governance for Infrastructure Dependencies and Interdependencies

Principal Investigator, Critical Infrastructure Resilience Institute

PETER FURTH



Professor, Civil and Environmental Engineering

PhD, MIT, 1981
civ.neu.edu/people/furth-peter

Scholarship focus: traffic signal control; bicycle transportation; transit operations modeling; transit data collection and sampling

SELECTED PUBLICATIONS

M.B. Lowry, P. Furth, T. Hadden-Loh

Prioritizing New Bicycle Facilities to Improve Low-Stress Network Connectivity, Transportation Research, 86, 2016, 124-140

B. Cesme, P. Furth

Self-Organizing Traffic Signals using Secondary Extension and Dynamic Coordination, Transportation Research Part C, 48, 2014, 1-15

P. Furth, B. Cesme, T.H.J. Muller

Lost Time and Cycle Length for an Actuated Traffic Signal, Transportation Research Record: Journal of the Transportation Research Board, 2009, 2128, 152-160

P. Furth, T.H. Muller

Conditional Bus Priority at Signalized Intersections: Better Service with Less Traffic Disruption, Journal of the Transportation Research Board, 1731, 2000, 23-30

SELECTED RESEARCH PROJECTS

Self-Organizing Traffic Signals

Principal Investigator, National Science Foundation

Bicycle Network Analysis

Principal Investigator, Delaware Department of Transportation

AUROOP GANGULY



Professor, Civil and Environmental Engineering;
affiliated faculty, Marine and Environmental
Sciences

PhD, MIT, 2002
civ.neu.edu/people/ganguly-auroop

Scholarship focus: climate extremes and
water sustainability; critical infrastructures

and homeland security; nonlinear dynamics and artificial
intelligence

Honors and awards: Runner-up Best Paper Award, ACM KDD
2017; First Prize at AGU Virtual Poster Spring 2017; Lead Author
for Artificial Intelligence section in Sustained US National Climate
Assessments; United Nations Environment Program Review
Panel

SELECT PUBLICATIONS

A.R. Ganguly, U. Bhatia, S. Flynn

Critical Infrastructures Resilience: Policy and Engineering
Principles. Routledge, Taylor & Francis, 2018, 131 pages

T. Vandal, E. Kodra, S. Ganguly, A. Michaelis, R. Nemani, A.R.
Ganguly

Generating High Resolution Climate Change Projections
through Single Image Super-Resolution: An Abridged Version,
IJCAI 2018, 27th International Joint Conference on Artificial
Intelligence, 2018

T. Vandal, E. Kodra, J. Dy, S. Ganguly, R. Nemani, and A.R.
Ganguly

Quantifying Uncertainty in Discrete-Continuous and Skewed
Data with Bayesian Deep Learning, KDD, 24th ACM SIGKDD
Conference on Knowledge Discovery and Data Mining, 2018

K. Clark, U. Bhatia, E. Kodra, A.R. Ganguly
Resilience of the US National Airspace System Airport Network.
IEEE Transactions on Intelligent Transportation Systems,
PP(99), 2018

P. Ganguli, D. Kumar, A.R. Ganguly

US Power Production at Risk from Water Stress in a Changing
Climate. Scientific Reports, Nature Publishing Group, 7, 2017,
11983

SELECTED RESEARCH PROJECTS

Deep Machine Learning in the Earth Sciences

Principal Investigator, National Aeronautics and Space
Administration

High-Dimensional Statistical Machine Learning for Spatio-
Temporal Data, with applications to Climate Science

Principal Investigator, National Science Foundation

Interdependent Network-Based Quantification of Infrastructure
Resilience (INQUIRE)

Co-Principal Investigator, National Science Foundation

Spatio-Temporal Extremes & Association: Marine Adaptation
and Survivability under Climate change and Rising Ocean
Temperatures

Co-Principal Investigator, National Science Foundation

Understanding Climate Change: A Data-Driven Approach

Co-Principal Investigator, National Science Foundation

EDGAR GOLUCH



Associate Professor, Chemical Engineering;
affiliated faculty, Bioengineering, Civil and
Environmental Engineering

PhD, University of Illinois, 2007
che.neu.edu/people/goluch-edgar

Scholarship focus: detection of biomolecules
at the nanoscale, specifically inside micro and

nanofluidic channels. This is applied to a broad range of scientific
fields including: biophysics, micro and systems biology, ecology,
environmental sensing, and analytical instrumentation

SELECTED PUBLICATIONS

J. Sun, N. Tandogan, A.Z. Gu, S. Müftü, E.D. Goluch, K.T. Wan
Quantification of Colloidal Filtration of Polystyrene Micro-
Particles on Glass Substrate Using a Microfluidic Device,
Colloids and Surfaces B: Biointerfaces 165, 2018, 381-387

C.R. Santiveri, H.J. Sismaet, M. Kimani, E.D. Goluch
Electrochemical Detection of Pseudomonas Aeruginosa in
Polymicrobial Environments, ChemistrySelect, 3(11), 2018
2926-2930

H.J. Sismaet, E.D. Goluch
Electrochemical Probes of Microbial Community Behavior
Annual Review of Analytical Chemistry, 2018

P.N. Abadian, P.J. Buch, E.D. Goluch, J. Li, Z. Zhang
Real-Time Monitoring of Urinary Encrustation Using a Quartz
Crystal Microbalance, Analytical chemistry 90 (3), 2018,
1531-1535

E.D. Goluch
Microbial Identification Using Electrochemical Detection of
Metabolites, Trends in Biotechnology, 35(12), 2017, 1125-1128

H.J. Sismaet, A.J. Pinto, E.D. Goluch
Electrochemical Sensors for Identifying Pyocyanin Production
in Clinical Pseudomonas Aeruginosa Isolates, Biosensors and
Bioelectronics 97, 2017, 65-69

Device and Method for High Throughput Bacterial Isolation

N. Tandogan, P.N. Abadian, B. Huo, E.D. Goluch
Characterization of Bacterial Adhesion and Biofilm Formation,
Antimicrobial Coatings and Modifications on Medical Devices,
2017, 67-95

SELECTED RESEARCH PROJECTS

SBIR Phase I: Point-of-Care Test for Identifying Gram-Negative
Urinary Tract Infections in Companion Animals

Principal Investigator, National Science Foundation

TARIK GOUHIER



Associate Professor, College of Science; affiliated faculty, Civil and Environmental Engineering

PhD, McGill University, 2010
civ.neu.edu/people/gouhier-tarik

Scholarship focus: statistical and dynamical modeling; theoretical ecology

SELECTED PUBLICATIONS

- P. Pillai, T.C. Gouhier, S.V. Vollmer
 Ecological Rescue of Host-Microbial Systems Under Environmental Change, *Theoretical Ecology*, 10, 2017, 51-63
- B. Spiecker, T.C. Gouhier, F. Guichard
 Reciprocal Feedbacks Between Spatial Subsidies and Reserve Networks in Coral Reef Meta-Ecosystems, *Ecological Applications*, 26(1), 2016, 264-278
- D. Wang, T.C. Gouhier, B.A. Menge, A.R. Ganguly
 Intensification and Spatial Homogenization of Coastal Upwelling Under Climate Change, *Nature*, 518, 2015, 390-394
- P. Pillai, T.C. Gouhier, S.V. Vollmer
 The Cryptic Role of Biodiversity in the Emergence of Host-Microbial Mutualisms, *Ecology Letters*, 17(11), 2014, 1437-1446
- T.C. Gouhier, F. Guichard, B.A. Menge
 Designing Effective Reserve Networks for Non-equilibrium Metacommunities, *Ecological Applications*, 23(6), 2013, 1488-1503
- T.C. Gouhier, F. Guichard, B.A. Menge
 Ecological Processes Can Synchronize Marine Population Dynamics Over Continental Scales, *Proceedings of the National Academy of Sciences of the United States of America*, 107(18), 2010, 8281-8286

SELECTED RESEARCH PROJECTS

- Coral-Microbial Interactions as Determinants of Disease Dynamics
 Principal Investigator, National Science Foundation
- The Effects of Fine-Scale Temperature and Desiccation Variability on the Distribution of Marine Species
 Co-Principal Investigator, National Science Foundation
- Integrating Broad-Scale Regional Variation in Environmental Forcing and Benthic-Pelagic Coupling
 Co-Principal Investigator, National Science Foundation
- Spatio-Temporal Extremes and Association: Marine Adaptation and Survivability Under Climate change and Rising Ocean Temperatures
 Co-Principal Investigator, National Science Foundation

JONATHAN GRABOWSKI



Associate Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, University of North Carolina at Chapel Hill, 2012
civ.neu.edu/people/grabowski-jonathan

Scholarship focus: environmental science and policy, fisheries, ecological economics

SELECTED PUBLICATIONS

- P.S.E. Zu Ermgassen, J.H. Grabowski, J.R. Gair, S.P. Powers
 Quantifying Fish and Mobile Invertebrate Production from a Threatened Nursery Habitat, *Journal of Applied Ecology*, 53, 2016, 596-606
- L.F. Dodd, J.H. Grabowski, M.F. Piehler, I. Westfield, J.B. Ries
 Ocean Acidification Impairs Crab Foraging Behavior, *Proceedings of the Royal Society B*, 282, 2015
- D.L. Kimbro, J.E. Byers, J.H. Grabowski, A.R. Hughes, M.F. Piehler
 The Biogeography of Trophic Cascades on U.S. Oyster Reefs, *Ecology Letters*, 17, 2014, 845-854
- A.B. Rodriguez, F.J. Fodrie, J.T. Ridge, N. Lindquist, E.J. Theuerkauf, S.E. Coleman, J.H. Grabowski, et al.
 Will Oyster Reefs Keep their Heads Above Water?, *Nature Climate Change*, 2014, 493-497
- M.D. McMahon, D.C. Brady, D. Cowan, J.H. Grabowski, G.D. Sherwood
 Using Fine-Scale Acoustic Telemetry to Observe the Effects of a Groundfish Predator (Atlantic cod, *Gadus morhua*) on the Movement Behavior of the American Lobster (*Homarus americanus*), *Canadian Journal of Fisheries and Aquatic Sciences* 70(11), 2013, 1625-1634
- J.H. Grabowski, R.D. Brumbaugh, R. Conrad, A.G. Keeler, et al.
 Economic Valuation of Ecosystem Services Provided by Oyster Reefs, *BioScience*, 632, 2012, 900-909
- P.S.E. Zu Ermgassen, M.D. Spalding, B. Blake, L.D. Coen, B. Dumbauld, S. Geiger, J.H. Grabowski, et al.
 Historical Ecology with Real Numbers: Past and Present Extent and Biomass of an Imperiled Estuarine Habitat, *Proceedings of the Royal Society B*, 279, 2012, 3393-3400

SELECTED RESEARCH PROJECTS

- Aligning Coastal Restoration with Ecological and Societal Needs
 Principal Investigator, National Center for Ecological Analysis and Synthesis
- Assessing Social Impacts in Groundfish Fishing Communities
 Principal Investigator, National Oceanic and Atmospheric Administration
- Social and Ecological Factors Influencing Shoreline Hardening in the Northeast: Implications for Vulnerability, Resilience and Informed Decision Making
 Principal Investigator, Northeast Sea Grant College Consortium

JEROME HAJJAR



CDM Smith Professor and Chair, Civil and Environmental Engineering; affiliated faculty, Marine and Environmental Sciences

PhD, Cornell University, 1988
civ.neu.edu/people/hajjar-jerome

Scholarship focus: steel and composite steel/concrete structures; earthquake engineering; structural stability; large-scale experimental

testing of structures; regional simulation

Honors and awards: Fellow, American Society of Civil Engineers; Fellow, Structural Engineering Institute; Norman Medal, American Society of Civil Engineers; Shortridge Hardesty Award, American Society of Civil Engineers; Moisseiff Award, American Society of Civil Engineers; T.R. Higgins Lectureship Award, American Institute of Steel Construction; Special Achievement Award, American Institute of Steel Construction; Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers; Breakthrough Award, Popular Mechanics; Clemens Hershel Award, Boston Society of Civil Engineers

SELECTED PUBLICATIONS

- J.S. Steelman, L.A. Fahnestock, J.F. Hajjar, J.M. LaFave
Cyclic Experimental Behavior of Nonseismic Elastomeric Bearings with Stiffened Angle Side Retainer Fuses for Quasi-Isolated Seismic Bridge Response, *Journal of Bridge Engineering*, ASCE, 23(1), 2018, 04017120
- B. Güldür Erkal, J.F. Hajjar
Laser-Based Surface Damage Detection and Quantification Using Predicted Surface Properties, *Automation in Construction*, 83, 2017, 285-302
- D. Deniz, J. Song, J.F. Hajjar
Energy-based Seismic Collapse Criterion for Ductile Structural Frames, *Engineering Structures*, 141, 2017, 1-13
- V.V. Saykin, T.H. Nguyen, J.F. Hajjar, D. Deniz, J. Song
Material Characterization Using Finite Element Deletion Strategies for Collapse Modeling of Steel Structures, *Engineering Structures*, 147, 2017, 125-133
- T.H. Nguyen, C.H. Le, J.F. Hajjar
Topology Optimization Using the P-version of the Finite Element Method, *Structural and Multidisciplinary Optimization*, 56(3), 2017, 571-586
- K. Wei, S.R. Arwade, A.T. Myers, S. Hallowell, J.F. Hajjar, E.M. Hines, W. Pang
Toward Performance-based Evaluation for Offshore Wind Turbine Jacket Support Structures, *Renewable Energy*, 97, 2016, 701-721
- M.R. Denavit, J.F. Hajjar, T. Perea, R.T. Leon
Stability Analysis and Design of Composite Structures, *Journal of Structural Engineering*, ASCE, 142(3), 2016, 04015157

SELECTED RESEARCH PROJECTS

- Post-Disaster Infrastructure Assessment with Non-conventional Operations (PIANO) of Unmanned Aerial Systems
Co-Principal Investigator, Department of Homeland Security
- CRISP Type 2: Identification and Control of Uncertain, Highly Interdependent Processes Involving Humans with Applications to Resilient Emergency Health Response
Co-Principal Investigator, National Science Foundation
- Collaborative Research: Transforming Building Structural Resilience Through Innovation in Steel Diaphragms
Co-Principal Investigator, National Science Foundation

BRIAN HELMUTH



Professor, Marine and Environmental Sciences; jointly appointed, School of Public Policy and Urban Affairs; affiliated faculty, Civil and Environmental Engineering

PhD, University of Washington, 1997
civ.neu.edu/people/helmuth-brian

Scholarship focus: ecological forecasting and resilience of coastal environments

Honors and awards: Google Science Communications Fellow

SELECTED PUBLICATIONS

- C.D.G. Harley, S.D. Connell, Z.A. Doubleday, B. Kalaher, B.D. Russell, G. Sará, B. Helmuth
Conceptualizing Ecosystem Tipping Points within a Physiological Framework, *Ecology and Evolution*, 2017
- K.J. Kroeker, E. Sanford, J.M. Rose, C.A. Blanchette, F. Chan, F.P. Chavez, B. Gaylord, B. Helmuth, T.M. Hill, G.E. Hofmann, M.A. McManus, B.A. Menge, K.J. Nielsen, P.T. Raimondi, A.D. Russell, L. Washburn
Interacting Environmental Mosaics Drive Geographic Variation in Mussel Performance and Species Interactions, *Ecology Letters*, 19, 2016, 771-779
- B. Helmuth, B.D. Russell, S.D. Connell, Y. Dong, C.D.G. Harley, F.P. Lima, G. Sará, G.A. Williams, N. Mieszkowska
Beyond Long-Term Averages: Making Biological Sense of a Rapidly Changing World, *Climate Change Responses*, 1, 2014, 10-20
- L.E. Petes, J.F. Howard, B. Helmuth, E.K. Fly
Science Integration into US Climate and Ocean Policy, *Nature Climate Change*, 4(8), 671-677
- R. Griffis, J. Howard, E. Babij, B. Helmuth, A. Himes-Cornell, P. Niemier, M. Orbach, L. Petes, et. al
Oceans and Marine Resources in a Changing Climate: A Technical Input to the 2013 National Climate Assessment, Island Press, 2013
- M. Kearney, A. Matzelle, B. Helmuth
Biomechanics Meets the Ecological Niche: The Importance of Temporal Data Resolution, *Journal of Experimental Biology*, 215, 2012, 922-933

SELECTED RESEARCH PROJECTS

- Predicting how Fine-Scale Temperature Variation will Affect the Spatial Distribution and Temporal Stability of Species and Communities Under Climate Change
Principal Investigator, National Science Foundation
- Using an Energetics Framework to Forecast the Interactive Effects of Abiotic and Biotic Stressors on Intertidal Mussels
Principal Investigator, National Science Foundation
- A Temperature Sensor Network to Study Public Health and Community Resilience Impacts of Heat Waves at Micro-Spatial Levels in the Town of Brookline
Co-Principal Investigator, Northeastern University

A. RANDALL HUGHES



Associate Professor, Marine and Environmental Sciences; affiliated faculty, Civil and Environmental Engineering

PhD, University of California-Davis, 2006
hugheslab.squarespace.com

Scholarship focus: marine community ecology and biodiversity

SELECTED PUBLICATIONS

A.R. Hughes, J.H. Grabowski, H.M. Leslie, S. Scyphers, S.L. Williams

Inclusion of Biodiversity in Habitat Restoration Policy to Facilitate Ecosystem Recovery, *Conservation Letters*, 11(3), 2018, e12419

A.R. Hughes, J. Cebrian, K. Heck, J. Goff, T.C. Hanley, W. Scheffell, R.A. Zerebecki

Effects of Oil Exposure, Plant Species Composition, and Plant Genotypic Diversity on Salt Marsh and Mangrove Assemblages, *Ecosphere*, 9, 2018, e02207

R. Zerebecki, G.M. Crutsinger, A.R. Hughes

Spartina alterniflora Genotypic Identity Affects Plant-Plant and Plant-Animal Interactions in an Experimental Marsh Community, *Journal of Ecology*, 2017

A.R. Hughes, F.R. Schenck, J. Bloomberg, T.C. Hanley, D. Feng, T.C. Gouhier, R.E. Beighley, D.L. Kimbro

Biogeographic Gradients in Ecosystem Processes of the Invasive Ecosystem Engineer *Phragmites australis*, *Biological Invasions*, 18(9), 2016, 2577-2595

A.R. Hughes, T.C. Hanley, F.R. Schenck, C.G. Hays

Genetic Diversity of Seagrass Seeds Influences Seedling Morphology and Biomass, *Ecology*, 97, 2016, 3538-3546

T.C. Hanley, A.R. Hughes, B. Williams, H. Garland, D.L. Kimbro
Effects of Intraspecific Diversity on Survivorship, Growth, and Recruitment of the Eastern Oyster Across Sites, *Ecology*, 97, 2016, 1518-1529

A.R. Hughes, T.C. Hanley, N.P. Orozco, R.A. Zerebecki

Consumer Trait Variation Influences Tritrophic Interactions in Salt Marsh Communities, *Ecology and Evolution*, 5, 2015, 2659-2672

SELECTED RESEARCH PROJECTS

Alabama Center for Ecological Resilience

Principal Investigator, Gulf of Mexico Research Initiative

CAREER: Linking Genetic Diversity, Population Density, and Disease Prevalence in Marine Foundation Species: Integrating Research, Education, and Stakeholder Knowledge to Enhance Resilience of Seagrass and Oyster Ecosystems

Principal Investigator, National Science Foundation
Biological Oceanography

Effects of Genetic Diversity, Epigenetic Change, and Root-Associated Fungal Colonization on Trait Variation in the Foundation Plant *Spartina alterniflora*

Principal Investigator, National Science Foundation

MICHAEL KANE



Assistant Professor, Civil and Environmental Engineering

PhD, University of Michigan, 2014
civ.neu.edu/people/kane-michael

Scholarship focus: model predictive control; wireless control systems; automatic control of complex infrastructure systems

SELECTED PUBLICATIONS

M.B. Kane, L.P. Jerome, J. Scruggs

Development of a Scalable Distributed Model Predictive Control System for Hydronic Networks with Bilinear and Hybrid Dynamics, *Journal of Computing in Civil Engineering*, 32(5), 2018, 04018038

M. B. Kane

Modeling Human-in-the-Loop Behavior and Interactions with HVAC Systems, *American Control Conference (ACC), IEEE*, 2018, 6

M.B. Kane, C. Peckens

"Digital Control Systems", Chapter in Marks' Standard Handbook for Mechanical Engineers, McGraw-Hill Professional, 2017, 1257-1265

M.W. Häckell, R. Rolfes, M.B. Kane, J.P. Lynch

Three-Tier Modular Structural Health Monitoring Framework Using Environmental and Operational Condition Clustering for Data Normalization: Validation on an Operational Wind Turbine System, *Proceedings of the IEEE*, 108(8), 2016, 1-15

M.B. Kane, J. Scruggs, J.P. Lynch

Model-predictive Control Techniques for Hydronic Systems Implemented on Wireless Sensor and Actuator Networks, 2014 American Control Conference, 2014, 3542-3547

HARIS KOUTSOPOULOS



Professor and Associate Chair for Graduate Studies, Civil and Environmental Engineering

PhD, MIT, 1986
civ.neu.edu/people/koutsopoulos-haris

Scholarship focus: urban transportation networks and informatics, urban mobility, intelligent transportation systems, public

transportation operations

Honors and awards: August-Wilhelm Scheer Visiting Professor, TUM, Technical University of Munich; Traffic Simulation Lifetime Achievement Award, Transportation Research Board

SELECTED PUBLICATIONS

- Z. Zhao, H.N. Koutsopoulos, J. Zhao
 Detecting Pattern Changes in Individual Travel Behavior: A Bayesian Approach, *Transportation Research B*, 112, 2018, 73-88
- Z. Zhao, H.N. Koutsopoulos, J. Zhao
 Individual Mobility Prediction Using Transit Smart Card Data, *Transportation Research C*, 89, 2018, 19-34
- J.B. Gordon, H.N. Koutsopoulos, N.H.M. Wilson
 Dynamic Estimation of Origin–Interchange–Destination Matrices for Multimodal Transit Networks, *Transportation Research C*, special issue on Smart Cards, 90, 2018, 350-365
- G. Goulet-Langlois, H.N. Koutsopoulos, Z. Zhao, J. Zhao
 Measuring Regularity of Individual Travel Patterns, *IEEE Transactions on Intelligent Transportation Systems*, 19(5), 2018, 1583-1592
- H.N. Koutsopoulos, Z. Ma, P. Noursalehi, Y. Zhu
 Transit Data Analytics for Planning, Monitoring, Control and Information. In *Mobility Patterns, Big Data and Transportation Analytics*, Elsevier, 2018
- E. Jenelius, H.N. Koutsopoulos
 Travel Time Estimation for Urban Road Networks Using Low Frequency Probe Vehicle Data, *Transportation Research Part B*, 53, 2013, 64-81 *Paper is 4th in the list of most cited articles in the journal

SELECTED RESEARCH PROJECTS

- Transport for London (TfL) Research Partnership
 Principal Investigator, TfL
- Mass Transit Railway (MTR) Research Partnership
 Principal Investigator, MTR
- Massachusetts Bay Transportation Authority
 Principal Investigator, Boston (MBTA) Research Partnership

MICHELLE LABOY



Assistant Professor, School of Architecture; affiliated faculty, Civil and Environmental Engineering

MArch, MUP University of Michigan, Ann Arbor, 2005
civ.neu.edu/people/laboy-michelle

Scholarship focus: building and site systems integration; structures and landscape

performance; building and urban resilience; green infrastructure; ecological concepts in design

Honors and awards: Latrobe Prize, American Institute of Architects College of Fellows

SELECTED PUBLICATIONS

- D. Fannon, M. Laboy, P. Wiederspahn
 Dimensions of Use: From Determinism to a New Humanism Enquiry, *The ARCC Journal of Architectural Research*, 15(1), 2018
- D. Fannon, M. Laboy
 Resilient Homes Online Design Aid: Connecting Research and Practice for Socially Resilient Communities, *Design and Resilience: Proceedings of the 2018 AIA/ACSA Intersections Symposium*, Washington, DC, 2018
- M. Laboy
 On Groundwater: Invisible Architectural Environments, *Journal of Architectural Education*, 71(2), 2017
- M. Laboy
 Landscape as a Conceptual Space for Architecture: Shifting Theories and Critical Practices, *The Plan Journal*, 0(0), 2016, 71-90
- M. Laboy, D. Fannon
 Resilience Theory and Praxis: A Critical Framework for Architecture, Edited by Architectural Research Centers Consortium, *Enquiry: The ARCC Journal of Architectural Research*, 13(1), 2016, 39-53
- D. Fannon, M. Laboy
 Teaching Building Science in Design Studio, *Journal of the National Institute of Building Sciences*, 2016

SELECTED RESEARCH PROJECTS

- Future-Use Architecture: Design for Persistent Change
 Co-Principal Investigator, American Institute of Architects College of Fellows
- Boston LightWells
 Principal Investigator, Boston Groundwater Trust and AutoDesk BUILD Grant
- Resilient Homes Online Design Aide
 Principal Co-Investigator, American Institute of Architects Upjohn Research Initiative

PHILIP LARESE-CASANOVA



Associate Professor, Civil and Environmental Engineering; affiliated faculty, Marine and Environmental Sciences

PhD, University of Iowa, 2006
civ.neu.edu/people/larese-casanova-philip

Scholarship focus: environmental chemistry and mineralogy; transformation and remediation of water pollutants; nanomaterial sorbents for water treatment

Honors and awards: National Science Foundation CAREER Award

SELECTED PUBLICATIONS

- N. Cai, P. Larese-Casanova
Application of Positively-Charged Ethylenediamine-Functionalized Graphene for the Sorption of Anionic Contaminants from Water, *Journal of Environmental Chemical Engineering*, 4, 2016, 2941-2951
- N. Cai, D. Peak, P. Larese-Casanova
Factors Influencing Natural Organic Matter Sorption onto Commercial Graphene Oxides, *Chemical Engineering Journal*, 273, 2015, 568-579
- A.E.P. Schellenger, A. Onnis-Hayden, D. Jaisi, P. Larese-Casanova
Oxygen Kinetic Isotope Effects in Selenate during Microbial Reduction, *Applied Geochemistry*, 63, 2015, 261-271
- P. Paydary, P. Larese-Casanova
Separation and Quantification of Quantum Dots and Dissolved Metal Cations by Size Exclusion Chromatography-ICP-MS, *International Journal of Environmental Analytical Chemistry*, 95(15), 2015, 1450-1470
- N. Cai, P. Larese-Casanova
Sorption of Carbamazepine by Commercial Graphene Oxides: A Comparative Study with Granular Activated Carbon and Multiwalled Carbon Nanotubes, *Journal of Colloid and Interface Science*, 426, 2014, 152-161

SELECTED RESEARCH PROJECTS

- CAREER: Quantum Dot Degradation in Aquatic Environments
Principal Investigator, National Science Foundation
- Insights to Selenium Cycling and Remediation Revealed by Stable Oxygen Isotopes
Principal Investigator, National Science Foundation
- Recrystallization of Stable Iron Oxides in Reducing Environments
Principal Investigator, National Science Foundation

YIANNIS LEVENDIS



COE Distinguished Professor, Mechanical and Industrial Engineering; affiliated faculty, Civil and Environmental Engineering

PhD, California Institute of Technology, 1987
mie.neu.edu/people/levendis-yiannis

Scholarship focus: gasification and combustion of solid fuels, generation and containment of combustion-generated pollution, synthesis and characterization of combustion-generated materials, fire suppression – fire extinction, engine design and operation

Honors and awards: Fellow, American Society of Mechanical Engineers; Fellow, Society of Automotive Engineers; Søren Buus Outstanding Research Award, College of Engineering; George Westinghouse Gold Medal, American Society of Mechanical Engineers; Percy Nicholls Award, jointly awarded by the American Society of Mechanical Engineers and the Society of Manufacturing Engineers, 2015

SELECTED PUBLICATIONS

- C.W. Martland, D.P. Marchessault, A. McGarey, D. Rivas, K.W. Stanley, Y.A. Levendis
Cryogen Capsules to Suppress Wildfires, *Fire and Safety Magazine*, 2016, 30-33
- E. Rokni, A. Panahi, X. Ren, Y.A. Levendis
Curtailling the Generation of Sulfur Dioxide and Nitrogen Oxide Emissions by Blending and Oxy-Combustion of Coals, *Fuel*, 181, 2016, 772-784
- A. Ruscio, F. Kazanc, Y.A. Levendis
Fine Ash Emissions Generated from Biomass and Coal Combustion and Valuation of Predictive Furnace Deposition Indices: A Review, *Journal of Energy Engineering*, 142(2), 2016, E4015007 1-12
- R. Khatami, Y.A. Levendis
An Overview of Coal Rank Influence on Ignition and Combustion Phenomena at the Particle Level, *Combustion and Flame*, 164, 2016, 22-34
- E. Rokni, A. Panahi, X. Ren, Y.A. Levendis
Reduction of Sulfur Dioxide Emissions by Burning Coal Blends, *Journal of Energy Resources Technology*, 138(3), 2016, 032204 1-8
- R. Khamati, Y.A. Levendis, M.A. Delichatsios
Soot Loading, Temperature and Size of Single Coal Particle Envelope Flames in Conventional and Oxy-Combustion Conditions (O₂/N₂ and O₂/CO₂), *Combustion and Flame*, 162, 2015, 2508-2517

SELECTED RESEARCH PROJECTS

- Co-firing Illinois Bituminous Coals with Highly-Fragmenting Lignite Coals for SO_x/HCl Control
Principal Investigator, Illinois Clean Coal Institute

AMY MUELLER



Assistant Professor, Civil and Environmental Engineering; jointly appointed, Marine and Environmental Sciences; affiliated faculty, Electrical and Computer Engineering

PhD, MIT, 2012
civ.neu.edu/people/mueller-amy

Scholarship focus: biogeochemistry of natural and engineered systems; in-situ sensors and instrumentation for high-resolution process characterization; remediation and sustainability in natural and built coastal environments; sensor-driven closed-loop controls for resource optimization in engineered systems; signal processing and machine learning, embedded systems, and sensor networks

Honors and awards: National Science Foundation Ocean Sciences Postdoctoral Research Fellowship

SELECTED PUBLICATIONS

A.V. Mueller, H.F. Hemond

Statistical Generation of Training Sets for Measuring NO₃-, NH₄⁺, and Major Ions in Natural Waters by an Ion Selective Electrode Array, *Environmental Science: Processes and Impacts*, 18(5), 2016, 590-599

A.V. Mueller, M.S. Orosz, A. Narasimhan, R. Kamal, H. Hemond, Y. Goswami

Evolution and Feasibility of Decentralized Concentrating Solar Thermal Power Systems for Modern Energy Access in Rural Areas, *MRS Energy and Sustainability*, 2016

M.S. Orosz, A.V. Mueller

Dynamic Simulation of Performance and Cost of Hybrid PV-CSP-LPG Generator Micro Grids with Applications to Remote Communities in Developing Countries, *Proceedings of the ASME 2015 Power and Energy Conference*, 2015, San Diego

A.V. Mueller, H.F. Hemond

Extended Artificial Neural Networks: Incorporation of a Priori Chemical Knowledge Enables use of Ion Selective Electrodes for in-situ Measurement of Ions at Environmentally-Relevant Levels, *Talanta*, 117, 2013, 112-118

A.V. Mueller, H.F. Hemond

Towards an Automated, Standardized Protocol for Determination of Equilibrium Potential of Ion-Selective Electrodes, *Analytica Chimica Acta*, 690(1), 2011, 71-78

SELECTED RESEARCH PROJECTS

Implementation of a synthetic Anammox Bio-Granular

Technology in the Main Wastewater Treatment Line

Co-Principal Investigator, DARPA Biological Technologies

Yeast-Based Chemical Sensors for Biohybrid Underwater Robots

Principal Investigator, Northeastern Tier 1.

SINAN MÜFTÜ



Professor, Mechanical and Industrial Engineering; affiliated faculty appointment in: Bioengineering, Civil and Environmental Engineering

PhD, University of Rochester, 1994
mie.neu.edu/people/muftu-sinan

Scholarship focus: mechanics and tribology of axially moving materials, webs; numerical simulation of tissue healing and bone remodeling; high velocity impact of micron scale particles

Honors and awards: Fellow, American Society of Mechanical Engineers; Søren Buus Outstanding Research Award, College of Engineering; Martin W. Essigman Outstanding Teaching Award, College of Engineering

SELECTED PUBLICATIONS

T. Kasıkçı, M.-C. Weng, A. Nayak, T. Goker, S. Müftü

Contact Mechanics of a Thin, Tensioned, Translating Tape With a Grooved Roller, *Journal of Tribology*, 140, 2018, 011405-1

T. Zhu, S. Müftü, K.-T. Wan

One-Dimensional Constrained Blister Test to Measure Thin Film Adhesion, *Journal of Applied Mechanics*, 85, 2018, 0545010-1

Q. Chen, A. Alizadeh-Dehkharghani, W. Xie, X. Wang,

V. Champagne, A. Gouldstone, J.-H. Lee, S. Müftü

High Strain Rate Material Behavior and Adiabatic Material Instability in Impact of Micron-Scale Al-6061 Particles, *Journal of Thermal Spray Technology*, 27, 2018, 641-653

J. Sun, N. Tandogan, A. Gu, S. Müftü, E.D. Goluch, K.T. Wan

Measuring Particle Adhesion-Detachment and Filtration Efficiency by Microfluidics, *Colloids and Surfaces B: Interfaces*, 165, 2018, 381-387

B. Yildirim, H. Yang, A. Gouldstone, S. Müftü

Rebound Mechanics of Micrometre-Scale, Spherical Particles in High Velocity Impacts, *Proceedings of the Royal Society of London A*, 473, 2017, 20160936

W. Xie, A. Alizadeh-Dehkharghani, Q. Chen, V.K. Champagne,

X. Wang, A. Nardi, S. Kooi, S. Müftü, J.-H. Lee

Dynamics and Extreme Plasticity of Metallic Microparticles in Supersonic Collisions, *Nature Scientific Reports*, 2017

SELECTED RESEARCH PROJECTS

Collaborative Research: High-Strain-Rate Dynamics of Copolymer Microparticles for Advanced Additive Manufacturing

Principal Investigator, National Science Foundation

Collaborative Research: Mechanics of Fusion of Dissimilar Lipid Bilayers and Multi-Lamellar Vesicles

Co-Principal Investigator, National Science Foundation

Engineered Materials and Materials Design of Engineered Materials (EMMDEM)

Technical Point of Contact, Army Research Laboratory

SAMUEL MUÑOZ



Assistant Professor, Marine and Environmental Sciences; jointly appointed, Civil and Environmental Engineering

PhD, University of Wisconsin-Madison, 2015
civ.neu.edu/people/munoz-samuel

Scholarship focus: sedimentary records of environmental change, paleoclimate and climate change, rivers and fluvial processes, hydroclimatic extremes

SELECTED PUBLICATIONS

S.E. Munoz, L. Giosan, M.D. Therrell, J.W. Remo, Z. Shen, R.M. Sullivan, J.P. Donnelly

Climatic Control of Mississippi River Flood Hazard Amplified by River Engineering, *Nature*, 556(7699), 2018, 95-98

S.E. Munoz, S.G. Dee

El Niño Increases the Risk of Lower Mississippi River Flooding, *Scientific Reports*, 7, 2017, 1772

J.R. Walsh, S.E. Munoz, M.J. Vander Zanden.

Outbreak of an Undetected Invasive Species Triggered by a Climate Anomaly, *Ecosphere*, 7(12), 2016, 1-17

S.E. Munoz, K. Gruley, A. Massie, D.A. Fike, S.S. Schroeder, J.W. Williams

Cahokia's Emergence and Decline Coincided with Shifts of Flood Frequency on the Mississippi River, *Proceedings of the National Academy of Sciences*, 112(20), 2015, 6319-6324

V.C. Radeloff, J.W. Williams, B.L. Bateman, K.D. Burke, S.K. Carter, E.S. Childress, K.J. Cromwell, C. Gratton, A.O. Hasley, B.M. Kraemer, A.W. Latzka, E. Marin-Spiotta, C.D. Meine, S.E. Munoz, et al.

The Rise of Novelty in Ecosystems, *Ecological Applications*, 25(8), 2015, 2051-2068

S.E. Munoz, S. Schroeder, D.A. Fike, J.W. Williams

A Record of Sustained Prehistoric and Historic Land use from the Cahokia Region, Illinois, USA, *Geology*, 42(6), 2014, 499-502

SELECTED RESEARCH PROJECTS

Collaborative Research: Re-evaluating Precipitation Extremes and Flood Hazard in the Wake of Hurricane Harvey

Principal Investigator, National Science Foundation (NSF) Hydrologic Sciences (HS)

Collaborative Research: Extreme Floods on the Lower Mississippi River in the Context of Late Holocene Climatic Variability

Principal Investigator, National Science Foundation (NSF) Paleo-Perspectives on Climate Change (P2C2),

Coastal Flooding Prediction and Mitigation: Integrating High-Fidelity Computer Models with Field Observations

Principal Investigator, Global Resilience Institute (GRI) of Northeastern University

ANDREW MYERS



Associate Professor, Civil and Environmental Engineering

PhD, Stanford University, 2009
civ.neu.edu/people/myers-andrew

Scholarship focus: offshore wind structures; multi-scale experimental testing of structures; computational simulation; fracture and damage mechanics of metals; probabilistic modeling

Honors and awards: National Science Foundation CAREER Award; Civil and Environmental Engineering Excellence in Teaching Award

SELECTED PUBLICATIONS

S. Hallowell, A.T. Myers, S.R. Arwade, W. Pang, P. Rawal, E. Hines, J.F. Hajjar, C. Qiao, V. Valamanesh, K. Wei, W. Carswell, C. Fontana

Hurricane Risk Assessment of Offshore Wind Turbines, *Renewable Energy*, Elsevier, 2018

F. Mirzaie, A.T. Myers, A. Jay, A. Mahmoud, S. Torabian, E. Smith, B.W. Schafer

Imperfection Measurements to Predict Buckling Behavior of Slender Steel Tubes, *Thin-Walled Structures*, Elsevier, 2017

A. Mahmoud, S. Torabian, A. Jay, F. Mirzaie, A.T. Myers, E. Smith, B.W. Schafer

Modeling the Flexural Collapse of Thin-walled Spirally Welded Tapered Tubes, *Journal of Structural Engineering*, ASCE, 123, 2018, 270-281

A. Jay, A.T. Myers, F. Mirzaie, A. Mahmoud, S. Torabian, E. Smith, B.W. Schafer

Large-Scale Bending Tests of Slender, Tapered Spirally Welded Steel Tubes, *Journal of Structural Engineering*, ASCE, 2016

V. Valamanesh, A.T. Myers, S.R. Arwade

Multivariate Analysis of Extreme Metocean Conditions for Offshore Wind Turbines, *Structural Safety*, Elsevier, 2015

SELECTED RESEARCH PROJECTS

CAREER: Advancing Multi-Hazard Assessment and Risk-based Design for Offshore Wind Energy Technology

Principal Investigator, National Science Foundation

Development of a National Offshore Wind Research Agenda

Co-Principal Investigator, Massachusetts Clean Energy Center

ANNALISA ONNIS-HAYDEN



Associate Teaching Professor, Civil and Environmental Engineering

PhD, University of Cagliari, Italy, 2004
civ.neu.edu/people/onnis-hayden-annalisa

Scholarship focus: biological treatment processes; ecotoxicology and toxicity assessment; microbial population dynamics and ecology in engineered biological systems

Honors and awards: Civil and Environmental Engineering Excellence in Teaching Award; Martin W. Essigman Outstanding Teaching Award, College of Engineering

SELECTED PUBLICATIONS

- Y. Men, P. Han, D.E. Helbling, N. Jehmlich, C. Herbold, R. Gulde, A. Onnis-Hayden, A.Z. Gu, D.R. Johnson, M. Wagner, K. Fenner
 Biotransformation of two Pharmaceuticals by the Ammonia-Oxidizing Archaeon *Nitrososphaera gargensis*, *Environmental Science and Technology*, 2016, 50(9), 4682-4692
- S.M. Rahman, M.J. Eckelman, A. Onnis-Hayden, A. Gu
 Life Cycle Assessment of Advanced Nutrient Removal Technologies for Wastewater Treatment, *Environmental Science and Technology*, 2016, 50, 3020-3030
- A.E. Schellenger, A. Onnis-Hayden, D.P. Jaisi, P. Larese-Casanova
 Oxygen Kinetic Isotope Effects in Selenate During Microbial Reduction, *Applied Geochemistry*, 63, 2015, 261-271
- Y. Li, X. Wang, A. Onnis-Hayden, K.T. Wan, A.Z. Gu
 Universal Quantifier Derived from AFM Analysis Links Cellular Mechanical Properties and Cell-Surface Integration Forces with Microbial Deposition and Transport Behavior, *Environmental Science and Technology*, 48(3), 2014, 1769-1778
- A. Onnis-Hayden, N. Majed, A.Z. Gu
 Decoupling the Microbial Populations for Phosphorus and Nitrogen Removal in Integrated Fixed-Film Activated Sludge Enhanced Biological Phosphorus Removal (IFAS-EBPR) System, *Water Research*, 45, 2011, 3845-3854
- A. Onnis-Hayden, H. Weng, M. He, S. Hansen, V. Ilyin, et al.
 Prokaryotic Real-Time Gene Expression Profiling for Toxicity Assessment, *Environmental Science and Technology*, 43(12), 2009, 4574-4581

SELECTED RESEARCH PROJECTS

- Insights to Selenium Cycling and Remediation Revealed by Stable Oxygen Isotopes
 Co-Principal Investigator, National Science Foundation
- Investigate Mechanisms for Optimization and Design of Sidestream EBPR Processes as a Sustainable Approach for Achieving Stable and Efficient P Removal
 Co-Principal Investigator, Water Environment Research Foundation

MARK PATTERSON



Professor, Marine and Environmental Sciences; jointly appointed, Civil and Environmental Engineering; Associate Dean for Research and Graduate Affairs, COS, and Chief Technology Officer, Global Resilience Institute

PhD, Harvard University, 1985
civ.neu.edu/people/patterson-mark

Scholarship focus: development of autonomous underwater robots for civil infrastructure and marine sensing; decision support tools for gray/green infrastructure like tide gates; environmental fluid mechanics; biomechanics and mass transfer in living systems

Honors and awards: Member of the Year Award, Association of Unmanned Vehicle Systems International; Lockheed Martin Award for Excellence in Ocean Science and Engineering

SELECTED PUBLICATIONS

- A.C. Trembanis, A.L. Forrest, B.M. Keller, M.R. Patterson
 Mesophotic Coral Ecosystems: A Geoacoustically Derived Proxy for Habitat and Relative Diversity for the Leeward Shelf of Bonaire, Dutch Caribbean, *Frontiers in Marine Science*, 4(51), 2017
- R.H. Certner, A.M. Dwyer, M.R. Patterson, S.V. Vollmer
 Zooplankton as a Potential Vector for White Band Disease Transmission in the Endangered Coral, *Acropora cervicornis*, *PeerJ*, 5, 2017, e3502
- J. Elliott, M. Patterson, N. Summers, C. Mitermiqué, E. Montocchio, E. Vitry
 How Does the Proliferation of the Coral-Killing Sponge *Terpios hoshinota* Affect Benthic Community Structure on Coral Reefs?, *Coral Reefs*, 2016, 1-13
- E.C. Edson, M.R. Patterson
 MantaRay: A Novel Autonomous Sampling Instrument for In Situ Measurements of Environmental Microplastic Particle Concentrations, *Proceedings of the IEEE/Marine Technology Society OCEANS 2015*, 2015, 1-6
- J. Elliott, M. Patterson, E. Vitry, N. Summers, C. Mitermiqué
 Morphological Plasticity allows Coral to Actively Overgrow the Aggressive Sponge *Terpios hoshinota* (Mauritius, Southwestern Indian Ocean), *Marine Biodiversity*, 2015, 1-5
- W.S. Howard, A. Gu, M.M. Garcia, M. Patterson, E. Izzo
 State of the World Report 2015: Water Challenges, *Fédération Internationale Des Ingénieurs-Conseils (FIDIC) (International Federation of Consulting Engineers)*, Geneva, 2015, 46

SELECTED RESEARCH PROJECTS

- MantaRay Microplastics Sampler
 Co-Principal Investigator, Schmidt Marine Technology Partners, Schmidt Family Foundation
- Tide Gate Modulation of Wetland Function: Decision Support Through Engineering Best Practices
 Principal Investigator, National Science Foundation Environmental Sustainability

AMEET PINTO



Assistant Professor, Civil and Environmental Engineering; affiliated faculty, Marine and Environmental Sciences

PhD, Virginia Tech, 2009
civ.neu.edu/people/pinto-ameet

Scholarship focus: microbial ecology and physiology, drinking water treatment and

distribution, wastewater treatment, public health microbiology, molecular microbiology, 'omics analyses

Honors and awards: Bright IDEAS Award, Engineering and Physical Sciences Research Council; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

- I. Bradley, A.J. Pinto, J.S. Guest
 Design and Evaluation of Illumina MiSeq Compatible 18S rRNA Primers for Improved Characterization of Mixed Phototrophic Communities, *EApplied and Environmental Microbiology*, 89(19), 2016, 5878-5891
- Q.M. Bautista, J. Schroeder, M.C.R. Sevillano, R. Sungthong, U. Ijaz, W.T. Sloan, A.J. Pinto
 Emerging Investigator Series: Microbial communities in Full Scale Drinking Water Systems- A Meta-Analysis, *Environmental Science: Water Research and Technology*, 2016, 631-644
- A.J. Pinto, D.N. Marcus, U.Z. Ijaz, Q.M. Bautista, G.J. Dick, L. Raskin
 Metagenomic Evidence for the Presence of Comammox Nitrospira-like Bacteria in a Drinking Water System, *mSphere Journal*, 1, 2015
- J. Schroeder, M. Lunn, A.J. Pinto, L. Raskin, W.T. Sloan
 Probabilistic Models to Describe the Dynamics of Migrating Microbial Communities, *PLoS One*, 10, 2015, e0117221
- A.J. Pinto, J. Schroeder, M. Lunn, W.T. Sloan, L. Raskin
 Spatial-Temporal Survey and Occupancy-Abundance Modeling to Predict Bacteria Community Dynamics in the Drinking Water Microbiome, *mBio Journal*, 5(3), 2014
- A.J. Pinto, C. Xi, L. Raskin
 Bacterial Community Structure in the Drinking Water Microbiome is Governed by Filtration Processes, *Environmental Science and Technology*, 46, 2012, 8851-8859
- A.J. Pinto, L. Raskin
 PCR Biases Distort Bacterial and Archaeal Community Structure in Pyrosequencing Datasets, *PLoS One*, 7(8), 2012

SELECTED RESEARCH PROJECTS

- Estimating the Comammox Contribution to Ammonia Oxidation in Nitrogen Removal Systems
 Principal Investigator, Water Environment & Reuse Foundation CAREER: Developing a Spatial-Temporal Predictive Framework for the Drinking Water Microbiome
 Principal Investigator, NSF

MEHRDAD SASANI



Professor, Civil and Environmental Engineering

PhD, University of California at Berkeley, 2001
civ.neu.edu/people/sasani-mehrdad

Scholarship focus: progressive collapse of structures; earthquake engineering; structural resilience, integrity and reliability

Honors and awards: Fellow, American Society of Civil Engineers; Fellow, Structural Engineering Institute; National Science Foundation CAREER Award

SELECTED PUBLICATIONS

- J.A. Murray, M. Sasani
 Collapse Resistance of a 7-Story Structure with Multiple Shear-Axial Column Failures Using Hybrid Simulation, *Journal of Structural Engineering, ASCE*, 04017012, 143(5), 2017, 1-13
- J.A. Murray, M. Sasani
 Seismic Hybrid Simulation of a Nonductile RC Building with Severe Damage to Multiple Columns, *Earthquake Engineering and Structural Dynamics*, 46, 2017, 733-752
- C. Wan, C. Audi, M. Sasani
 Modeling Floor Systems for Collapse Analysis, *Engineering Structures*, 127, 2016, 278-286
- J.A. Murray, M. Sasani
 Near-Collapse Response of Existing RC Building Under Severe Pulse Type Ground Motion using Hybrid Simulation, *Earthquake Engineering and Structural Dynamics*, 45(7), 2016, 1109-1127
- L. Keyvani, M. Sasani
 Analytical and Experimental Evaluation of Progressive Collapse Resistance of a Flat-slab Posttensioned Parking Garage, *Journal of Structural Engineering, ASCE*, 141(11), 2015
- M. Joyner, M. Sasani
 A Multihazard Risk-Based Resilience Analysis of East and West Coast Buildings Designed to Current Codes, *Journal of Structural Engineering, ASCE*, 2018
- S. Sagioglu, M. Sasani
 Progressive Collapse Resisting Mechanisms of Reinforced Concrete Structures and Effects of Initial Damage Locations, *Journal of Structural Engineering, ASCE*, 140(3), 2014, 1-12
- R. Ceskavich, M. Sasani
 Methodology for Evaluating Community Resilience, *Natural Hazards Review, ASCE*, Vol. 19, No. 1 (04017021), pp. 1-13, 2018

SELECTED RESEARCH PROJECTS

- A Decision and Design Framework for Multi-Hazard Resilient and Sustainable Buildings (RSB)
 Principal Investigator, National Science Foundation
- Near Collapse Performance of Existing RC Concrete Frame Buildings (NEESR)
 Principal Investigator, National Science Foundation

THOMAS SHEAHAN



Sr. Associate Dean for Academic Affairs; Professor, Civil and Environmental Engineering; Training Core Leader, PROTECT Center

ScD, MIT, 1991
civ.neu.edu/people/sheahan-thomas

Scholarship focus: soft ground engineering, coastal adaptation, education and training for engineers and scientists

Honors and awards: Fellow, American Society of Civil Engineers

SELECTED PUBLICATIONS

- D. Meric, F. Hellweger, A.N. Alshawabkeh, T.C. Sheahan
 Nonlinear Nonequilibrium One-Dimensional Large-Strain Consolidation-Coupled Contaminant Transport Model of Capped Sediments, *American Society of Civil Engineers Journal of Geotechnical and Geoenvironmental Engineering*, 143(8), 2017
- S. Barbuto, T.C. Sheahan, J.P. Shine, A. Alshawabkeh, et al.
 Benchscale Assessment of the Efficacy of a Reactive Core Mat to Isolate PAH-spiked Aquatic Sediments, *Soil and Sediment Contamination: An International Journal*, 23(1), 2014
- D. Meric, A.N. Alshawabkeh, J.P. Shine, T.C. Sheahan
 Bioavailability of Hydrophobic Organic Compounds in Thin-Layered Sediments, *Chemosphere*, 103, 2014, 281-289
- E. Hamin, Y. Abunnasr, M.R. Dilthey, P. Judge, M. Kenney, P. Kirshen, T.C. Sheahan, D.J. DeGroot, R.L. Ryan, B. McAdoo, L. Nurse, J. Buxton, E. Roper, E. Albright, M. Buchanan, A. Marielos Marin, R. Fricke
 Pathways to Coastal Resiliency: The Adaptation Gradients Framework, *Sustainability*, 2018
- D. Cheney, L. Rajicb, E. Sly, D. Meric, T.C. Sheahan
 Uptake of PCBs Contained in Marine Sediments by the Green Macroalga *Ulva Rigida*, *Marine Pollution Bulletin*, 88(1-2), 2014, 207-214

SELECTED RESEARCH PROJECTS

- Sustainable Adaptive Gradients in the Coastal Environment: Reconceptualizing the Role of Infrastructure in Resilience
 Co-Principal Investigator, National Science Foundation
- Puerto Rico Testsite for Exploring Contamination Threats (PROTECT)
 Training Core Leader, National Institutes of Health

CRAIG SHILLABER



Assistant Teaching Professor, Civil and Environmental Engineering

PhD, Virginia Tech, 2016
civ.neu.edu/people/shillaber-craig

Scholarship focus: geotechnical subsurface characterization through in-situ and laboratory methods; quantification of construction energy and carbon; sustainable geotechnics

SELECTED PUBLICATIONS

- C.M. Shillaber, J.K. Mitchell, J.E. Dove, Z.A. Ostrum
 Framework to Account for Uncertainty in Energy and Carbon Assessment of Ground Improvement Works, *Journal of Geotechnical and Geoenvironmental Engineering*, 143(5), 2017
- C.M. Shillaber, J.E. Dove, J.K. Mitchell, C.D. Moen, V.A. Mouras
 Student Perceptions of Sustainability and Engineering Mechanics in Undergraduate Civil and Environmental Engineering Education at Virginia Tech, *Proc. 2017 ASEE Annual Conference*, American Society for Engineering Education, 2017
- C.M. Shillaber, J.K. Mitchell, J.E. Dove
 Energy and Carbon Assessment of Ground Improvement Works I: Definitions and Background, *Journal of Geotechnical and Geoenvironmental Engineering*, 142(3), 2016
- C.M. Shillaber, J.K. Mitchell, J.E. Dove
 Energy And Carbon Assessment of Ground Improvement Works. II: Working Model And Example, *Journal of Geotechnical and Geoenvironmental Engineering*, 142(3), 2016
- E.K. Phillips, C.M. Shillaber, J.K. Mitchell, J.E. Dove, G.M. Filz
 Sustainability Comparison of a Geosynthetic-Reinforced Soil Abutment and a Traditionally-Founded abutment: A Case History, *Proceedings of the Geotechnical and Structural Engineering Congress*, ASCE, Reston, VA, 2016, 699-711
- C.M. Shillaber, J.K. Mitchell, J.E. Dove
 Sustainability Considerations in Deep Mixing Applications, with Examples from LPV 111 in New Orleans, LA., *Proceedings, Deep Mixing*, Deep Foundations Institute, 2015, 511-520
- C.M. Shillaber, J.K. Mitchell, J.E. Dove
 Assessing Environmental Impacts in Geotechnical Construction: Insights from the Fuel Cycle, *Proceedings, GeoCongress 2014*, Geo-Characterization and Modeling for Sustainability, *Geotechnical Special Publication No. 234*, ASCE, Reston, VA, 2014, 3516-3525
- J.E. Dove, C.M. Shillaber, T. Becker, A. Wallace, P. Dove
 Biologically Inspired Silicification Process for Improving Mechanical Properties of Sand, *Journal of Geotechnical and Geoenvironmental Engineering*, 137(10), 2011, 949-957

MICHAEL B. SILEVITCH



Robert D. Black Professor, COE Distinguished Professor, Electrical and Computer Engineering; affiliated faculty, Civil and Environmental Engineering; Director, CenSSIS

PhD, Northeastern University, 1971
ece.neu.edu/people/silevitch-michael

Scholarship focus: subsurface sensing and imaging systems, detection of explosives related anomalies, engineered system development and engineering leadership

Honors and awards: Life Fellow, Institute of Electrical and Electronics Engineers; 2015 National Academy of Engineering Gordon Prize, for developing an innovative method to provide graduate engineers with the necessary personal skills to become effective engineering leaders

SELECTED RESEARCH PROJECTS

ALERT: Awareness and Localization of Explosives Related Threats, A Department of Homeland Security Center of Excellence. ALERT seeks to conduct transformational research, technology and educational development for effective characterization, detection, mitigation and response to the explosives-related threats facing the country and the world
Director and Principal Investigator, Department of Homeland Security

CenSSIS: Center for Subsurface Sensing and Imaging Systems, Gordon-CenSSIS, a graduated NSF Engineering Research Center, was created to develop new technologies to detect hidden objects, and to use those technologies to meet real-world subsurface challenges in areas as diverse as noninvasive breast cancer detection and underground pollution assessment

Director and Principal Investigator, National Science Foundation
Research and Development of Reconstruction Advances in CT Based Object Detection Systems
Principal Investigator, Department of Homeland Security

JENNIE C. STEPHENS



Dean's Professor of Sustainability Science and Policy, School of Public Policy and Urban Affairs; affiliated faculty, Civil and Environmental Engineering; Associate Director of Strategic Research Collaborations, Global Resilience Institute

PhD, California Institute of Technology, 2002
civ.neu.edu/people/stephens-jennie

Scholarship focus: renewable energy transformation, reducing fossil fuel reliance, energy resilience, energy democracy, integrating social justice with climate and energy innovations

SELECTED PUBLICATIONS

J.C. Stephens, D. Kopin, E.J. Wilson, T.R. Peterson
Framing of Customer Engagement Opportunities and Renewable Energy Integration by Electric Utility Representatives, *Utilities Policy*, 47, 2017, 69-74

N. Markusson, M.D. Gjefsen, J.C. Stephens, D. Tyfield
The Political Economy of Technical Fixes: The (mis)alignment of Clean Fossil and Political Regimes, *Energy Research and Social Science*, 23, 2017, 1-10

P.C. Frumhoff, J.C. Stephens
The Siren Call of US Funding for Solar Geoengineering Research, *Forum on US Solar Geoengineering Research*, Harvard University and University of California, Los Angeles School of Law, 2017

A.M. Feldpausch-Parker, T.R. Peterson, J.C. Stephens, E.J. Wilson
Smart Grid Electricity System Planning and Climate Disruptions: A Review of Climate and Energy Discourse Post-Superstorm Sandy, *Renewable and Sustainable Energy Reviews*, 2017

E.M. Cody, J.C. Stephens, J.P. Bagrow, P.S. Dodds, C.M. Danforth
Transitions in Climate and Energy Discourse Between Hurricanes Katrina and Sandy, *Journal of Environmental Studies and Science*, 2016

R. Pearl-Martinez, J.C. Stephens
Toward a Gender Diverse Workforce in the Renewable Energy Transition, *Sustainability: Science, Practice and Policy*, 12(1), 2016

J.C. Stephens, E.J. Wilson, T.R. Peterson
Smart Grid (R)evolution: Electric Power Struggles, Cambridge University Press, 2015

ARON STUBBINS



Associate Professor, Marine and Environmental Sciences; jointly appointed, Civil and Environmental Engineering, Chemistry and Chemical Biology

PhD, Newcastle University, 2002
civ.neu.edu/people/stubbins-aron

Scholarship focus: environmental chemistry; geochemistry; the carbon cycle; freshwater, coastal and ocean biogeochemistry; feedbacks between natural biogeochemical cycles and climate change; permafrost; black carbon; aquatic microplastics

Honors and awards: Fellow of the Association for the Sciences of Limnology and Oceanography

SELECTED PUBLICATIONS

D.H Howard, J.T.V. Stan, A. Whitetree, L. Zhu, A. Stubbins
 Interstorm Variability in the Biolability of Tree-Derived Dissolved Organic Matter (Tree-DOM) in Throughfall and Stemflow, *Forests*, 9(5), 2018, 236

J.T. Van Stan, A. Stubbins
 Tree-DOM: Dissolved Organic Matter in Throughfall and Stemflow *Limnology and Oceanography Letters*, 3(3), 2018, 199-214

S. Wagner, R. Jaffé and A. Stubbins
 Dissolved Black Carbon in Aquatic Ecosystems, *Limnology and Oceanography Letters*, 3(3), 2018 168-185

C. Li, P. Chen, S. Kang, F. Yan, L. Tripathi, G. Wu, A. Stubbins
 Fossil Fuel Combustion Emission from South Asia Influences Precipitation Dissolved Organic Carbon Reaching the Remote Tibetan Plateau: Isotopic and Molecular Evidence, *Journal of Geophysical Research: Atmospheres*, 123(11), 2018, 6248-6258

M. Jennings, H. Abdulla, A. Stubbins, L. Sun, R. Wang, K. Mopper
 A Dissolved Organic Carbon (DOC) Analyzer Capable of Detecting Sub- μ M DOC Differences in Natural Fresh Waters: A Proof of Concept Study, *Limnology and Oceanography: Methods*, 16(5), 2018, 309-321

SELECTED RESEARCH PROJECTS

Constraining the Source of Oceanic Dissolved Black Carbon Using Compound-Specific Stable Carbon Isotopes
 Co-Principal Investigator, National Science Foundation

Transforming our Understanding of Carbon Dioxide Photoproduction in Oceanic Waters
 Principal Investigator, National Science Foundation

Linking Microbial Diversity, Gene Expression, and the Transformation of Terrestrial Organic Matter in Major U.S. Rivers
 Principal Investigator, National Science Foundation

HAO SUN



Assistant Professor, Civil and Environmental Engineering

PhD, Columbia University, 2014
civ.neu.edu/people/sun-hao

Scholarship focus: smart and resilient infrastructure; innovative sensing, data analytics and machine learning with applications to infrastructure engineering; computational mechanics and uncertainty quantification

Honors and awards: Forbes 30 Under 30: Science, Boeing Fellowship

SELECTED PUBLICATIONS

H. Sun, O. Buyukozturk
 The MIT Green Building Benchmark Problem for Structural Health Monitoring of Tall Buildings, *Structural Control and Health Monitoring*, 25(3), 2018, e2115

H. Sun, A. Mordret, G.A. Prieto, N. Toksoz, O. Buyukozturk
 Bayesian Characterization of Buildings Using Seismic Interferometry on Ambient Vibrations, *Mechanical Systems and Signal Processing*, 85, 2017, 468-486

A. Mordret, H. Sun, G.A. Prieto, N. Toksoz, O. Buyukozturk
 Continuous Monitoring of High-Rise Buildings using Seismic Interferometry, *Bulletin of the Seismological Society of America*, 107(6) 2017, 2759-2773

H. Sun, O. Buyukozturk
 Probabilistic Updating of Building Models Using Incomplete Modal Data, *Mechanical Systems and Signal Processing*, 75(0) 2016, 27-40

H. Sun, O. Buyukozturk
 Optimal Sensor Placement in Structural Health Monitoring using Discrete Optimization, *Smart Materials and Structures*, 24(12), 2015, 125034

H. Sun, R. Betti
 A Hybrid Optimization Algorithm with Bayesian Inference for Probabilistic Model Updating, *Computer-Aided Civil and Infrastructure Engineering*, 30(8), 2015, 602-619

H. Sun, H. Waisman, R. Betti
 A Multiscale Aw Detection Algorithm Based on XFEM, *International Journal for Numerical Methods in Engineering*, 100(7), 2014, 477-503

SELECTED RESEARCH PROJECTS

Data Interferometry for Field Monitoring: Development and Applications in Structural and Crustal Systems
 Principal Investigator, Subcontract from MIT; Shell Global

ALI TOURAN



Professor, Civil and Environmental Engineering

PhD, Stanford University, 1980
civ.neu.edu/people/touran-ali

Scholarship focus: risk assessment;
 construction cost/schedule uncertainty;
 project delivery systems; simulation;
 construction productivity

Honors and awards: Fellow, American Society of Civil Engineers;
 President's Award, Boston Society of Civil Engineers

SELECTED PUBLICATIONS

- N. Montazeri, A. Touran
 Multi-Objective Reliability-Based Optimization of Life-cycle Maintenance for Bridges under Cost Uncertainty, Proceedings of the Construction Research Congress, ASCE, 2018, 2003
- Touran, A. and F. Panah
 Use of the Alternative Technical Concepts in Transportation Projects, ISEC 9 Conference, 2017
- R. Tapia, D.D. Gransberg, A. Touran
 Managing Scheduling Risk due to Geotechnical Uncertainty Using Linear Scheduling, Proceedings of the Transportation Research Board, Washington, D.C., 2017
- R. Masoumi, A. Touran
 A Framework to Form Balanced Project Portfolios, Proceedings of the Construction Research Congress, San Juan, Puerto Rico, 2016
- A. Touran, J. Liu
 A Method for Estimating Contingency based on Project Complexity, Procedia Engineering, Elsevier, 123, 2015, 574-580
- A.P. Gurgun, A. Touran
 Public-Private Partnership Experience in the International Arena: Case of Turkey, Journal of Management in Engineering, 30(6), 2014

SELECTED RESEARCH PROJECTS

- Integrated Project Delivery in Industrial Projects
 Co-Principal Investigator, Construction Industry Institute
- Systematic Approach for Estimating Construction Contract Time
 Co-Principal Investigator National Cooperative Highway Research Program (NCHRP), National Academy of Engineering

GEOFFREY C. TRUSSELL



Professor and Chair, Department of Marine and Environmental Sciences; Director Coastal Sustainability Institute & Marine Science Center; affiliated faculty, Civil and Environmental Engineering

PhD, College of William & Mary, 1998
civ.neu.edu/people/trussell-geoffrey

Scholarship focus: evolutionary and community ecology; coastal sustainability

Honors and awards: Ray Lankester Investigatorship; Sigma Delta Tau Outstanding Professor

SELECTED PUBLICATIONS

- C.M. Matassa, P.J. Ewanchuk, G.C. Trussell
 Cascading Effects of a Top Predator on Intraspecific Competition at Intermediate and Basal Trophic Levels, Functional Ecology, 2018, 1-12
- S.C. Donelan, G.C. Trussell
 Parental and Embryonic Experiences with Predation Risk Affect the Behavior and Performance of their Offspring, Proc. Roy. Soc. B., 2018
- S.C. Donelan, G.C. Trussell
 Synergistic Effects of Parental and Embryonic Exposure to Predation Risk on Offspring Size at Emergence, Ecology 99, 2018, 68-78
- Trussell, G.C., C.M. Matassa, P.J. Ewanchuk
 Moving Beyond Linear Food Chains: Trait-Mediated Indirect Interactions in a Rocky Intertidal Food Web, Proc. Roy. Soc. B., 2017
- M.E.S. Bracken, J.G. Douglass, V. Perini, G.C. Trussell
 Environmental Context and Scale Mediate the Effects of Biodiversity on Marine Primary Producers, Ecology 98, 2017, 1434-1443
- S.C. Donelan, J.H. Grabowski, G.C. Trussell
 Refuge Quality Impacts the Strength of Nonconsumptive Effects on Prey, Ecology 98, 2017, 403-411

SELECTED RESEARCH PROJECTS

- Collaborative Research: Intertidal Community Assembly and Dynamics: Integrating Broad-scale Regional Variation in Environmental Forcing and Benthic-pelagic Coupling
 Principal Investigator, National Science Foundation
- Collaborative Research: Using an Energetics Framework to Forecast the Interactive Effects of Abiotic and Biotic Stressors on Intertidal Mussels
 Co-Principal Investigator, National Science Foundation
- Research Coordination Network: Evolution in Changing Seas
 Co-Principal Investigator, National Science Foundation

SARA WADIA-FASCETTI



Vice Provost, PhD Network; Professor, Civil and Environmental Engineering

PhD, Stanford University, 1994
civ.neu.edu/people/wadia-fascetti-sara

Scholarship focus: condition assessment methodologies for infrastructure systems; life cycle and life span analysis; nondestructive testing and evaluation;

structural and earthquake engineering uncertainty

Honors and awards: American Society of Engineering Education Sharon Keillor Award for Women in Engineering Education; Minorities in Engineering Award, American Society of Engineering Education; National Science Foundation CAREER Award; Presidential Award for Excellence in Science, Mathematics, and Engineering Mentoring, selected by President Bush and awarded at the White House

SELECTED PUBLICATIONS

- D. Vine, S. Shahini Shamsabadi, Y. Zhao, R. Birken, M. Wang, S. Wadia
 City-Wide Application of the Affordable and Rapid StreetScan Pavement Management System, *ASCE Journal of Infrastructure Systems*, 2017
- A. Ganguli, C.M. Rappaport, D. Abramo, S. Wadia-Fascetti
 Synthetic Aperture Imaging for Flaw Detection in a Concrete Medium, *NDT & E International*, 45(1), 2012, 79-90
- K. Belli, S. Wadia-Fascetti, C. Rappaport
 Integrated Sensor and Media Modeling Environment Developed and Applied to Ground-Penetrating Radar Investigation of Bridge Decks, *Journal of Computing in Civil Engineering*, 25(1), 2011, 10-20
- K. Belli, C. Rappaport, S. Wadia-Fascetti
 A Time Domain Equivalent Source Model of an Impulse GPR Antenna Based on Measured Radiation Field, *Research in Nondestructive Evaluation*, 22(4), 2011, 197-207

SELECTED RESEARCH PROJECTS

- Northeastern ADVANCE
 Principal Investigator, National Science Foundation
- IGERT: Intelligent Diagnostics for Aging Civil Infrastructure
 Principal Investigator, National Science Foundation
- VOTERS: Versatile Onboard Traffic Embedded Roaming Sensors
 Co-Principal Investigator/Deputy Director, National Institute of Standards and Technology

KAI-TAK WAN



Professor, Mechanical and Industrial Engineering; affiliated faculty, Bioengineering, Civil and Environmental Engineering

PhD, University of Maryland at College Park, 1993
mie.neu.edu/people/wan-kai-tak

Scholarship focus: cellular biomechanics; water filtration; thin film adhesion and characterization; subsurface mechano-sensing; shell adhesion; fundamental intersurface forces

Honors and awards: National Science Foundation CAREER Award; College of Engineering Faculty Fellow

SELECTED PUBLICATIONS

- J. Sun, N. Tandogan, A.Z. Gu, Sinan Müftü, E.D. Goluch, K.-T. Wan
 Quantification of Colloidal Filtration of Polystyrene Micro-P-articles on Glass Substrate Using a Microfluidic Device, *Colloids and Surfaces B: Biointerfaces*, 165, 2018, 381-387
- J. Sun, S. Müftü, A.Z. Gu, K.-T. Wan
 Intersurface Adhesion in the Presence of Capillary Condensation, *Journal of Applied Mechanics*, 85, 2018, 061009
- W. Wang, J.V. Gray, S.E. Julien, K.-T. Wan
 Mechanical Characterization of a Convex Shell (Contact Lens) with Meridional Thickness Variation, *Experimental Mechanics*, 58(6), 2018, 997-1002
- T. Zhu, G. Li, S. Müftü, K.-T. Wan
 One-Dimensional Constrained Blister Test to Measure Thin Film Adhesion, *Journal of Applied Mechanics*, 85, 2018, 054501
- T. Zhu, G. Li, S. Müftü, K.-T. Wan
 Revisiting the Constrained Blister Test to Measure Thin Film Adhesion, *Journal of Applied Mechanics*, 84, 2017, 071005
- X. Wang, B. Li, J. Hao, Y.J. Jung, K.-T. Wan
 Mechanical Characterization of Suspended Strips of Meshed Single-Walled Carbon Nanotubes, *Journal of Applied Physics*, 119, 2017, 045305

SELECTED RESEARCH PROJECTS

- Mechanics of Fusion of Dissimilar Lipid BiLayers and Multi-Lamellar Vesicles
 Principal Investigator, National Science Foundation
- Mechanical Integrity and Long Term Reliability of Photovoltaic Panels
 Principal Investigator, National Institute of Standards and Technology/Department of Energy

MING WANG



COE Distinguished Professor, Civil and Environmental Engineering

PhD, University of New Mexico, 1983
civ.neu.edu/people/wang-ming

Scholarship focus: network-wide pavement and bridge deck inspections; sensor technology for infrastructure; saliva-based sensor technology for disease diagnosis and

monitoring; structural health monitoring for bridges; subsurface fault detection using air-coupled GPR systems

Honors and awards: Fellow, SPIE; Søren Buus Outstanding Research Award, College of Engineering

SELECTED PUBLICATIONS

- Y. Du, W. Zhang, M.L. Wang
An On-Chip Disposable Salivary Glucose Sensor for Diabetes Control, *Journal of Diabetes Science and Technology*, 2016
- Y. Du, W. Zhang, M.L. Wang
Sensing of Salivary Glucose Using Nano-structured Biosensors, *Biosensors*, 6(1), 2016, 10
- W. Zhang, M.L. Wang, S. Khalili, S. Cranford
Materiomics for Oral Disease Diagnostics and Personal Health Monitoring: Designer Biomaterials for the Next Generation Biomarkers, *OMICS: A Journal of Integrative Biology*, 20, 2016, 12-29
- W. Zhang, M.L. Wang, S. Cranford
Ranking of Molecular Biomarker Interaction with Targeted DNA Nucleobases via Full Atomistic Molecular Dynamics, *Scientific Report*, Nature Publishing Group, 6, 2016, 18659
- N. Martino, K. Maser, R. Birken, M.L. Wang
Quantifying Bridge Deck Corrosion Using Ground Penetration Radar, *Research in Nondestructive Evaluation*, 27(2), 2016, 112-124
- W. Zhang, Y. Du, M.L. Wang
Noninvasive Glucose Monitoring using Saliva Nano-biosensor, *Sensing and Biosensing Research*, 4, 2015, 23-29
- M. Lee, R. Vilbig, D. Busuioc, R. Birken, N. Sun, M.L. Wang
Novel Miniaturized Designs for In-traffic Air-coupled Ground Penetration Radar Systems, *Journal of Environmental and Engineering Geophysics*, 20(1), 2015, 71-79
- Y. Zhang, G. McDaniel, M.L. Wang
Pavement Microtexture Measurement using Tire/Road Noise, *Journal of Civil Structural Health Monitoring*, 5(3), 2015, 253-261

SELECTED RESEARCH PROJECTS

- VOTERS: Versatile Onboard Traffic Embedded Roaming Sensors
Principal Investigator, National Institute of Standards and Technology
- Breath and Saliva Based Nano-Bio Sensing System for Disease Diagnosis and Monitoring
Principal Investigator, Northeastern University

QI RYAN WANG



Assistant Professor, Civil and Environmental Engineering

PhD, Virginia Tech, 2015
civ.neu.edu/people/wang-ryan

Scholarship focus: urban and social resilience; geo-social networking; coupled, human-natural systems, natural disaster response and evacuation; urban computing

SELECTED PUBLICATIONS

- Q. Wang, N.E. Phillips, M.L. Small, R.J. Sampson
Urban Mobility and Neighborhood Isolation in America's 50 Largest Cities, *Proceedings of the National Academy of Sciences* (2018)
- J. Chen, Q. Wang, Z. Lin, and X. Guo
Measuring the Cognitive Loads of Construction Safety Sign Designs During Selective and Sustained Attention, *Safety Science*, 105, 2018, 9-21
- Q. Wang, J.E. Taylor
Aggregated Responses of Human Mobility to Severe Winter Storms: An Empirical Study, *PLoS one*, 12, 2017
- N Mohammadi, Q. Wang, and J.E. Taylor
Diffusion Dynamics of Energy Saving Practices in Large Heterogeneous Online Networks, *PLoS one*, 10, 2016
- Y. Wang, Q. Wang, and J.E. Taylor
Patterns and Limitations of Urban Human Mobility Resilience Under the Influence of Multiple Types of Natural Disaster, *PLoS one*, 11(1), 2016
- Q. Wang, J.E. Taylor
Process Map for Urban-Human Mobility and Civil Infrastructure Data Collection Using Geosocial Networking Platforms, *Journal of Computing in Civil Engineering*, 30(2), 2015
- Q. Wang, J.E. Taylor
Energy Saving Practice Diffusion in Online Networks, *Energy and Buildings*, 76, 2014, 622-630
- Q. Wang, J.E. Taylor
Quantifying Human Mobility Perturbation and Resilience in Hurricane Sandy, *PLoS ONE*, 9(11), 2014

SELECTED RESEARCH PROJECTS

- Personalized Systems for Wayfinding for First Responders
Principal investigator, National Science Foundation
- Cognition-driven Display for Navigation Activities (Cog-DNA): Personalized Spatial Information System Based on Information Personality of Firefighters
Co-Principal Investigator, National Institute of Standards and Technology

MISHAC YEGIAN



COE Distinguished Professor, Civil and Environmental Engineering

PhD, MIT, 1976

civ.neu.edu/people/yegian-mishac

Scholarship focus: geotechnical earthquake engineering; soil dynamics; geosynthetics; seismic response of landfills; base isolation;

liquefaction; bridge engineering; use of shaking table in earthquake engineering

Honors and awards: Fellow, American Society of Civil Engineers; ASCE Thomas A. Middlebrooks Award

SELECTED PUBLICATIONS

E. Eseller-Bayat, S. Gokyer, M.K. Yegian

Earthquake Engineering Experimental Facility for Research and Public Outreach, Seismic Evaluation and Rehabilitation of Structures, 26, 2014, 379-387

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, O. Deniz, A. Alshawabkeh

Bender Elements and Bending Disks for Measurement of Shear and Compression Wave Velocities in Large Fully and Partially Saturated Sand Specimens, ASTM Geotechnical Testing Journal, 36(2), 2013, 1-8

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, E. Ortakci, A. Alshawabkeh

Design and Application of Simple Shear Liquefaction Box, ASTM Geotechnical Testing Journal, 36(3), 2013, 1-9

E. Eseller-Bayat, S. Gokyer, M.K. Yegian, A. Alshawabkeh

Liquefaction Response of Partially Saturated Sands: An Empirical Model, ASCE Journal of Geotechnical and Geoenvironmental Engineering, 139(6), 2013, 872-879

SELECTED RESEARCH PROJECTS

Field Application of Induced Partial Saturation (IPS) for Liquefaction Mitigation

Principal Investigator, National Science Foundation

Kevin Luther Clark

PhD 2018, Civil Engineering; Advisor: Auroop Ganguly

MITIGATING INFRASTRUCTURE RISK: REDUCING UNCERTAINTY IN RESILIENCE MODELING

The National Airspace System (NAS) is a complex system of systems which plays a vital role in sustaining economic and personal growth in America. As part of the transportation critical infrastructure the NAS like other lifeline substructures is impacted by shocks caused by both man-made and natural phenomenon. The U.S. airport network (USAN) continues to show signs it is operating at capacity, and its supporting facility infrastructure is aging and in some cases operating in poor conditions. Recently critical infrastructure resilience has emerged as an essential research topic for academia, public and private industries. This is in reaction and perception of the range of shocks and stresses correlated with natural and man-made pressures on transportation infrastructure which are compounded by the uncertainty of climate variability and resource constraints. Measuring critical infrastructure resilience is challenging and requires an approach which focuses on the robustness of infrastructure. Here we develop and demonstrate a framework which utilizes the integration of network science based analysis, and system dynamics analysis to quantitatively characterize the airport network and supporting infrastructure resilience.

See full dissertation at coe.neu.edu/18/KevinLutherClark

Wei Cui

PhD 2017, Civil Engineering; Advisor, Luca Caracoglia

PERFORMANCE-BASED DESIGN FRAMEWORK FOR 3D COUPLED WIND- INDUCED RESPONSE OF TALL BUILDINGS IN TURBULENT WINDS

In this study, a novel performance-based analysis framework for tall building structures, located in hurricane-prone regions of the United States, is proposed and introduced. This framework consists of four integral parts: (1) long-term hurricane wind speed prediction model, (2) probabilistic 3D coupled aerodynamic and structural response for tall buildings, (3) wind tunnel testing procedure and protocols to examine the effect of wind load experimental errors on the predictions of building response, (4) numerical analysis method to combine and integrate the results of the three initial parts.

See full dissertation at coe.neu.edu/17/WeiCui

Angelina Louise Jay

PhD 2017, Civil Engineering; Advisor, Andrew T. Myers

EXPERIMENTAL INVESTIGATION OF THE LOCAL BUCKLING AND FATIGUE BEHAVIOR OF SLENDER AND TAPERED SPIRALLY WELDED STEEL TUBES TO ENABLE TALLER WIND TOWERS

The research completed in this dissertation provides an experimental foundation for the design of slender spirally welded tubes for use as wind towers. The work includes large scale testing to assess flexural local buckling strength and performance, including experimental assessment of residual stress fields, detailed measurements of the initial imperfect geometry of the tube, measurements of local deformation during and after the completion of each test to enable analysis of the onset and evolution of local buckling, and an experimental investigation into the fatigue behavior of the weld intersection detail. These experimental results are intended to inform existing codified design methodologies and to enable non-existing, but more sophisticated design procedures.

See full dissertation at coe.neu.edu/17/AngelinaLouiseJay

Anshuman Kunwar

PhD 2017, Civil Engineering; Advisor, Dionisio Bernal

SYSTEM IDENTIFICATION FREE DAMAGE LOCALIZATION

One of the most widely used frameworks for vibration based structural damage identification involves characterizing damage as changes in the modal parameters of the structure between reference and damaged states respectively. Modal parameters are derived from the responses measured from the structure by implementing system identification. The sensitivity of the identified modal parameters to noise and lack thereof to the damage lead to inaccurate identification of parameters and incorrect damage characterization. As an obvious approach to circumvent problems associated with system identification, system identification free damage localization seems a worthwhile venture.

See full dissertation at coe.neu.edu/17/AnshumanKunwar

Mahdokht Montazeri

PhD 2017, Environmental Engineering; Advisor, Matthew Eckelman

ENVIRONMENTAL ASSESSMENT OF BIO-BASED FUELS AND CHEMICALS USING LCA METHODOLOGY

This dissertation combines chemical engineering process modeling with LCA to assess environmental impacts of novel bio-based products and synthesis routes. Four projects of this dissertation include, (1) a statistical meta-analysis of life cycle GHG emission and energy use results for priority bio-based chemicals; (2) a process design and LCA analysis of a novel catalytic depolymerization process for production of aromatics from the lignin fraction of woody biomass; (3) an industry-sponsored assessment of the net environmental benefits of substitution of renewable chemical building blocks in the formulation of wood flooring coatings; and (4) evaluation of integrated fuel, energy, and chemicals production from a microalgal biorefinery, considering time-dependent fractional growth kinetics of freshwater and marine microalgae.

See full dissertation at [coe.neu.edu/18/](http://coe.neu.edu/18/MahdokhtMontazeri)

MahdokhtMontazeri

Frank Schellenger Jr.

PhD 2018, Civil Engineering; Advisor, Ferdi Hellweger

LONG-TERM PHOSPHORUS LOADING FROM ONSITE WASTEWATER SYSTEMS TO SURFACE WATERS

Accelerated eutrophication caused by oversupply of nutrients from anthropogenic sources has impaired surface waters, especially lakes, in many places in the United States and worldwide. Nitrogen and phosphorus oversupply to surface waters has frequently caused overgrowth of aquatic plants and blooms of phytoplankton (algae) that damage fisheries, recreation, and property values. In many surface waters, phosphorus is the limiting nutrient, without which this overgrowth or bloom does not occur. Efforts to prevent, remediate, and mitigate the effects of phosphorus oversupply generally focus on surface sources and transport pathways of phosphorus, but review of the research literature suggests that phosphorus transport from domestic onsite wastewater systems (OWSs) via groundwater has not been considered a significant source because of sorption, and this source is not effectively addressed in lake management. We hypothesize that, with increasing time-in-use of an OWS, phosphorus may be transported via the groundwater surficial aquifer to a down-gradient surface water in ecologically relevant amounts. The results suggest that the phosphorus load from OWSs may be significant and should be considered in efforts to manage the effects of lake eutrophication.

See full dissertation at coe.neu.edu/18/

FrankSchellengerJr

Lizhong Wang

PhD 2017, Civil Engineering; Advisor, Jerome F. Hajjar

DECONSTRUCTABLE SYSTEMS FOR SUSTAINABLE DESIGN OF STEEL AND COMPOSITE STRUCTURES

This dissertation first describes the deconstructable composite floor system utilizing clamping connectors. This floor system is anticipated to be used along with all-bolted construction for the remainder of the structure to facilitate deconstruction. The environmental benefits of utilizing DfD in the design of buildings is demonstrated with the life cycle assessment results of prototype structures. The experimental program for investigating the performance of the system is then introduced. Pushout tests are conducted to quantify the strength and ductility of the clamping connectors and evaluate the influences of the parameters. It is indicated that the strength of the ductile clamping connectors is comparable to that of steel headed stud anchors. In addition, the behavior of the clamping connectors is further validated through full-scale beam tests in which the flexural behavior of the deconstructable composite beams is investigated comprehensively. Combining experimental and finite element analysis results, strength design equations and resistance factors are proposed for calculating the shear strength of the clamping connectors and the flexural strength of the associated composite beams. This dissertation culminates with conclusions and future work.

See full dissertation at coe.neu.edu/18/LizhongWang

Yiwen Zhu

PhD 2017, Civil Engineering; Advisor, Haris Koutsopoulos

PASSENGER-TO-ITINERARY ASSIGNMENT MODEL BASED ON AUTOMATED DATA

This dissertation addresses the important problem of evaluating the performance of subway systems operating near capacity, especially from the passenger's point of view. It develops a key building block towards this goal, the Passenger-to-Itinerary Assignment Model (PIAM), to identify the boarding train(s) of each passenger using Automatic Fare Collection (AFC) and Automatic Vehicle Location (AVL) data. PIAM is a model system, with a number of individual modules that interact but can also be used independently: the access/egress time model, left behind model, route choice model, and assignment model. The overall problem is challenging because of the large number of feasible itineraries a passenger may have. To deal with this, PIAM first estimates the left behind probabilities by station and time interval at the aggregate level and then assigns individual passengers to itineraries. The model is extended to incorporate trips involving route choice by estimating the route choice fractions and integrating them into the assignment model.

See full dissertation at coe.neu.edu/18/YiwenZhu

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DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

400 Snell Engineering Center
Northeastern University
360 Huntington Avenue
Boston, MA 02115

P 617.373.2444
F 617.373.4419

civ.neu.edu
coe.neu.edu

COVER IMAGE

Geanna Flavetta, a PhD Candidate in the Fernandez laboratory, is working to determine how tide gates and their operation affect the transport of toxic chemicals in coastal marshes. She monitors chemical concentrations in water and sediment at several locations, and prepares models to inform best practices for operating these flood-control devices.

