

## Matthew J. Whelan, Ph.D., P.E.

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CONTACT INFORMATION	3326 Energy Production and Infrastructure Center Department of Civil and Environmental Engineering University of North Carolina at Charlotte Charlotte, NC 28223 USA	<i>Voice:</i> (704) 687-1239 <i>Fax:</i> (704) 687-0957 <i>Email:</i> mwhelan3@charlotte.edu <a href="http://coefs.uncc.edu/mwhelan3/">http://coefs.uncc.edu/mwhelan3/</a>
RESEARCH INTERESTS	Structural Health Monitoring, Bridge Management Systems, Operational Modal Analysis, Nondestructive Testing and Evaluation, Large-Scale and Wireless Sensor Networks for Civil Infrastructure Applications, Structural Performance under Blast Loads, Full-Scale Structural Experimentation, Digital Twins	
EDUCATION	<b>Doctor of Philosophy</b> <i>Civil and Environmental Engineering</i> Clarkson University, Potsdam, New York  <b>Masters of Science</b> <i>Civil Engineering</i> Clarkson University, Potsdam, New York  <b>Bachelors of Science</b> with High Distinction and University Honors <i>Civil and Environmental Engineering</i> Clarkson University, Potsdam, New York	
ACADEMIC APPOINTMENTS	2016-present	Associate Professor <i>University of North Carolina at Charlotte, Charlotte, NC</i>
	2023-present	Assistant Director of Research for Energy Infrastructure <i>Energy Production and Infrastructure Center (EPIC)</i> <i>University of North Carolina at Charlotte</i>
	2010-2016	Assistant Professor <i>University of North Carolina at Charlotte, Charlotte, NC</i>
	2009-2010	Postdoctoral Research Associate <i>Clarkson University, Potsdam, NY</i>
	2004-2009	Graduate Research Assistant <i>Clarkson University, Potsdam, NY</i>
	2003-2004	Undergraduate Research Assistant <i>Clarkson University, Potsdam, NY</i>
PROFESSIONAL LICENSES	Professional Engineer, State of North Carolina, License #050018	
PATENTS	<ol style="list-style-type: none"><li>Holloway, D.C., Whelan, M.J., and Janoyan, K.D. Cooper Technologies Company. <i>Integrated condition or actuation monitoring and control components for switches, circuit breakers, panel boards, and other items for electrical control and circuit protection.</i> U.S. Patent 8,570,179, October 29, 2013.</li><li>Whelan, M.J., Ivey, J., and Dulin, S. Duke Energy Corporation and University of North Carolina at Charlotte <i>Nondestructive Inspection Tools for Timber Distribution Poles, and Related Methods.</i> U.S. Patent 10,612,995, April 7, 2020.</li></ol>	
PROVISIONAL PATENTS	<ol style="list-style-type: none"><li>Whelan, M.J. <i>Methods and devices for condition assessment of timber distribution poles.</i> U.S. Provisional Patent Application No. 62/531,589, July 12, 2017.</li></ol>	

PUBLICATION Citation Count: 1221  
METRICS (GOOGLE h-index: 18  
SCHOLAR AS OF i10-index: 27  
NOVEMBER 2024)

**FUNDED RESEARCH Development of Tools and Guidance for Damage Assessment of Prestressed Concrete Girder Bridges following Overheight Collisions**

*Sponsor:* NCDOT  
*Role:* Co-Principal Investigator (33%)  
*Period:* August 2022 - July 2024  
*Amount:* \$258,692

**Development of a Low-Cost, Portable, and Rapid Nondestructive Inspection Tool for Wood Distribution Poles - Phase IIIA**

*Sponsor:* Duke Energy Corporation  
*Role:* Principal Investigator (50%)  
*Period:* July 2022 - December 2024  
*Amount:* \$125,487

**Technical Support of Precast Concrete Joint Fatigue Test Program**

*Sponsor:* Tindall Corporation  
*Role:* Principal Investigator (40%)  
*Period:* April 2022 - December 2024  
*Amount:* \$62,176

**UNCC Digital Twin Support for the NRIC Demonstration**

*Sponsor:* EPRI  
*Role:* Co-Principal Investigator (20%)  
*Period:* February 2022 - December 2022  
*Amount:* \$803,751

**Field Vibration Testing of Tindall T-Slab System**

*Sponsor:* Tindall Corporation  
*Role:* Principal Investigator (40%)  
*Period:* June 2021 - March 2022  
*Amount:* \$19,182

**Instrumentation and Field Measurement of Tindall T-Slab Variant**

*Sponsor:* Tindall Corporation  
*Role:* Principal Investigator (40%)  
*Period:* June 2021 - March 2022  
*Amount:* \$13,044

**Full Scale Testing Program of Tindall T-Slab System**

*Sponsor:* Tindall Corporation  
*Role:* Co-Principal Investigator (25%)  
*Period:* April 2020 - March 2021  
*Amount:* \$69,031

**UNCC EPIC Support for GE Hitachi's BWRX-300 Construction LTR 5**

*Sponsor:* GE Hitachi  
*Role:* Co-Principal Investigator (45%)  
*Period:* May 2020 - July 2020  
*Amount:* \$90,414

**Development of a Low-Cost, Portable, and Rapid Nondestructive Inspection Tool for Wood Distribution Poles - Phase III**

*Sponsor:* Duke Energy Corporation  
*Role:* Principal Investigator (100%)  
*Period:* March 2020 - July 2022  
*Amount:* \$102,457

**Compliance of Regulatory Inspection and Testing Requirements using Nondestructive Evaluation (NDE)**

*Sponsor:* GE Hitachi  
*Role:* Co-Principal Investigator (40%)  
*Period:* January 2020 - February 2020  
*Amount:* \$31,932

**Full Scale Testing Program for the Tindall Slab System**

*Sponsor:* Tindall Corporation  
*Role:* Co-Principal Investigator (33%)  
*Period:* January 2018 - June 2019  
*Amount:* \$112,219

**Effects of Torsion and Moment on Traffic Signal Structure' Foundations in Coastal Conditions**

*Sponsor:* North Carolina Department of Transportation  
*Role:* Co-Principal Investigator (24%)  
*Period:* August 2017 - July 2019  
*Amount:* \$288,596

**Development of a Low-Cost, Portable, and Rapid Nondestructive Inspection Tool for Wood Distribution Poles - Phase II**

*Sponsor:* Duke Energy Corporation  
*Role:* Principal Investigator (60%)  
*Period:* December 2016 - March 2020  
*Amount:* \$230,234

**Improving Replacement Cost Data for NCDOT Highway Bridges**

*Sponsor:* North Carolina Department of Transportation  
*Role:* Principal Investigator (50%)  
*Period:* August 2015 - July 2017  
*Amount:* \$97,070

**Blast Testing and Simulations of a Full-Scale Cold-Formed Steel Building**

*Sponsor:* Charlotte Research Institute - Targeted Research Seed Grant Program  
*Role:* Co-Principal Investigator (45%)  
*Period:* July 2016 - June 2017  
*Amount:* \$59,995

**Preliminary Structural and Foundation Assessment of the Historic Crusader Walls and Pillars at the St. Jerome Hall within the Armenian Section of the Church of the Nativity in Bethlehem**

*Sponsor:* University of the Holy Land  
*Role:* Co-Principal Investigator (50%)  
*Period:* May 2016 - December 2016  
*Amount:* \$13,000

**Guidelines for Prioritization of Bridge Replacement, Rehabilitation, and Preservation Projects**

*Sponsor:* North Carolina Department of Transportation

*Role:* Principal Investigator (50%)

*Period:* August 2015 - July 2017

*Amount:* \$181,802

**Post-Blast Investigative Tools for Structural Forensics by 3D Scene Reconstruction and Advanced Simulation**

*Sponsor:* National Institute of Justice

*Role:* Principal Investigator (55%)

*Period:* January 2015 - December 2017

*Amount:* \$274,012

**First Phase Development of a Low-Cost, Portable, and Rapid Nondestructive Inspection Tool for Wood Distribution Poles**

*Sponsor:* Duke Energy Corporation

*Role:* Principal Investigator (50%)

*Period:* January 2015 - May 2016

*Amount:* \$115,502

**Enabling Sustainable Civil Infrastructure Using Interactive Formal Analytics for Structural Health Diagnosis**

*Sponsor:* National Science Foundation

*Role:* Co-Principal Investigator (40%)

*Period:* October 2013 - September 2017

*Amount:* \$563,000

**Wireless Vibration Monitoring of the Hicks and Henry St. Bridge**

*Sponsor:* WSP Group, Inc.

*Role:* Principal Investigator (100%)

*Period:* August 2014 - November 2014

*Amount:* \$10,894

**Blast Testing of Steel Stud Wall Specimens**

*Sponsor:* The Steel Network

*Role:* Co-Principal Investigator (45%)

*Period:* October 2013 - January 2014

*Amount:* \$8,000

**Determination of Vertical Resistance for Sheet Pile Abutments**

*Sponsor:* North Carolina Department of Transportation

*Role:* Co-Primary Investigator (40%)

*Period:* August 2013 - January 2017

*Amount:* \$231,459

**Determination of Bridge Deterioration Models and Bridge User Costs for NCDOT Bridge Management System**

*Sponsor:* North Carolina Department of Transportation

*Role:* Co-Primary Investigator (33%)

*Period:* August 2013 - August 2015

*Amount:* \$174,801

**Wireless Experimental Vibration Analysis of the Mississippi River Bridge over Prairie Du Chien USH18E/W**

*Sponsor:* Teng & Associates, Inc, under Wisconsin Department of Transportation (Prime)  
*Role:* Primary Investigator (100%)  
*Period:* February 2011 - September 2011  
*Amount:* \$35,342

**Wireless Experimental Vibration Analysis of the Mississippi River Bridge over Prairie Du Chien USH18E/W - Phase II**

*Sponsor:* Teng & Associates, Inc, under Wisconsin Department of Transportation (Prime)  
*Role:* Primary Investigator (100%)  
*Period:* December 2011 - August 2012  
*Amount:* \$8,130

**Quantifying Corrosive Potential of De-Icing and Anti-Icing Solutions to Steel and Concrete Bridge Components**

*Sponsor:* North Carolina Department of Transportation  
*Role:* Co-Primary Investigator (50%)  
*Period:* August 2011 - July 2013  
*Amount:* \$165,361

**Nondestructive Evaluation and Load Rating of Prestressed Double-Tee Joists at the Harbor Baptist Church**

*Sponsor:* Structural Innovations Engineering and Consulting, PC  
*Role:* Primary Investigator (50%)  
*Period:* April 2011 - August 2011  
*Amount:* \$6,685

**EAGER: Underground Wireless Sensor Networks for Distributed Sensing of Buried Infrastructure**

*Sponsor:* National Science Foundation  
*Role:* Co-Primary Investigator (50%)  
*Period:* October 2010 - March 2013  
*Amount:* \$25,000 subcontract award from \$50,000 master award to Clarkson University

**Water Quality Measurements using a Novel Buoyancy Controlled Drifting Sensor Platform (BCDSP)**

*Sponsor:* Syracuse Center of Excellence under EPA  
*Role:* Primary Investigator at UNCC and Co-Primary Investigator of Project (25%)  
*Period:* July 2009 - June 2011  
*Amount:* \$25,000 subcontract from \$215,000 master award to Clarkson University

**♣ Advanced Sensing and Structural Evaluation Toolkit (ASSET) for Load Capacity Rating within Bridge Inspection**

*Sponsor:* New York State Energy Research and Development Authority (NYSERDA)  
*Role:* Co-Primary Investigator (50%)  
*Period:*  
*Amount:* \$50,000

♣ Awarded while a Post-Doctoral Research Associate at Clarkson University

## Graduate Research Fellowship Awards

### **Sweep Tolerance in Prestressed Concrete I-Girders**

*Sponsor:* Prestressed Concrete Institute (PCI) Daniel P. Jenny Fellowship Program

*Sponsored Student:* Pegah Ahrabi

*Amount:* \$50,000

*Period:* January 2025 - July 2026

### **Extended Development, Verification, and Validation of a Blast Dynamics Simulator for Post-Blast Forensic Investigations**

*Sponsor:* National Institute of Justice Graduate Research Fellowship in Science, Technology, Engineering, and Mathematics

*Sponsored Student:* Jonathan Moss

*Amount:* \$137,876

### **Model Calibration and Health Monitoring of Structures using Modifications to Genetic Algorithm**

*Sponsor:* North Carolina Space Grant Consortium Graduate Research Fellowship

*Sponsored Student:* Timothy Kernicky

*Amount:* \$7,000

*Period:* August 2013 - May 2014

### **Validation and Uncertainty Quantification of Analytical Models for Seismic Qualification of Nuclear Power Plant Structures, Systems, and Components**

*Sponsor:* EPIC Graduate Research Fellowship

*Sponsored Student:* Michael Tedeschi

*Amount:* \$15,000 Student Support & \$5,000 Faculty Support

*Period:* August 2013 - May 2014

### **Development and Validation of a Pseudodynamic Hybrid Testing System for Lattice Transmission Structures**

*Sponsor:* EPIC Graduate Research Fellowship

*Sponsored Student:* Michael Tedeschi

*Amount:* \$9,000 Student Support

*Period:* August 2014 - December 2014

## In-Kind Support

Extreme Loading for Structures Software License

*Sponsor:* Applied Science International

*Support:* 12 month term license (x2) valued at \$5,000

*Period:* December 2013 - December 2014

## Industry Sponsored Graduate Projects

### **Automated Design of Reinforced Concrete Wall Panels in Nuclear Facilities for In-Plane and Out-of-Plane Forces According to ACI 349-06**

*Sponsor:* URS Corporation (Through the Industrial Solutions Laboratory)

*Amount:* \$4000 Student Support & \$500 Faculty Stipend

*Sponsored Students:* William Atkinson and Colin Manning

*Period:* January 2014 - May 2014

JOURNAL  
PUBLICATIONS

1. Whelan, M.J., Gangone, M.V., Janoyan, K.D. (202x) "Data Set from Ambient Vibration Monitoring and Static Loading of a Steel Stringer Bridge Subject to Imposed Damage for Structural Health Monitoring and Damage Detection," *Journal of Bridge Engineering*, (Under

Review)

2. Whelan, M.J., Weggel, D., Moss, J., Rahman, N., and Khalil, A. (202X) "Blast Testing of a Cold-Formed Steel-Framed Building with Roof Truss System: II. Component-Level Response," *Journal of Structural Engineering*, (Accepted for publication)
3. Weggel, D., Whelan, M.J., Moss, J., Rahman, N., and Khalil, A. (202X) "Blast Testing of a Cold-Formed Steel-Framed Building with Roof Truss System: I. System-Level Response," *Journal of Structural Engineering*, (Accepted for publication)
4. Goyal, R., Whelan, M.J., and Cavalline, T. (2020) "Multivariable Proportional Hazards-Based Probabilistic Model for Bridge Deterioration Forecasting," *Journal of Infrastructure Systems*, 26 (2), 04020007
5. Kernicky, T., Whelan, M.J., and Al-Shaer, E. (2019) "Vibration-based Damage Detection with Uncertainty Quantification by Structural Identification using Nonlinear Constraint Satisfaction with Interval Arithmetic," *Structural Health Monitoring*, 18 (5-6), 1569-1589
6. Kernicky, T., Whelan, M.J., and Al-Shaer, E. (2018) "Dynamic Identification of Axial Force and Boundary Restraints in Tie Rods and Cables with Uncertainty Quantification using Set Inversion Via Interval Analysis," *Journal of Sound and Vibration*, Vol. 423, 401-420.
7. Whelan, M.J., Salas, N., and Kernicky, T. (2018) "Structural Identification of a Tied Arch Bridge using Genetic Algorithms and Ambient Vibration Monitoring with a Wireless Sensor Network," *Journal of Civil Structural Health Monitoring*, Vol. 8, No. 2, 315-330.
8. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2017) "Effect of Sensor System Noise and Load Positioning on the Precision of Load Testing and Rating of Highway Bridges: A Case Study," *Journal of Structural Integrity and Maintenance*, Vol. 2, No. 4, 234-248.
9. Kernicky, T., Whelan, M.J., Rauf, U., and Al-Shaer, E. (2017) "Structural Identification using a Nonlinear Constraint Satisfaction Processor with Interval Arithmetic and Contractor Programming," *Computers and Structures*, Vol. 188, 1-16.
10. Goyal, R., Whelan, M.J., and Cavalline, T. (2017) "Characterizing the effect of external factors on deterioration rates of bridge components using multivariate proportional hazards regression," *Structure and Infrastructure Engineering*, Vol. 13, No. 7, 894-905.
11. Whelan, M.J., Ralston, A., and Weggel, D. (2016) "Blast Testing of Cold-Formed Steel Stud Wall Panels," *Journal of Performance of Constructed Facilities*, Vol. 30, No. 2, 04015008.
12. Ralston, A.D., Weggel, D.C., Whelan, M.J., and Fang, H. (2015) "Experimental and Numerical Investigations of Glass Curtain Walls Subjected to Low-Level Blast Loads," *International Journal of Computational Methods and Experimental Measurements*, Vol. 3, No. 2, 121-138.
13. Whelan, M.J. and Gangone, M.V. (2015) "Effect of Measurement Uncertainties on Strain-Based Damage Diagnostics for Highway Bridges," *Journal of Civil Structural Health Monitoring*, Vol. 5, No. 3, 321-335.
14. Kernicky, T., Whelan, M.J., Weggel, D., and Rice, C. (2015) "Structural Identification and Damage Characterization of a Masonry Infill Wall in a Full-Scale Industrial Building Subjected to Internal Blast Load," *Journal of Structural Engineering* Vol. 141, No. 1, D4014013.
15. Whelan, M.J., Tempest, B., and Scott, D. (2015) "Post-Fire Nondestructive Evaluation of a Prestressed Concrete Double-Tee Joist Roof," *Journal of Performance of Constructed Facilities*, Vol. 29, No. 2, 04014055.
16. Whelan, M.J., Tempest, B., and Scott, D. (2014) "Influence of Fire Damage on the Modal Parameters of a Prestressed Concrete Double-Tee Joist Roof," *Structural Control and Health Monitoring* Vol. 21, No. 11, 1335-1346.
17. Gangone, M.V., Whelan, M.J., Janoyan, K.D., and Minnetyan, L. (2014) "Development of performance assessment tools for a highway bridge resulting from controlled progressive monitoring," *Structure and Infrastructure Engineering*, Vol. 10, No. 5, 551-567.

18. Kunwar, A., Jha, R., Whelan, M.J., and Janoyan, K.D. (2013) "Damage Detection in an Experimental Bridge Model using Hilbert-Huang Transform of Transient Vibrations," *Structural Control and Health Monitoring*, Vol. 20, No. 1, 1-15.
19. Gangone, M.V., Whelan, M.J., Janoyan, K.D., and Minnetyan, L. (2013) "Experimental Characterization and Diagnostics of the Early-Age Behaviour of a Semi-Integral Abutment FRP Deck Bridge," *Sensor Review*, Vol. 32, No. 4, 296-309.
20. Whelan, M.J. and Janoyan, K.D. (2012) "Assessment of Simplified Linear Dynamic Analysis of a Multi-Span Skew Bridge on Steel-Reinforced Elastomeric Bearings," *Journal of Bridge Engineering*, Vol. 17, No. 1, 151-160.
21. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2011). "Wireless Monitoring of a Multi-Span Bridge Superstructure for Diagnostic Load Rating and System Identification," *Computer-Aided Civil and Infrastructure Engineering*, Vol. 26, No. 7, 560-579.
22. Whelan, M.J., Gangone, M.V., Janoyan, K.D., and Jha, R. (2011) "Operational Modal Analysis of a Multi-Span Skew Bridge using Real-Time Wireless Sensor Networks," *Journal of Vibration and Control*, Vol. 17, No. 13, 1952-1963.
23. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2011) "Deployment of a dense hybrid wireless sensing system for bridge assessment," *Structure and Infrastructure Engineering*, Vol. 7, No. 5, 369-378.
24. Whelan, M.J. and Janoyan, K.D. (2010) "In-Service Diagnostics of a Highway Bridge from a Progressive Damage Case Study," *Journal of Bridge Engineering*, Vol. 15, No. 5, 597-607.
25. Whelan, M.J., Gangone, M.V., Janoyan, K.D., Hout, N., Middleton, C.R., and Soga, K. (2010), "Wireless Operational Modal Analysis of a Multi-Span Prestressed Concrete Bridge for Structural Identification," *Smart Structures and Systems*, Vol. 6, No. 5-6.
26. Whelan, M.J., Gangone, M.V., Janoyan, K.D., and Jha, R. (2009) "Real-Time Wireless Vibration Monitoring for Operational Modal Analysis of an Integral Abutment Highway Bridge." *Engineering Structures*, Vol. 30, No. 10, p. 2224-2235.
27. Whelan, M.J. and Janoyan, K.D. (2009) "Design of a Robust, High-Rate Wireless Sensor Network for Static and Dynamic Structural Health Monitoring," *Journal of Intelligent Material Systems and Structures*, Vol. 20, No. 7, p. 849-863.
28. Whelan, M.J., Gangone, M.V., and Janoyan, K.D. (2009) "Highway Bridge Assessment using an Adaptive Real-Time Wireless Sensor Network," *IEEE Sensors*, Vol. 9, No. 11, p. 1405-1413.
29. Whelan, M.J., Fuchs, M.P., and Janoyan, K.D. (2008) "Large Scale Remote Sensing for Environmental Monitoring of Infrastructure," *Journal of Environmental Monitoring*, Vol. 10, pp. 812-816.

TECHNICAL  
REPORTS

1. Rodriguez, C., Pando, M., Whelan, M.J., Weggel, D., and Fang, H. (2020) "State of Practice and Literature Review on Foundations for Coastal Traffic Signal Mast Arm Structures," Final Report, FHWA/NC/2018-17
2. Whelan, M.J., Cavalline, T., Phillips, P., and Rice, C. (2019) "Improving Replacement Cost Data for NCDOT Highway Bridges," Final Report, FHWA/NC/2017-09
3. Whelan, M.J., Cavalline, T., Alar, A., and Lane, K. (2019) "Guidelines for Prioritization of Bridge Replacement, Rehabilitation, and Preservation Projects," Final Report, FHWA/NC/2016-05
4. Whelan, M.J., Weggel, D., Moss, J., and Howe, A. (2019) "Post-Blast Investigative Tools for Structural Forensics by 3D Scene Reconstruction and Advanced Simulation," National Criminal Justice Reference Service, Number 252954.



5. Pando, M., Whelan, M.J., Ogunro, V., Rice, C., Sylvain, M., Park, Y. (2018) "Determination of Vertical Resistance for Sheet Pile Abutments," Final Report, FHWA/NC/2014-08
6. Cavalline, T., Whelan, M.J., Tempest, B., Goyal, R., and Ramsey, J. (2015) "Determination of Bridge Deterioration Models and Bridge User Costs for the NCDOT Bridge Management System," Final Report, FHWA/NC/2014-07

BOOK CHAPTERS     Janoyan, K.D. and Whelan, M.J. (2010) "Intelligent Transportation Infrastructure Technologies for Condition Assessment and Structural Health Monitoring of Highway Bridges," *in* Sustainable Infrastructure Systems: Simulation, Imaging, and Intelligent Engineering, K. Gopalakrishnan and S. Peeta (editors), Springer Verlag.

- CONFERENCE  
PROCEEDINGS
1. Whelan, M.J., Park, Y., and Kernicky, T. (2025) "Design and Demonstration of an Improved Optical Multiplexer for Vision-based Vibration Monitoring of Civil Structures," International Modal Analysis Conference XLIII, Orlando, FL, February.
  2. Samazad, A. and Whelan, M.J. (2024) "Effect of Hourglass Control on LS-DYNA Concrete Constitutive Models in Low Velocity Impact Simulations," 2024 International LS-DYNA Conference, Metro Detroit, Michigan, USA, October 22-23.
  3. Samazad, A., Cathey, S., Whelan, M.J., Braxtan, N., and Chen, S.E. (2024) "Finite Element Analysis of Over-Height Vehicle Collisions on Prestressed Girder Bridges," IABMAS 2024, Copenhagen, Denmark, June 24 - June 28.
  4. Whelan, M.J. and Park, Y. (2024) "Enhancing Vision-Based Structural Displacement Measurement of Civil Structures through Optical Multiplexing," International Modal Analysis Conference XLII, Orlando, FL, February.
  5. Thomas, L., Kernicky, T., Whelan, M., Park, Y., and Cox, R. (2023) "Application of a Structural Digital Twin on a Laboratory Model for Performance Monitoring of Aging and Degradation," International Modal Analysis Conference XLI, Austin, TX, February 13.
  6. Cox, R., Kernicky, T., Khire, M., Whelan, M., Park, Y., Charkas, H., Varma, A., and Vedovi, J. (2022) "Digital Twins for Monitoring Construction Quality," ANS Winter Meeting, November 11-13, 2022.
  7. Thomas, L., Kernicky, T., Park, Y., Whelan, M.J., and Charkas, H. (2022) "Laboratory Demonstration of Structural Digital Twin Use Cases for Nuclear Construction," ANS Winter Meeting, November 11-13, 2022.
  8. Kernicky, T. and Whelan, M.J. (2022) "Simplified Modeling and Modal Analysis of Timber Distribution Poles to Support Vibration-Based Condition Assessment," International Modal Analysis Conference XL, Orlando, FL, (prepared as an extended abstract), February 8-11, 2021.
  9. Whelan, M.J., Braxtan, N., Mayo, G., and Tempest, B. (2020) "Experimental Modal Analysis of Double Tee Floors in a Fire Damaged Parking Deck for Post-Fire Vibration-Based Condition Assessment," International Modal Analysis Conference XXXVIII, Houston, TX, February 11-13, 2020.
  10. Goyal, R., Whelan, M.J., and Cavalline, T. (2019) "Duration-based Forecasting of Bridge Condition with Non-Parametric Kaplan-Meier Survival Function," Fifth Conference on Smart Monitoring, Assessment, and Rehabilitation of Civil Structures, Potsdam, Germany, August 27-29.
  11. Gonzales, E.M., Pando, M.A., Whelan, M.J., Fratta, D., Ramos, L., and Aguilar, R. (2018) "Structural Evaluation and Preliminary Analysis of the St. Jerome Hall of the Church of the Nativity in Bethlehem," 11<sup>th</sup> International Conference on Structural Analysis of Historical Constructions, Cusco, Peru, September 11-13.

12. Goyal, R., Whelan, M.J., and Cavalline, T. (2018) "Predictive fidelity of bridge deterioration models: probabilistic vs. deterministic," 9<sup>th</sup> International Conference on Bridge Maintenance, Safety, and Management, Melbourne, Australia, July 9-13.
13. Gangone, M.V. and Whelan, M.J. (2018) "The impact of measurement uncertainty from experimental load distribution factors on bridge load rating," Proceedings of SPIE Smart Structures and Materials + Nondestructive Evaluation and Health Monitoring, Denver Colorado. March 27.
14. Sylvain, M.B., Pando, M.A., Rice, C.D., Whelan, M.J., Ogunro, V.O., Park, Y., and Koch, T. (2017) "Case History of a Full Scale Axial Load Test of Sheet Piles," Geotechnical Frontiers 2017, Orlando, Florida, March 12-15.
15. Gangone, M.V. and Whelan, M.J. (2017) "Damage Identification in Highway Bridges using Distribution Factors," Proceedings of SPIE 10169, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, and Civil Infrastructure 2017, 1016921, April 19.
16. Sylvain, M.B., Pando, M.A., Whelan, M.J., Ogunro, V.O., and Park, Y. (2016) "Design and application of a low-cost, 3D printed crosshole seismic system," 5th International Conference on Geotechnical and Geophysical Site Characterisation, Queensland, Australia.
17. Kernicky, T.P., Tedeschi, M., and Whelan, M.J. (2016) "Leveraging Hybrid Simulation for Vibration-Based Damage Detection Studies," International Modal Analysis Conference XXXIV, Orlando, FL, January 25-28.
18. Ramsey, J., Cavalline, T., Whelan, M.J., Goyal, R., and Tempest, B. (2016) "A 25-year Retrospective on Bridge-Related Crashes in North Carolina: Frequencies, User Costs, and Associated Bridge Characteristics," Transportation Research Board (TRB) Annual Meeting.
19. Goyal, R., Whelan, M.J., and Cavalline, T. (2016) "Multivariate Regression Modeling of Bridge Deterioration: Identifying Factors Influencing Deterioration over the Life-Cycle," 8th International Conference on Bridge Maintenance, Safety and Management, Foz do Iguacu, Brazil, June 26-30.
20. Sylvain, M., Pando, M., Whelan, M., Ogunro, V., Park, Y., and Koch, T. (2015) "Large Scale Laboratory Testing to Evaluate Axial Load Capacity of Sheet Piles for Bridge Abutments," XV Panamerican Conference on Soil Mechanics and Geotechnical Engineering, Buenos Aires, Argentina, November 15-18.
21. Kernicky, T., Whelan, M.J., Rauf, U., and Al-Shaer, E. (2015) "Damage Detection in a Laboratory Model using a Nonlinear Constraint Satisfaction Processor for Finite Element Model Updating," The International Workshop on Structural Health Monitoring, Stanford University, September 1-3, 2015.
22. Whelan, M.J., Kernicky, T., and Salas Zamudio, N. (2015) "Structural Identification of Large Finite Element Models using Commodity Computing Clusters for Parallel Genetic Algorithms," The International Workshop on Structural Health Monitoring, Stanford University, September 1-3, 2015.
23. Rauf, U., Kernicky, T., Whelan, M.J., and Al-Shaer, E. (2015) "Formal Analysis of Critical Infrastructures by Structural Identification using Constraint Programming Paradigm," International Modal Analysis Conference XXXIII, Orlando, FL, February 2-5.
24. Kernicky, T., Whelan, M.J., and Moen, C. (2015) "Influence of Prestressing Strand Damage on Modal Parameters of a Hybrid Composite Bridge Beam," International Modal Analysis Conference XXXIII, Orlando, FL, February 2-5.
25. Ameijeiras, M.P., Godoy, L., Weggel, D. and Whelan, M.J. (2014) "Incidencia del tiempo de arribo de onda en la respuesta de tanques sometidos a explosiones externas," XXI Congress on Numerical Methods and their Applications, Bariloche, Argentina, 23-26 September.

26. Salas Zamudio, N., Kernicky, T., and Whelan, M.J. (2014) "Structural Identification of a Tied Arch Bridge Span: Effect of Boundary Conditions on Model Correlation," International Conference on Short and Medium Span Bridges, Calgary, Alberta.
27. Goyal, R., Ramsey, J., Whelan, M.J., Cavalline, T., and Tempest, B. (2014) "A Framework for Statistical Regression of Bridge Deterioration Rates for Improved BMS Classification," International Conference on Short and Medium Span Bridges, Calgary, Alberta.
28. Rice, C., Pando, M., Whelan, M.J., and Ogunro, V. (2014) "Vertical Load Capacity of Steel Sheet Piles for Bridge Abutments - Preliminary Assessment for Test Site in Sand," International Conference on Short and Medium Span Bridges, Calgary, Alberta.
29. Whelan, M.J., Kernicky, T., and Weggel, D. (2014) "Structural Identification using the Applied Element Method: Advantages and Case Study Application," International Modal Analysis Conference XXXII, Orlando, FL, February 2-5, 2014.
30. Kernicky, T., Whelan, M.J., and Weggel, D. (2014) "Experimental Modal Analysis of a Prestressed Concrete Double-Tee Joist Roof Subject to Blast," International Modal Analysis Conference XXXII, Orlando, FL, February 2-5, 2014.
31. Goyal, R., Kelsey, B., Kennedy, R., Whelan, M.J., and Janoyan, K.D. (2014) "Parametric Study of Underground Wireless Sensor Networks using 2nd Generation RF Transceivers," Geo-Congress 2014, Atlanta, GA.
32. Warren, K., Whelan, M.J., Hite, J., and Adams, M. (2014) "Three Year Evaluation of Thermally Induced Strain and Corresponding Lateral End Pressures for a GRS IBS in Ohio," Geo-Congress 2014, Atlanta, GA.
33. Kernicky, T., Whelan, M.J., Rice, C., and Weggel, D. (2013) "Structural Identification of a Full-Scale CMU Infill Wall Subjected to Blast Loading using an Applied Element Framework," *The International Workshop on Structural Health Monitoring*, Stanford University, September 10-12, 2013.
34. Gangone, M.V., Whelan, M.J., Janoyan, K.D., and Minnetyan, L. (2013) "The Importance in Load Positioning During Experimental Load Testing of Highway Bridges," *The International Workshop on Structural Health Monitoring*, Stanford University, September 10-12, 2013.
35. Gangone, M.V., Whelan, M.J., Janoyan, K.D., and Minnetyan, L. (2013) "A Complementary Approach to Condition Assessment of Highway Bridges Using a Quantitative Index Measure," *The International Workshop on Structural Health Monitoring*, Stanford University, September 10-12, 2013.
36. Warren, K., Whelan, M.J., Adams, M., and Nicks, J. (2013) "Preliminary Evaluation of Thermally Induced Strains and Pressures that Develop in a GRS Integrated Bridge System," *Geosynthetics 2013*, April 1-4.
37. Whelan, M. and Hietbrink, C. (2012) "Wireless Sensor Network Deployments for Structural Identification in a Tied Arch Bridge," *NDE/NDT for Highways and Bridges: Structural Materials Technology*, New York, NY, August.
38. Tempest, B. and Whelan, M. (2012) "Damage Evaluation of Prestressed Double Tees Exposed to Accidental Building Fire," *PCI Convention and National Bridge Conference*, Nashville, TN, September.
39. Hietbrink, C. and Whelan, M.J. (2012) "System Identification of a Tied Arch Bridge using Reference-Based Wireless Sensor Networks," *SPIE Smart Structures/NDE Conference*, San Diego, CA, March, in *Smart Sensor Phenomena, Technology, Networks, and Systems Integration 2012*, Vol. 8346.
40. Kernicky, T. and Whelan, M.J. (2012) "Sensor Topologies for Application of Strain Energy Damage Diagnostics and Prognostication," *SPIE Smart Structures/NDE Conference*, San Diego, CA, March, in *Smart Sensor Phenomena, Technology, Networks, and Systems Integration 2012*, Vol. 8346.

41. Whelan, M.J. (2011) "Design and Application of a Wireless Sensor Network for Vibration-Based Performance Assessment of a Tied Arch Bridge," International Workshop on Structural Health Monitoring, Stanford, CA, September 13-15, in *Structural Health Monitoring 2011: Condition-based Maintenance and Intelligent Structures*, DEStech, Lancaster, PA, pp. 709-716.
42. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2011) "Diagnostic Performance Indication through Field Testing of a Bridge Superstructure," International Workshop on Structural Health Monitoring, Stanford, CA, September 13-15, in *Structural Health Monitoring 2011: Condition-based Maintenance and Intelligent Structures*, DEStech, Lancaster, PA, pp. 692-700.
43. Whelan, M.J., Gangone, M.V., and Janoyan, K.D. (2011) "Influence of Sensor Placement on Operational Modal Analysis of Steel Girder Bridges," SPIE Smart Structures/NDE Conference, San Diego, CA, March 8, in *Smart Sensor Phenomena, Technology, Networks, and Systems 2011*, Vol. 7982. (Invited)
44. Gangone, M.V., Whelan, M.J. and Janoyan, K.D. (2011) "Condition Assessment of a Bridge Superstructure using Diagnostic Performance Indicators," SPIE Smart Structures/NDE Conference, San Diego, CA, March 8, in *Smart Sensor Phenomena, Technology, Networks, and Systems 2011*, Vol. 7982.
45. Gangone, M.V., Whelan, M.J., Janoyan, K.D., Minnetyan, L, and Qiu, T. (2010) "High-Rate Wireless Strain Monitoring of an FRP Bridge Deck Replacement Superstructure," NDE/NDT for Highways and Bridges: Structural Materials Technology (SMT), New York, NY August 16-20.
46. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2010) "Damage Detection of Highway Bridges using Wireless Strain and Acceleration Measurements", NDE/NDT for Highways and Bridges: Structural Materials Technology (SMT), New York, NY August 16-20.
47. Gangone, M.V., Whelan, M.J., Janoyan, K.D., Minnetyan, L., and Qiu, T. (2010) "Wireless Sensor Performance Monitoring of an Innovative Bridge Design in New York State," Fifth International Conference on Bridge Maintenance, Safety, and Management (IABMAS2010), Philadelphia, PA. July 11-15.
48. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2009) "Case Studies of Wireless Sensor Monitoring for Structural Identification and Evaluation of Bridge Superstructures," International Workshop on Structural Health Monitoring, Stanford, CA, September 9-11.
49. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2009) "Wireless Monitoring of a Multi-Span Bridge Superstructure for Structural Evaluation," 4th International Conference on Structural Health Monitoring of Intelligent Infrastructure (SHMII-4). Zurich, Switzerland, 22-24 July.
50. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2009) "Wireless Sensing Systems for Bridge Condition Assessment and Health Monitoring," SPIE Smart Structures Symposium, San Diego, California. 8-12 March.
51. Whelan, M.J., Gangone, M.V., Janoyan, K.D., and Jha, R. (2008) "Wireless Vibration Monitoring for Damage Detection of Highway Bridges," SPIE Smart Structures Symposium. San Diego, CA.
52. Gangone, M.V., Whelan, M.J., Janoyan, K.D., and Jha, R. (2008) "Field deployment of a dense wireless sensor network for condition assessment of a bridge superstructure," SPIE Smart Structures Symposium, San Diego, CA.
53. Whelan, M.J., Janoyan, K.D., and Qiu, T. (2008) "Integrated Monitoring of Wind Plant Systems," SPIE Smart Structures Symposium, San Diego, CA.
54. Whelan, M.J. and Janoyan, K.D. (2007) "Wireless Sensor Network for Monitoring of Geo-Structural Systems," 7th International Symposium on Field Measurements in Geomechanics, Boston, MA.

55. Gangone, M.V., Whelan, M.J., and Janoyan, K.D. (2008) "Structural Health Management of Concrete Structures using Wireless Sensors," *Health Monitoring Systems and Sensors for Assessing Concrete*. American Concrete Institute Special Publication SP-252-9.
56. Whelan, M.J. and Janoyan, K.D. (2007) "Real-time Embedded Sensing for Process Monitoring and Quality Control in the Lost Foam Casting Process," *Transactions of the American Foundry Society (AFS)*. Vol. 115, 823-832.
57. Whelan, M.J. and Janoyan, K.D. (2007) "Development of a Wireless Predictive Maintenance Sensor Network for the Lost Foam Casting Process," *Transactions of the American Foundry Society (AFS)*. Vol. 115, 813-822.
58. Whelan, M.J., Gangone, M.V., and Janoyan, K.D. (2007) "Integrated Smart Wireless Sensors for Bridge Structural Health and Homeland Security Monitoring," 3<sup>rd</sup> International Conference on Intelligent Infrastructure, Vancouver, British Columbia, Canada.
59. Whelan, M.J., Gangone, M.V., Janoyan, K.D., Cross, K., and Jha, R. (2007) "Reliable High-Rate Bridge Monitoring using Dense Wireless Sensor Arrays," International Workshop on Structural Health Monitoring, Stanford, CA.
60. Gangone, M.V., Whelan, M.J., Janoyan, K.D., Cross, K., and Jha, R. (2007) "Performance Monitoring of a Bridge Superstructure using Dense Wireless Sensor Networks," International Workshop on Structural Health Monitoring, Stanford, CA.
61. Cross, K., Jha, R., Whelan, M.J., and Janoyan, K.D. (2007) "Bridge Health Monitoring Using Non-Linear Approaches: Experimental Validation," International Workshop on Structural Health Monitoring, Stanford, CA.
62. Cross, K., Jha, R., Whelan, M.J., and Janoyan, K.D. (2007) "Bridge Health Monitoring using Non-Linear Approaches: Numerical Validation," International Workshop on Structural Health Monitoring, Stanford, CA.
63. Cross, K., Jha, R., Whelan, M.J., and Janoyan, K.D. (2007) "Numerical Evaluation of Hilbert-Huang Transform and Fourier Spectrum for Benchmark Bridge Health Monitoring," 18th Engineering Mechanics Division Conference, Blacksburg, VA.
64. Whelan, M.J. and Janoyan, K.D. (2007) "Wireless Sensor Network with Spatiotemporal Intelligence for Real-Time Monitoring and Tracking," 86th Annual Meeting of the Transportation Research Board, Washington, DC.
65. Whelan, M.J., Fuchs, M.P., Gangone, M.V., and Janoyan, K.D. (2007) "Development of a Wireless Bridge Monitoring System for Condition Assessment using Hybrid Techniques," SPIE Smart Structures Symposium, San Diego, CA.
66. Whelan, M.J. and Janoyan, K.D. (2007) "Real-time Wireless Sensing with Spatiotemporal Tracking," SPIE Smart Structures Symposium, San Diego, CA.
67. Gangone, M.V., Whelan, M.J., Fuchs, M.P., and Janoyan, K.D. (2007) "Performance Monitoring of a Single-Span Integral Abutment Bridge using a Dense Wireless Sensor Network," SPIE Smart Structures Symposium, San Diego, CA.
68. Whelan, M.J. and Janoyan, K.D. (2006) "Wireless Accelerometer Network for Process Monitoring," SPIE Smart Structures Symposium, San Diego, CA.
69. Whelan, M.J. and Janoyan, K.D. (2006) "Interface Granular Force Measurement using Tactile Sensors," GeoCongress 2006 Conference, ASCE, Atlanta, GA.
70. Whelan, M.J. and Janoyan, K.D. (2005) "Large Scale Remote Sensing for Environmental Monitoring of Infrastructure," International Conference on Energy, Environment, and Disasters (INCEED), Charlotte, NC.
71. Whelan, M.J. and Janoyan, K.D. (2005) "Development and Optimization of Novel Sensors for Inline Measurement of Sand Filling and Compaction Stages in Lost Foam Casting," SPIE Symposium on Smart Structures and Materials, San Diego, CA.

72. Whelan, M.J. and Janoyan, K.D. (2005) "Mobilization of Component Interface Stresses Between Soil and Pile Under Lateral Loading," *GeoFrontiers 2005 Conference*, ASCE, Austin, TX.
73. Whelan, M.J. and Janoyan, K.D. (2004) "Advanced Inline Measurement and Control Tools for Sand Filling and Compaction in Lost Foam Casting," *Smart Structures/NDE 2004*, San Diego, CA.
74. Janoyan, K.D. and Whelan, M.J. (2004) "Interface Stresses between Soil and Large Diameter Drilled Shaft under Lateral Loading," *GeoSupport 2004*, American Society of Civil Engineers Geotechnical Special Publication No. 124.
75. Janoyan, K.D. and Whelan, M.J. (2003) "Experimental Investigation of Interface Stresses between Soil and Laterally Loaded Shaft," 6th International Symposium on Field Measurements in Geomechanics, Oslo, Norway.

DISSERTATION AND  
THESES

1. Whelan, M.J. "In-service highway bridge condition assessment using high-rate real-time wireless sensor networks," Ph.D. Dissertation, Department of Civil and Environmental Engineering, Clarkson University.
2. Whelan, M.J. "Development of advanced measurement and monitoring tools for the sand fill and compaction stage of the lost foam casting process," M.S. Thesis, Department of Civil and Environmental Engineering, Clarkson University.
3. Whelan, M.J. "A model study of soil-pile interaction for a single pile embedded in dry silty-sand," Undergraduate Honors Thesis, Honors Program, Clarkson University.

PRESENTATIONS

**Invited Presentations**

1. Braxtan, N. and Whelan, M.J. (2017) "Effects of Fire on Concrete Structures and Post-Fire Condition Assessment using Nondestructive Techniques," International Concrete Repair Institute (ICRI) Gulf South Chapter, September 21, 2017.
2. Connor, M., Whelan, M.J., Weggel, D.C., and Ralston, A.D. (2015) "Numerical Modeling of Cold-Formed Steel Stud Walls with Conventional Stud-to-Track Connections Subjected to Blast Loads," U.S. National Congress on Computational Mechanics, Minisymposium: Numerical Modeling and Computational Methods for Impact and Blast Problems," San Diego, CA, July 26-27.
3. Whelan, M.J. (2015) "Nondestructive Evaluation of Timber Distribution Poles," IEEE Overhead Catenary Systems Subcommittee meeting, Charlotte, NC, June 25.
4. Whelan, M.J. (2014) "NDT for Post-Fire Assessment of Concrete Structures," American Society for Nondestructive Testing - Charlotte Chapter February Meeting, February 10.
5. Whelan, M.J. and Weggel, D. (2013) "Structural Performance of Full-Scale Building Components Subject to Blast Loads," University of South Carolina Department of Civil and Environmental Engineering Seminar Series, February 22.
6. Weggel, D. and Whelan, M.J. (2012) "Post-Blast Structural Evaluation of Building Components," 4th Annual Structural Engineers Association of NC Conference, September 21.
7. Whelan, M.J., Gangone, M.V., and Janoyan, K.D. (2011) "Influence of Sensor Placement on Operational Modal Analysis of Steel Girder Bridges," SPIE Smart Structures Conference, March 8.
8. Weggel, D., Whelan, M.J., Pando, M., Chirikuri, H., Fang, H., Keanini, R., Turas, E. (2011) "Introduction to the ISERRT Concept," 1st Infrastructure Security and Emergency Responder Research and Training (ISERRT) Seminar, UNC Charlotte, November 16.
9. Whelan, M.J. (2011) "Reinventing Wind: Engineering Challenges to the 20% by 2030 Renewable Energy Scenario," Department of Civil and Environmental Engineering INES Seminar, September 23.

10. Whelan, M.J. (2008). "Bridge Performance Monitoring and Condition Assessment using Dense Wireless Sensor Networks," Association of Bridge Construction and Design (ABCD) Fall Bridge Conference, Buffalo, NY, November 5th.
11. Whelan, M.J. and Gangone, M.V. (2007) "Integrated Wireless Sensor Network for Bridge Health Monitoring," Department of Civil and Environmental Engineering Seminar, Potsdam, NY, November, 9th.
12. Whelan, M.J. and Gangone, M.V. (2007) "Health Care for Bridges: Searching for Diagnostic Tools" American Society of Civil Engineers, Clarkson Chapter Annual Dinner, Potsdam, NY, April 21st.

#### Conference Presentations

1. Samazad, A., Cathey, S., Whelan, M.J., Braxtan, N., and Chen, S.E. (2024) "Finite Element Analysis of Over-Height Vehicle Collisions on Prestressed Girder Bridges," IABMAS 2024, Copenhagen, Denmark, June 24 - June 28.
2. Whelan, M.J. and Park, Y. (2024) "Enhancing Vision-Based Structural Displacement Measurement of Civil Structures through Optical Multiplexing," International Modal Analysis Conference XLII, Orlando, FL, January 29.
3. \*Thomas, L., Kernicky, T., Whelan, M., Park, Y., and Cox, R. (2023) "Application of a Structural Digital Twin on a Laboratory Model for Performance Monitoring of Aging and Degradation," International Modal Analysis Conference XLI, Austin, TX, February 13.
4. Whelan, M.J. and Kernicky, T. (2022) "Simplified Modeling and Modal Analysis of Timber Distribution Poles to Support Vibration-Based Condition Assessment," International Modal Analysis Conference XL, Orlando, FL, February 8.
5. Whelan, M.J., Braxtan, N., Mayo, G., and Tempest, B. (2020) "Experimental Modal Analysis of Double Tee Floors in a Fire Damaged Parking Deck for Post-Fire Vibration-Based Condition Assessment," International Modal Analysis Conference XXXVIII, Houston, TX, February 13.
6. \*Moss, J., Whelan, M.J., and Weggel, D. (2019) "Simulation and Experimental Validation of Fracture, Fragmentation, and Debris Field Formation of Glass Lite Specimens under Blast Loading using the Applied Element Method," U.S. National Congress on Computational Mechanics, Austin, TX, July 31.
7. Elfouly, A., Khalil, A., Weggel, D., and Whelan, M. (2019) "Numerical Analysis of Glass-Curtain Walls Subjected to Blast Loading using AEM," Structures Congress, April 25.
8. Kernicky, T. and Whelan, M.J. (2019) "Model Updating using Interval Arithmetic and Contractor Programming," International Modal Analysis Conference, Orlando, FL, January 30.
9. \*Moss, J., Howe, A., Whelan, M.J., and Weggel, D. (2018) "Simulation of Fracture and Fragmentation of Glass Lites under Blast Loading using the Applied Element Method with Comparison to the Finite Element Method," World Congress on Computational Mechanics, New York, NY, July 23.
10. \*Moss, J., Howe, A., Whelan, M.J., and Weggel, D. (2017) "Simulation of Fracture, Fragmentation, and Debris Field Formation in Glass Lites under Blast Loading using the Applied Element Method", U.S. National Congress on Computational Mechanics, Montreal, Canada, July 18.
11. \*Howe, A., Moss, J., Whelan, M.J., and Weggel, D. (2017) "Experimental Investigation of 3D Scanning and Scene Reconstruction Tools for Post-Blast Measurement of Building Facades," 2017 Structures Congress, Denver, CO, April 8.
12. \*Sylvain, M.B., Pando, M.A., Rice, C.D., Whelan, M.J., Ogunro, V.O., Park, Y., and Koch, T. (2017) "Case History of a Full Scale Axial Load Test of Sheet Piles," Geotechnical Frontiers 2017, Orlando, Florida, March 12-15.

13. \*Sylvain, M.B., Pando, M.A., Whelan, M.J., Ogunro, V.O., and Park, Y. (2016) "Design and application of a low-cost, 3D printed crosshole seismic system," 5th International Conference on Geotechnical and Geophysical Site Characterisation, Queensland, Australia.
14. \*Kernicky, T., Tedeschi, M., and Whelan, M.J. (2016) "Leveraging Hybrid Simulation for Vibration-Based Damage Detection Studies," *International Modal Analysis Conference XXXIV*, Orlando, FL, January 28.
15. Kernicky, T., Whelan, M.J., Rauf, U. and Al-Shaer, E. (2015) "Damage Detection in a Laboratory Model using a Nonlinear Constraint Satisfaction Processor for Finite Element Model Updating," International Workshop on Structural Health Monitoring, Stanford University, September 1-3.
16. Rauf, U., \*Kernicky, T., Whelan, M.J., and Al-Shaer, E. (2015) "Formal Analysis of Critical Infrastructures by Structural Identification using Constraint Programming Paradigm," International Modal Analysis Conference XXXIII, Orlando, FL, February 2-5.
17. \*Kernicky, T., Whelan, M.J., and Moen, C. (2015) "Influence of Prestressing Strand Damage on Modal Parameters of a Hybrid Composite Bridge Beam," International Modal Analysis Conference XXXIII, Orlando, FL, February 2-5.
18. \*Sylvain, M., Pando, M., Whelan, M.J., Ogunro, V., Bents, D., and Park, C. (2014) "Comparison of Shear Wave Profiles for a Compacted Fill in a Geotechnical Test Pit," American Geophysical Union Fall Meeting 2014, San Francisco, December 18.
19. Salas Zamudio, N., Kernicky, T., and Whelan, M.J. (2014) "Structural Identification of a Tied Arch Bridge Span: Effect of Boundary Conditions on Model Correlation," International Conference on Small and Medium Span Bridges, Calgary, Alberta, July 18, 2014.
20. Goyal, R., Ramsey, J., Whelan, M.J., Cavalline, T., and Tempest, B. (2014) "A Framework for Statistical Regression of Bridge Deterioration Rates for Improved BMS Classification," International Conference on Small and Medium Span Bridges, Calgary, Alberta, July 18, 2014.
21. Rice, C., Pando, M., Whelan, M.J., and Ogunro, V. (2014) "Vertical Load Capacity of Steel Sheet Piles for Bridge Abutments - Preliminary Assessment for Test Site in Sand," International Conference on Small and Medium Span Bridges, Calgary, Alberta, July 17, 2014.
22. \*Goyal, R., Kelsey, B., Kennedy, R., Whelan, M.J., and Janoyan, K.D. (2014) "Parametric Study of Underground Wireless Sensor Networks using 2nd Generation RF Transceivers," Geo-Congress 2014, Atlanta, GA.
23. Whelan, M.J., Kernicky, T., and Weggel, D. (2014) "Structural Identification using the Applied Element Method: Advantages and Case Study Application," International Modal Analysis Conference XXXII, Orlando, FL, February 5, 2014.
24. Kernicky, T., Whelan, M.J., and Weggel, D. (2014) "Experimental Modal Analysis of a Prestressed Concrete Double-Tee Joist Roof Subject to Blast," International Modal Analysis Conference XXXII, Orlando, FL, February 3, 2014.
25. \*Kernicky, T., Whelan, M.J., Rice, C., and Weggel, D. (2013) "Structural Identification of a Full-Scale CMU Infill Wall Subjected to Blast Loading using an Applied Element Framework," *The International Workshop on Structural Health Monitoring*, Stanford University, September 10-12, 2013.
26. \*Kernicky, T., Whelan, M.J., and Weggel, D. (2013) "Numerical Simulation of a Masonry Infill Wall Subjected to Blast Load using Applied Element Method," U.S. National Congress on Computational Mechanics, Raleigh, NC, July 24, 2013.
27. Whelan, M.J. and Hietbrink, C. (2012) "Wireless Sensor Network Deployments for Structural Identification in a Tied Arch Bridge," ASNT NDE/NDT for Highways and Bridges: Structural Materials Technology (SMT), August 22, 2012.



28. Tempest, B. and Whelan, M.J. (2012) "Damage Evaluation of Prestressed Double Tees Exposed to Accidental Building Fire," 2012 PCI Convention and National Bridge Conference, September 30, 2012.
29. Hietbrink, C. and Whelan, M.J. (2012) "System Identification of a Tied Arch Bridge using Reference-Based Wireless Sensor Networks," SPIE Smart Structures/NDE Conference 2012, San Diego, CA.
30. Kernicky, T. and Whelan, M.J. (2012) "Sensor Topologies for Application of Strain Energy Damage Diagnostics and Prognostication," SPIE Smart Structures/NDE Conference 2012, San Diego, CA.
31. Whelan, M.J. (2011) "Design and Application of a Wireless Sensor Network for Vibration-Based Performance Assessment of a Tied Arch Bridge," International Workshop on Structural Health Monitoring, Stanford, CA.
32. Whelan, M.J., Gangone, M.V., and Janoyan, K.D. (2009) "Wireless Sensing Systems for Bridge Condition Assessment and Health Monitoring," SPIE Smart Structures Conference 2009, San Diego, CA.
33. Whelan, M.J., Gangone, M.V., Janoyan, K.D., Cross, K., and Jha, R. (2007) "Reliable High-Rate Bridge Monitoring using Dense Wireless Sensor Arrays," International Workshop on Structural Health Monitoring, Stanford, CA. September 10th.
34. Whelan, M.J. and Janoyan, K.D. (2006) "Wireless Accelerometer Network for Process Monitoring," SPIE Smart Structures Symposium, San Diego, CA.
35. Whelan, M.J. and Janoyan, K.D. (2005) "Development and Optimization of Novel Sensors for Inline Measurement of Sand Filling and Compaction Stages in Lost Foam Casting," SPIE Symposium on Smart Structures and Materials, San Diego, CA.
36. Janoyan, K.D. and Whelan, M.J. (2004) "Interface Stresses between Soil and Large Diameter Drilled Shaft under Lateral Loading," GeoSupport 2004, Orlando, FL.

\*Sponsored graduate student presented work

TEACHING

Clarkson University

**Course Number and Title**

ES222: Strength of Materials  
CE212: Introduction to Engineering Design

**Terms**

Summer 2008, Spring 2010  
Fall 2009

University of North Carolina at Charlotte

**Course Number and Title**

CEGR3122 Structural Analysis  
  
CEGR3221 Structural Steel Design  
  
CEGR4108/5108 Finite Element Analysis & Applications  
CEGR4222/5222 Structural Steel Design II  
  
CEGR4224/5224 Advanced Structural Analysis  
  
CEGR6128/8128 Structural Optimization  
CEGR6129/8129 Structural Dynamics  
CEGR6090/8090 Experimental Structural Identification

**Terms**

Fall 2010, Spring 2011, Fall 2011, Fall 2012, Fall 2013, Fall 2014  
Spring 2011, Spring 2012, Spring 2013, Spring 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016, Fall 2017, Spring 2019, Spring 2020, Fall 2020, Spring 2021, Spring 2023, Spring 2024, Fall 2024  
Fall 2020, Fall 2021, Fall 2023, Fall 2024  
Fall 2015, Spring 2016, Fall 2016, Spring 2017, Fall 2017, Spring 2018, Spring 2019  
Spring 2013, Spring 2014, Fall 2019, Spring 2020, Spring 2021, Spring 2022  
Fall 2021  
Spring 2015  
Spring 2012, Fall 2014

ADVISING

**Doctor of Philosophy**

In Process:

1. Amirmohammad Samadzad, Civil and Environmental Engineering
2. Lauren Thomas, Civil and Environmental Engineering

Completed:

1. Jonathan Moss (2020) *Development, Verification, and Validation of an Applied Element Method Simulation Framework for Glass Lite Fracture, Fragmentation, and Debris Field Formation*, Civil and Environmental Engineering, University of North Carolina at Charlotte.
2. Corey Rice (2020) *Rapid and Dynamic Load Testing of Instrumented PZ27 Steel Sheet Piles*, Civil and Environmental Engineering, University of North Carolina at Charlotte.
3. Timothy Kernicky (2018) *Structural Identification and Vibration-Based Damage Diagnosis of Civil Infrastructure using Interval Arithmetic and Contractor Programming*, Doctoral Dissertation, Infrastructure and Environmental Systems, University of North Carolina at Charlotte.
4. Raka Goyal (2015) *Development of a Survival Based Framework for Bridge Deterioration Modeling with Large-Scale Application to the North Carolina Bridge Management System*, Doctoral Dissertation, Infrastructure and Environmental Systems, University of North Carolina at Charlotte.

Committee Member:

In Progress: Ali Alhakim, Seth Cathey, Isha Abdullah, Pegah Ahrabi, Amimul Ehasn

Completed:

1. Prithwiraj Roy Chowdhury (2024) *Investigations, Analysis, and Validation of a Novel Synchronous Machine Emulator with Embedded Droop Control for Grid-Forming and Grid-Connected Inverters*, Ph.D. Dissertation, Department of Electrical and Computer Engineering, University of North Carolina at Charlotte.
2. Zheng Li (2022) *Constitutive Modeling and Dynamic Impact Analysis of Bighorn Sheep Horn*, Ph.D. Dissertation, Department of Mechanical Engineering, University of North Carolina at Charlotte.
3. Peyman Razi (2021) *Numerical Simulations and Low-Order Models of the Two-Way Interaction between Ocean Current Turbines and the Background Flow*, Ph.D. Dissertation, Department of Mechanical Engineering, University of North Carolina at Charlotte.
4. Md Mazharul Islam (2021) *Active Cyber Defense Planning and Orchestration*, Ph.D. Dissertation, Department of Software and Information Systems, University of North Carolina at Charlotte.
5. Matthew Sylvain (2019) *A Study of the Soil-Structure Interaction of Axially Loaded Sheet Piles*, Ph.D. Dissertation, Infrastructure and Environmental Systems, University of North Carolina at Charlotte.
6. Emre Palta (2019) *Multi-Scale Finite Element Modeling of Multi-Ply Woven Fabrics Under Ballistic Loads*, Ph.D. Dissertation, Department of Mechanical Engineering, University of North Carolina at Charlotte.
7. Matthew T. Gutowski (2017) *Finite Element Modeling and Simulation of Tractor-Trailer Impacts on Highway Median Barriers*, Ph.D. Dissertation, Mechanical Engineering, University of North Carolina at Charlotte.

8. Mohammad Ashiqur Rahman (2015) *Automated Formal Analytics for Smart Grid Security and Resiliency*, Ph.D. Dissertation, Computing and Information Systems, University of North Carolina at Charlotte.

### Masters of Science

In Process:

1. Lauren Thomas - MS Thesis; anticipated completion Fall 2024

Completed:

1. Hunter Meacham (2024) "Finite Element Analysis of Tension Members and Limit States of Bolted Steel Connections," Master of Science Project Report, Fall.
2. Tau Wu (2023) *Bridge Selection Process and Workflow Development for UAS-Enabled Bridge Inspection*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering, Fall (co-adviser with Dr. Tara Cavallini)
3. Steven Dulin (2018) *Laboratory Validation and Initial Field Evaluation of a Vibration-Based Technique for Condition Assessment of Timber Utility Poles*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering, Spring.
4. Aidan Alar (2018) *Development of Bridge Management Tools for Predicting Bridge Replacement Projects*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering, Spring.
5. Erica Barber (2016) *Experimental Evaluation of Low-Cost, Portable, and Rapid Nondestructive Evaluation Methods for Timber Distribution Poles*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering, Fall.
6. Neal Salas Zamudio (2016) *Structural Identification of a Tied Arch Bridge using Genetic Algorithms*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering, Summer.
7. Houston Skipper (2016) "Numerical Analysis of a GRS-IBS Bridge under Thermal Loading with Consideration of Concrete Deck Creep and Shrinkage," Master of Science Project Report, Spring.
8. Michael Tedeschi (2015) *Development, Verification, and Validation of a Hybrid Testing Framework for Latticed Structures with Nonlinear Geometric Effects*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
9. Jonathan Moss (2015) *Vibration Analysis of a Steel Twin I-Girder Pedestrian Bridge: Structural Identification and Evaluation of Pedestrian Excitation Models*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
10. Michael Connor (2015) "Finite Element Analysis of Cold-Formed Steel Stud Walls Subject to Blast Loading: Experimental Validation and Extended Numerical Analysis," Master of Science Project Report, Fall.
11. Timothy Cruse (2015) "Simulation of a Prestressed Double-Tee Joist Roof under Blast Loading with Comparison to a Full-Scale Field Experiment," Master of Science Project Report, Spring.
12. Colin Manning (2015) "Improving Single Degree-of-Freedom Blast Analysis through Structural Identification of Boundary Conditions in Simplified Models," Master of Science Project Report, Spring.
13. Thanh-Tu Diep (2014) *Experimental Assessment of the Effect of Sodium Chloride Deicing and Anti-Icing Solutions on Exposed, Coated, and Reinforcing Steel in Highway Bridges*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering (co-advised with B. Tempest)

14. William Atkinson (2014) “Automated Design of Reinforced Concrete Wall Panels in Nuclear Facilities for In-Plane and Out-of-Plane Forces According to ACI 349-06,” Masters of Science Project Report, Fall.
15. Timothy Kernicky (2013) *Structural Identification and Damage Characterization of a Full-Scale Masonry Building Subject to Internal Blast Load*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
16. Papa Kwesi Prah-Ennin (2013) *Quantifying Corrosive Potential of De-Icing and Anti-Icing Solutions to Steel and Concrete Bridge Components*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering (co-advised with B. Tempest)
17. David Scott (2011) “Nondestructive Evaluation of Prestressed Concrete Double-Tees at Harbor Baptist Church” Masters of Science Project Report, Fall

Committee Member (Thesis):

In Process:

1. Taiseer Al Salihi (2022) *Evaluating Corrosive Site Performance, Service Life, and Policy of Coastal Bridges*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
2. Peter Theilgard (2022) *Optimized Aggregate Gradation Concrete Mixtures with Cementitious Material Reduction*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
3. Carlos Rodriguez Guevara (2019) *Performance of Drilled Shaft Foundations Supporting Coastal Mast arm Traffic Signal and Highway Sign Structures*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
4. Jonathan Blackwell (2019) , Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering
5. Patrick Phillips (2017) *Predicting Costs for Bridge Replacement Projects*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Engineering Technology and Construction Management
6. Kelsey Lane (2016) *Performance Criteria and Measures for Prioritization of Bridge Replacement Projects*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Engineering Technology and Construction Management.
7. Joshua Ramsey (2015) *Updating and Enhancing the North Carolina Department of Transportation’s Bridge Management System User Costs*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Engineering Technology and Construction Management.
8. Ashley Skipper (2014) *Performance of Geopolymer Cement Concrete in Flexural Members*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.
9. James Hite (2013) *Field Evaluation of Thermally Induced Behaviors at the Interface of the Superstructure and Substructure of a GRS Integrated Bridge System*, Masters of Science Thesis, University of North Carolina at Charlotte, Department of Civil and Environmental Engineering.

Committee Member (Project):

In Process: Grace Brooks

1. Seth Cathey, Masters of Science Project Report, December 2021
2. Matthew Benfield “Instrumentation Setup for Elevated Temperature Tensile Testing of Steel Coupons,” Masters of Science Project Report, July 2019

3. Jeffrey Poe “Rebar Corrosion Rate Measurement Equipment Comparison,” Masters of Science Project Report, April 2019
4. Adam Ralston “Experimental and Numerical Investigations of Glass Curtain Walls Subjected to Low-Level Blast Loads,” Masters of Science Project Report, December 2014
5. Michael Hoff “The Use of Resonant Frequencies for QC/QA of Construction of Rural Reinforced Concrete Bridges,” Masters of Science Project Report, December 2013
6. Dwaine Williams “Modeling of a Three-Strut Tensegrity Structure under Vertical Loads,” Masters of Science Project Report, December 2012
7. Jennifer Smith “Design and Modeling of Concrete Specimen for Non-Destructive Testing of Typical Nuclear Containment (Part II - Model Validation),” Masters of Science Project Report, April 2011
8. Adam Goodman “Design and Modeling of Concrete Specimen for Non-Destructive Testing of Typical Nuclear Containment (Part I - Design and Modeling),” Masters of Science Project Report, April 2011

Committee Member (All Coursework/Exam): Total 39 (I have administered the examination since 2018) - Spring 2012 (2), Fall 2013 (1), Spring 2014 (2), Fall 2014 (1), Spring 2015 (1), Fall 2015 (4), Spring 2016 (5), Fall 2016 (1), Spring 2017 (1), Fall 2017 (1), Spring 2018 (1), Summer 2018 (1), Fall 2018 (2), Spring 2019 (2), Summer 2019 (1), Fall 2019 (1), Summer 2020 (3), Spring 2021 (2), Summer 2021 (7)

#### **Undergraduate Research Assistants**

Current:

Past: Jared Guillen, Jed Kidd, Scott Birch, Aidan Alar, Islam Elsayed (Charlotte Research Scholars), Caleb Martin, Deepika Dave, Michael Tedeschi (Charlotte Research Scholars), Dongning Sun, Divya Radhakrishnan

#### **Visiting Research Assistants**

Current:

Past:

1. Lukas Striefler (University of Stuttgart; August 2019 - December 2019)
2. Anouar Raddaoui (Karlsruhe Institute of Technology; April 2018 - September 2018)
3. Yihong Cai (Karlsruhe Institute of Technology; April 2016 - September 2016)

#### **PROFESSIONAL MEMBERSHIPS**

American Society of Civil Engineers (ASCE)  
 Society for Experimental Mechanics (SEM)  
 International Society for Structural Health Monitoring of Intelligent Infrastructure (ISHMII)  
 American Society for Nondestructive Testing (ASNT)  
 International Association for Bridge Maintenance and Safety (IABMAS)  
 American Institute of Steel Construction (AISC)  
 Precast/Prestressed Concrete Institute (PCI)  
 The Structural Engineers Association of North Carolina (SEA of NC)  
 American Society for Engineering Education (ASEE)  
 Structural Engineering Institute (SEI)  
 Chi Epsilon - National Civil Engineering Honor Society  
 The Honor Society of Phi Kappa Phi

## EXTERNAL SERVICE **Session Organizer**

Session Organizer, "Structural Health Monitoring," International Modal Analysis Conference XLIII, 2025. Session Organizer, "Bridge Deterioration Modeling with Nondestructive Evaluation (NDE) Data," International Association for Bridge Maintenance and Safety (IABMAS) 2020, Sapporo, Japan, June 28 - July 2, 2020.

Session Organizer, "Bridge Deterioration Modeling and Probabilistic Bridge Maintenance Needs Forecasting," International Association for Bridge Maintenance and Safety (IABMAS) 2018, Melbourne, Australia, July 9-13, 2018.

## **Session Chair**

Session Chair, "Structural Health Monitoring," International Modal Analysis Conference XLII, January 29 - February 1, 2024.

Session Chair, "Dynamics of Buildings," International Modal Analysis Conference XLI, February 13-16, 2023.

Session Chair, "Dynamics of Buildings," International Modal Analysis Conference XL, February 7-10, 2022.

Session Chair, "Testing and Evaluation of Full-Scale Structures," International Modal Analysis Conference XXXIX, February 8-11, 2021.

Session Chair, "Data Analysis and Evaluation Techniques," International Modal Analysis Conference XXXIX, February 8-11, 2021.

Session Chair, "Dynamic Analysis for Civil Structures," International Modal Analysis Conference XXXVIII, Houston, TX, February 10-13, 2020.

Session Chair, "Minisymposium: Numerical Modeling and Computational Methods for Impact and Blast Problems," The 13th U.S. National Congress on Computational Mechanics, San Diego, CA, July 26-27, 2015.

Session Chair, "Minisymposium: Numerical Modeling and Engineering Design for Impact and Blast Problems," The 12th U.S. National Congress on Computational Mechanics, Raleigh, NC, July 21-25, 2013.

## **Committees**

Dynamics of Civil Structures Technical Division: Society for Experimental Mechanics (Member: 2014 - present; Chair: 2023 - present, Vice-Chair: 2021 - 2023, Secretary: 2019 - 2021)

TRB AHD 35 Bridge Management (Membership Level: Friend)

TRB AFF40 Field Testing and Nondestructive Evaluation of Transportation Structures (Friend)

TRB AFP 30 Soil and Rock Properties Committee (Membership Level: Friend)

## **Editorial Boards**

Shock and Vibration (2017-2023) - Oversaw review of 7 manuscripts

Journal of Sensors (2015-2017) - Oversaw review of 8 manuscripts

## **Proposal Review**

"Vehicle Scanning Method for Bridges" proposal for development of a new textbook - review for John Wiley & Sons Limited 2018

"Cold-Formed Steel Design" 5th Edition text - review for John Wiley & Sons Limited 2017

"Ambient Vibration Monitoring" 2nd Edition text - review for John Wiley & Sons Limited

Reviewer for Chilean Comisión Nacional de Investigación Científica y Tecnológica (CONICYT) FONDECYT National Fund for Scientific and Technological Development 2014

## **Peer Review - 75 papers**

**2024** - (9)

Computers & Structures, Engineering Structures (2), Journal of Bridge Engineering, Transportation Research Record, Measurement, Automation in Construction (2), Applied Sciences

**2023** - (11)

Structural Health Monitoring; International Modal Analysis Conference Dynamics of Civil Struc-

tures Technical Division Best Student Paper (8); TRB Annual Meeting; Machines  
**2022** - (4)  
 Journal of Structural Engineering; Journal of Bridge Engineering; Journal of Infrastructure Systems;  
 TRB Annual Meeting  
**2020** - (3)  
 Computers & Structures; Structure and Infrastructure Engineering; Journal of Sound and Vibration  
**2019** - (1)  
 Journal of Civil Structural Health Monitoring  
**2018** - (11)  
 Engineering Structures (4); Computer-Aided Civil and Infrastructure Engineering (3); Journal of  
 Civil Structural Health Monitoring; Sensors (2); Construction & Building Materials  
**2017** - (6)  
 Structural Health Monitoring; Engineering Structures; Journal of Infrastructure Systems; Journal  
 of Civil Structural Health Monitoring; TRB Annual Meeting; Sensors  
**2016** - (10)  
 Structural Health Monitoring; Computers & Structures; Journal of Civil Structural Health Moni-  
 toring; Structure and Infrastructure Engineering; Applied Sciences (2); Journal of Civil Engineering  
 and Management; ACM Transaction on Sensor Networks; International Journal of Concrete Struc-  
 tures and Materials; Measurement  
**2015** - (2)  
 IEEE American Control Conference; Journal of Sensors  
**2014** - (5)  
 Computer-Aided Civil and Infrastructure Engineering; Journal of Intelligent Material Systems and  
 Structures (JIMSS); ASTM Journal of Testing and Evaluation; ACM Transactions on Sensor Net-  
 works; Sensors  
**2013** - (5)  
 ASCE Journal of Structural Engineering (2); Structural Engineering and Mechanics; Mechanical  
 Systems and Signal Processing; ACM Transactions on Sensor Networks  
**2012** - (4)  
 Structure and Infrastructure Engineering; Steel and Composite Structures; ACM Transactions on  
 Sensor Networks; Journal of Aerospace Engineering  
**2011** - (4)  
 IEEE American Control Conference; Journal of Environmental Monitoring; EURASIP Journal on  
 Wireless Communications and Networking; EURASIP Journal on Embedded Systems

SERVICE -  
 DEPARTMENT

Faculty Advisor to the ASCE Student Steel Bridge Competition Team (2011-present)  
 Key Researcher - Infrastructure Security and Emergency Responder Research and Training (IS-  
 ERRT) Facility (2011-current)  
 Host FE Review Session for Structural Analysis and Dynamics (Continuously since Fall 2011)  
 Search Committee for Assistant Teaching Professor (2024)  
 Search Committee for Department Chair (2022)  
 Search Committee for Department Chair (2013-2014)  
 CEE Graduate Committee (2019 - present)  
 CEE Ph.D. Implementation Committee (2019)  
 Structures Group Area Coordinator (2018 - 2023)  
 Graduate Academic Appeals Committee - Committee Chair (2012-2018)  
 Undergraduate Academic Appeals Committee (2012-2018) - Committee Chair (2014-2018)  
 Computing Committee (2011-current)  
 Faculty Workload Committee (2014-2019)

SERVICE - COLLEGE  
 OF ENGINEERING

President of the College of Engineering Faculty Organization (2024-2025)  
 President-Elect of the College of Engineering Faculty Organization (2023-2024)

Secretary of the College of Engineering Faculty Organization (2022-2023)  
B.S. in Construction Engineering Exploratory Committee (2024-current)  
Common First Year Initial Planning Committee (2023-2024)  
External Representative to the Search Committee for the Engineering Technology and Construction Management Department Chair (2022)  
Review committee for the College of Engineering Graduate Award in Teaching Excellence (2022)  
COE Policies and Procedures Service Subcommittee (2021-2022)  
EPIC Search Committee for Research Assistant Professor in Structures (2019-2020)  
B.S. in Construction Engineering Letter of Intent Committee (2019)  
B.S. in Construction Engineering Exploratory Committee (2018)  
EPIC Search Committee for High Bay Director Position (2015-2016)  
EPIC Search Committee for Structural Engineering Faculty (2013-2014)  
CEE Representative to the MEGR Mechanics/Materials FAIT Committee (2013-2017)  
Masters Thesis Award Committee (2012-2013)

SERVICE -  
UNIVERSITY

Hearing Committee (two consecutive terms: 2019-2023 and 2023-present)  
Faculty Council: 2024-2025  
Faculty Executive Council (FEC): 2024-2025

AWARDS AND  
HONORS

William States Lee College of Engineering Graduate Award in Teaching Excellence, Recipient, 2013-2014, nominee 2020-2021  
William States Lee College of Engineering Undergraduate Award in Teaching Excellence, Nominee, 2012-2013  
Academic Visitor, Department of Engineering, University of Cambridge, August 2009  
Honorable Mention, National Science Foundation Graduate Fellowship Program, 2004  
George A. Gray Endowed Fellowship, 2004  
Charles Martin Clark Memorial Prize, 2003 and 2004  
Clarkson University Honors Program, 2000-2004  
Community Contributor of the Month, Texas Instruments E2E Community Low Power RF Forum, December 2008

Advisee Awards

Raka Goyal:

NRC Post-Doctoral Research Associate Program, Turner-Fairbank Highway Research Center, 2018-2020

Steven Dulin:

Foundation of the Association of Energy Engineers (FAEE) Scholarship, 2017

Timothy Kernicky:

North Carolina Space Grant Consortium Graduate Research Fellow, 2013-2014

Outstanding Graduate Research Assistant, Dept. of Civil and Environ. Eng. 2012-2013

Michael Tedeschi:

Exceptional Scholars Masters Tuition Award, UNC Charlotte Graduate School 2013-2014

Jonathan Moss:

National Institute of Justice Graduate Research Fellowship in STEM

Neal Salas Zamudio:

Merit-Based Masters Tuition Award, UNC Charlotte Graduate School 2013-2014

Outstanding Graduate Teaching Assistant, Dept. of Civil and Environ. Eng., 2013-2014