Kalil Erazo, Ph.D., P.E., M.ASCE

Assistant Teaching Professor
Department of Civil and Environmental Engineering
Rice University
6100 Main St. Ryon Lab - MS 318
Houston, TX 77005
Kalil.Erazo@rice.edu
Website | Google Scholar | Researchgate | Linkedin

RESEARCH AND TEACHING INTERESTS

- Structural condition assessment and monitoring for resilient and sustainable smart civil infrastructure systems
- Stochastic methods for modeling, uncertainty quantification-propagation, and reliability assessment of structural and mechanical systems
- Structural system identification, digital twins, and structural health monitoring
- Structural dynamics and earthquake engineering
- Bayesian estimation and recursive nonlinear filtering methods
- Risk assessment and post-disaster decision-making under uncertainty

EDUCATION

RICE UNIVERSITY   Houston, TX
Postdoctoral Fellow   September 2016

UNIVERSITY OF VERMONT   Burlington, VT
Ph.D. in Civil Engineering   May 2015
Thesis: Bayesian filtering in nonlinear structural systems with application to structural health monitoring

GEORGIA INSTITUTE OF TECHNOLOGY   Atlanta, GA
Master of Science in Civil Engineering, *Structural Engineering, Mechanics & Materials*   May 2012

INSTITUTO TECNOLÓGICO DE SANTO DOMINGO   Santo Domingo, DR
Bachelor of Science in Civil Engineering, *Summa Cum Laude Honors*   January 2009

PROFESSIONAL EXPERIENCE

ASSISTANT TEACHING PROFESSOR   July 2022 - Present
Director of the Master of Civil and Environmental Engineering Program
Department of Civil and Environmental Engineering, Rice University

ADJUNCT PROFESSOR   January 2020 - Present
Department of Civil Engineering, Instituto Tecnológico de Santo Domingo, Dominican Republic

SENIOR LECTURER   January 2020 – July 2022
Department of Civil and Environmental Engineering, Rice University

ASSISTANT PROFESSOR   January 2017 – January 2020
Department of Civil Engineering, Instituto Tecnológico de Santo Domingo, Dominican Republic

LECTURER   August 2018 – December 2018
School of Engineering, Polytechnic University of Puerto Rico

Kalil Erazo, Ph.D., P.E., M.ASCE

POSTDOCTORAL ASSOCIATE   August 2015 – September 2016

Department of Civil and Environmental Engineering, Rice University

LECTURER   August 2015 – August 2016

Department of Civil and Environmental Engineering, Rice University

Department of Mechanical Engineering, Rice University

GRADUATE RESEARCH AND TEACHING ASSISTANT   June 2012 – May 2015

Department of Civil and Environmental Engineering, University of Vermont

GRADUATE RESEARCH ASSISTANT   May 2011 – May 2012

Georgia Institute of Technology

STRUCTURAL ENGINEER   May 2009 – July 2010

LEXCO-Engineering, Management, and Construction, Dominican Republic

BUILDING OFFICIAL (STRUCTURAL DESIGN AND COMPLIANCE)   January 2009 – May 2009

Department of Transportation of the Dominican Republic

HONORS & AWARDS

- Professor of the Year Award, CEE Department, Rice University (2024, 2021)
- Scholar/Honor Athlete Favorite Professor Award, Rice University (2024, 2021)
- Career Champion Award, Rice University (2024, 2023, 2022)
- Takuji Kobori Award, International Association of Structural Control and Health Monitoring (2021)
- Faculty award for research excellence, Instituto Tecnológico de Santo Domingo (2018)
- ISUMA/ICVRAM 2014 conference award, University of Liverpool, UK (2014)
- Uncertainty Quantification summer school award, USC, CA (2014)
- 54TH AIAA/ASME/ASCE/AHS/ASC 2013 structures, structural dynamics and materials conference award (2014)
- Georgia Tech OMED Tower award for academic performance (2011, 2012)
- Fulbright Fellowship, U.S. Department of State (2010)
- Georgia Institute of Technology Graduate Scholarship (2010)
- B.S. in Civil Engineering Summa Cum Laude honors, Instituto Tecnológico de Santo Domingo (2009)

TEACHING EXPERIENCE

Rice University (2015 – 2016, 2020 – Present)
- Earthquake Engineering (Graduate)
- Design of Prestressed Concrete Structures (Graduate)
- Design of Reinforced Concrete Structures (UG Senior)
- Senior/Capstone Design (UG Senior)
- Modeling of Dynamic Systems (UG Junior)
- Fluid Mechanics (UG Junior)
- Engineering Mechanics (UG Sophomore)
- Mechanics of Solids and Structures (UG Sophomore)

Instituto Tecnológico de Santo Domingo (2017 – 2020)
- Earthquake Engineering (Graduate)
- Structural Dynamics (Graduate)
- Mechanical Vibrations (Graduate)
- Probability and Statistics in Engineering (Graduate)

- Research Methods in Engineering (UG Sophomore)
- Rigid-body Dynamics (UG Sophomore)

Polytechnic University of Puerto Rico (2018)
- Advanced Statistics and Quality Improvement (Graduate/UG Senior)

FUNDED RESEARCH PROJECTS

Project: Artificial intelligence methods to assess the performance and resiliency of civil infrastructure systems against natural disasters (2023-2024)
Sponsor: Department of Higher Education of the Dominican Republic
Role: Principal Investigator (US$70,000 for direct costs)

Project: Building climate-resilient communities in the Dominican Republic (2022-2024)
Sponsor: Columbia World Projects (CWP), Columbia University
Role: Principal Investigator (US$60,000 for direct costs)

Project: Hands-on learning structural mechanics for resilient civil infrastructure using 3D printed models (2021-2022)
Sponsor: Brown Teaching Grant, Rice University
Role: Principal Investigator (US$2,500 for direct costs)

Project: Next-generation probabilistic monitoring and damage assessment methods for nonlinear structural systems subjected to extreme events (2017-2019)
Sponsor: Department of Higher Education of the Dominican Republic
Role: Principal Investigator (US$100,000 for direct costs)

Project: Aeroelastic stability assessment of slender tall buildings (2018-2019)
Sponsor: Department of Higher Education of the Dominican Republic
Role: Principal Investigator (US$60,000 for direct costs)

Project: Development of structural assessment methods for resilient infrastructure systems (2017-2018)
Sponsor: Instituto Tecnológico de Santo Domingo (INTEC), Dominican Republic
Role: Co-Principal Investigator (US$100,000 for direct costs)

SCHOLARSHIP

Journal Publications
- Erazo, K., Di Matteo, A. & Spanos, Pol D. (2024). Parameter estimation of stochastic fractional dynamic systems using nonlinear Bayesian filtering system identification methods. ASCE Journal of Engineering Mechanics.
- Erazo, K. (2024). Parameter Estimation of Nonlinear Structural Systems Using Bayesian Filtering Methods. Vibration, 8(1), 1.
- Erazo, K. (2024). Analysis and damage correlation of ground motion intensity measures from records of the 2023 Turkey-Syria earthquake. Bulletin of Earthquake Engineering, 1-24.
- Hernandez, E. M., & Erazo, K. (2024). Lower bound of structural damage to achieve practical identifiability of nonlinear models in seismic structural health monitoring. Earthquake Engineering & Structural Dynamics, 53(1), 5-22.
- Erazo, K. (2023). Updated Seismic Hazard Curves, Maps, and Spectra for the Northern Dominican Republic using a Probabilistic Seismic Hazard Analysis. Journal of Seismology. https://doi.org/10.1007/s10950-023-10150-y.

- Rojas-Mercedes, N., Erazo, K., & Di Sarno, L. (2022). Seismic fragility curves for a concrete bridge using structural health monitoring and digital twins. Earthquakes and Structures, 22(5), 503-515.
- Roohi, M., Erazo, K., Rosowsky, D., & Hernandez, E. M. (2021). An extended model-based observer for state estimation in nonlinear hysteretic structural systems. Mechanical Systems and Signal Processing, 146, 107015.
- Lei, Xia, Erazo and Nagarajaiah (2019). A novel unscented Kalman filter for recursive state-input-system identification of nonlinear systems. Mechanical Systems and Signal Processing, 127, 120-135.
- Sen, Erazo, Zhang, Nagarajaiah and Li (2019). On the effectiveness of principal component analysis for decoupling structural damage and environmental effects in bridge structures. Journal of Sound and Vibration, 457, 280-298.
- Erazo, Moaveni and Nagarajaiah (2019). Bayesian seismic strong-motion response and damage estimation with application to a full-scale seven-story shear wall structure. Engineering Structures, 186, 146-160.
- Erazo, Sen, Zhang, Nagarajaiah and Sun (2019). Vibration-based structural health monitoring under changing environmental conditions using Kalman filtering. Mechanical Systems and Signal Processing, doi.org/10.1016/j.ymssp.2018.07.041.
- Erazo (2019). Probabilistic seismic hazard analysis and design earthquake for Santiago, Dominican Republic. Ciencia, Ingenierías y Aplicaciones, 2(1), 67-84.
- Erazo and Nagarajaiah (2018). Bayesian structural identification of a hysteretic negative stiffness earthquake protection system using unscented Kalman filtering. Structural Control and Health Monitoring, doi.org/10.1002/stc.2203.
- Erazo and Nagarajaiah (2017). An offline approach for output-only Bayesian identification of stochastic nonlinear systems using unscented Kalman filtering. Journal of Sound and Vibration, 397(9), 222-240.
- Sen, Erazo and Nagarajaiah (2017). Bayesian estimation of acoustic emissions source in plate structures using particle-based stochastic filtering. Structural Control and Health Monitoring, DOI:10.1002/stc.2005.
- Erazo and Hernandez (2016). High-resolution seismic monitoring of instrumented buildings using model-based state observers. Earthquake Engineering and Structural Dynamics, DOI10.1002/eqe.2781.
- Nagarajaiah and Erazo (2016). Structural monitoring and identification of civil infrastructure in the United States. Structural Monitoring and Maintenance, An International Journal, 3(1).
- Erazo and Hernandez (2016). Bayesian model-data fusion for mechanistic post-earthquake damage assessment of building structures. ASCE Journal of Engineering Mechanics, 10.1061/(ASCE)EM.1943-7889.0001114 , 04016062.
- Erazo and Hernandez (2015). Uncertainty quantification of Bayesian filtering in structural systems subjected to seismic ground motions. ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems.
- Erazo and Hernandez (2014). A model-based observer for state and stress estimation in structural and mechanical systems: Experimental validation. Mechanical Systems and Signal Processing, 43:141-152.

Conference Proceedings Publications

- Erazo K., Di Sarno L., and Rojas N. (2024). Assessing the sensitivity of seismic fragility curves to modeling errors using SHM and digital twins. 18TH World Conference on Earthquake Engineering, Milan, Italy.
- Erazo K. (2024). Seismic response and damage estimation using Bayesian stochastic filtering methods. 18TH World Conference on Earthquake Engineering, Milan, Italy.
- Erazo and Nagarajaiah (2020). Recursive Nonlinear Identification of a Negative Stiffness Device for Seismic Protection of Structures with Geometric and Material Nonlinearities. In: Mao Z. (eds) Model Validation and Uncertainty Quantification, Vol 3. Conference Proceedings of the Society for Experimental Mechanics Series.
- Erazo and Nagarajaiah (2020). An Output-Only Bayesian Identification Approach for Nonlinear Structural and Mechanical Systems. Proceedings of the 38th IMAC. Society for Experimental Mechanics. Houston, TX.

- Erazo and Nagarajaiah (2019). On-line response and damage estimation of a shear wall structure tested on a shake table using Bayesian filtering. Proceedings of the SPIE Smart Structures and Nondestructive Evaluation Conference, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems. Denver, Colorado.
- Erazo and Hernandez (2014). Real-time efficient state estimation in nonlinear structural systems. Proceedings of the 9th International Conference on Structural Dynamics. Porto, Portugal.
- Erazo and Hernandez (2014). Uncertainty Quantification for State Estimation in Nonlinear Structural Systems. Proceedings of the Second International Conference on Vulnerability and Risk Analysis and Management and the Sixth International Symposium on Uncertainty, Modeling, and Analysis. Liverpool, United Kingdom.
- Erazo and Hernandez (2014). State Estimation in Nonlinear Structural Systems. Proceedings of the 32nd IMAC. Orlando, FL.
- Hernandez and Erazo (2013). Experimental verification of a finite element model based functional observer for structural systems. Proceedings of the 54TH Structures, Structural Dynamics, and Materials Conference (AIAA/ASME/ASCE/AHS/ASC)}. Boston, MA.
- Hernandez and Erazo (2013). Real-Time Dynamic Stress Response Estimation at Critical Locations of Instrumented Structures Embedded in Random Fields. Proceedings of the 31st IMAC Conference. Orlando, FL.
- Erazo and Hernandez (2013). Nonlinear Model-Data Fusion for Post-Earthquake Assessment of Structures. Proceedings of the 9th International Workshop on Structural Heath Monitoring. Stanford University, Stanford, CA.

Conference Presentations
- Erazo K., Di Matteo A., and Spanos. P. (2024). Analysis of fractional dynamical systems using recursive Bayesian estimation methods and response data. Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024), Chicago, IL.
- Erazo K. (2024). A model-based framework for structural damage assessment of instrumented civil infrastructure systems. Engineering Mechanics Institute Conference and Probabilistic Mechanics & Reliability Conference (EMI/PMC 2024), Chicago, IL.
- Di Matteo, Erazo and Spanos (2023). Identification of Fractional Dynamical Systems using Recursive Nonlinear Stochastic. Engineering Mechanics Institute International Conference. Palermo, Italy.
- Erazo, Di Matteo and Spanos (2023). Identification of Fractional Dynamical Systems using Recursive Nonlinear Stochastic Filtering Methods. Engineering Mechanics Institute Conference. Atlanta, GA.
- Nagarajaiah and Erazo (2020). Identification of nonlinear structural systems using sparse and Bayesian methods. 38th International Modal Analysis Conference, Invited Talk. Society for Experimental Mechanics. Houston, TX.
- Erazo and Nagarajaiah (2018). Output-only Bayesian Identification of Nonlinear Structural Systems. Engineering Mechanics Institute Conference. Boston, MA.
- Erazo (2018). Nonlinear probabilistic response and damage estimation using structural monitoring. XIV International Congress of Scientific Research. Dominican Republic.
- Erazo (2017). Probabilistic estimation of the nonlinear response of structures subjected to seismic excitations using structural monitoring. XIII International Congress of Scientific Research. Santo Domingo, DR
- Erazo (2017). Bayesian identification of a seismic protection device based on the concept of negative stiffness. XIII International Congress of Scientific Research. Santo Domingo, DR.
- Nagarajaiah, Yang, Erazo, Sun, Lai and Sen (2015). Large Scale Sensory and Video Data from Civil Infrastructure: Learning, Diagnosis and Prognosis for Health, Safety and Resiliency. Rice Big Data Forum. Houston, TX.

- Erazo and Hernandez (2015). A mechanistic approach to seismic damage estimation of instrumented building structures using Bayesian filtering. Engineering Mechanics Institute Conference. Stanford, CA.
- Erazo and Hernandez (2014). Uncertainty quantification for state estimation and its application to post-earthquake damage assessment. Engineering Mechanics Institute Conference. Ontario, Canada.
- Erazo and Hernandez (2013). Tracking dynamic stress response based on acceleration measurements. Engineering Mechanics Institute Conference. Evanston, IL.

Invited Talks and Seminars

- Vibration-based Structural Health Monitoring of Civil Infrastructure using Probabilistic Methods, Universidad de La Salle, Colombia, April 2021.
- Bayesian Probabilistic Methods for Nonlinear System Identification, University of Vermont, October 2020.
- Robust Probabilistic Methods for Monitoring, Identification and Reliability Assessment of Resilient Civil Infrastructure, Syracuse University, April 2019.
- Robust probabilistic methods for monitoring, identification and reliability assessment of resilient civil infrastructure systems, Department of Civil and Environmental Engineering, Virginia Tech, November 2018.
- Probabilistic methods for robust monitoring, identification and reliability assessment of resilient structural and mechanical systems, Department of Mechanical Engineering, KU Leuven, October 2017.

Book Chapter

- Erazo and Nagarajaiah (2022). Structural Health Monitoring of Civil Infrastructure Using Applied Recursive Bayesian Estimation Methods. *Recent Developments in Structural Health Monitoring and Assessment — Opportunities and Challenges*. World Scientific Publishing Company Pte. Limited.

Technical Reports

- Roueche, D., S. Admin, S. Garcia, C. Wang, S. Xu, X. Romão, B. Petreski, A. Diekmann, H. Dang, P. Arora, C. Chou, C. Hung, K. Mosalam, D. Gho, S. Chou, C. Lin, A. Córdova, H. Lin, G. Yu, Y. Liu, S. Gunay, M. Marinkovic, J. Carrillo, T. Lahna, G. Zhou, B. Alhawamdeh, N. BEKTAS, B. Duran, K. Erazo, A. Kyprioti, M. Nobahar, E. Toraman, S. Zaoui, A. Jana, T. Kijewski-Correa, D. Prevatt, I. Robertson, K. Wolohan (2024). "StEER: 2024 Hualien City Earthquake Preliminary Virtual Reconnaissance Report (PVRR)", in StEER- Hualien City, Taiwan Earthquake. DesignSafe-CI. https://doi.org/10.17603/ds2-0d2z-9682
- Mosalam, K., S. Admin, D. Kalliontzis, V. Hoskere, V. Kotzamanis, R. Bazrgary, W. Khan, A. Ur Rahman, M. Kenawy, K. Erazo, K. Ghahremani, H. Pham, J. Capa Salinas, T. Kijewski-Correa, D. Prevatt, I. Robertson, D. Roueche (2024). "StEER 2024 Houston Derecho Joint Preliminary Virtual Reconnaissance Report and Early Access Reconnaissance Report (PVRR-EARR)", in StEER- 2024 Houston Derecho. DesignSafe-CI. https://doi.org/10.17603/ds2-a6hb-8940
- Dilsiz, A., S. Gunay, K. Mosalam, D. Prevatt, E. Gerczak, E. Miranda, C. Arteta, H. Sezen, E. Fischer, M. Hakhamaneshi, W. Hassan, B. ALhawamdeh, S. Andrus, J. Archbold, S. Arslanturkoglu, N. BEKTAS, L. Ceferino, J. Cohen, B. Duran, K. Erazo, G. Faraone, T. Feinstein, R. Gautam, A. Gupta, S. Haj Ismail, A. Jana, S. Javadinasab Hormozabad, A. Kasalanati, M. Kenawy, Z. Khalil, I. Liou, M. Marinkovic, A. Martin, Y. Merino, M. Mivehchi, L. Moya, C. Pájaro Miranda, n. quintero, J. Rivera, X. Romão, M. Lopez Ruiz, S. Sorosh, L. Vargas, P. Velani, H. Wibowo, S. Xu, T. YILMAZ, M. Alam, G. Holtzer, T. Kijewski-Correa, I. Robertson, D. Roueche, A. Safiey (2023). "*StEER: 2023 Mw 7.8 Kahramanmaras, Türkiye Earthquake Sequence Preliminary Virtual Reconnaissance Report (PVRR)*", in StEER- February 6, 2023, Kahramanmaras, Türkiye, Mw 7.8 Earthquake. DesignSafe-CI. https://doi.org/10.17603/ds2-7ry2-gv66
- Building Climate-Resilient Communities in the Dominican Republic: A Blueprint for a Community Resilience Center in Santo Domingo (2023). Columbia World Projects.
- Identification of adaptive negative stiffness devices for seismic protection, Rice University, 2016.

- Structural health monitoring under varying environmental conditions: State-of-the-art and new methods, Rice University, 2016.
- Validation of AISC approximate second-order geometric nonlinear analyses. Computer-Aided Structural Engineering Center, Georgia Institute of Technology, 2012.

Data Repository

- Kalliontzis, D., V. Kotzamanis, H. Pham, K. Erazo, J. Capa Salinas, W. Khan (2024). "StEER 2024 Houston Derecho Annotated Media Repository", in StEER- 2024 Houston Derecho. DesignSafe-CI. https://doi.org/10.17603/ds2-xgvz-5790

PROFESSIONAL AFFILIATIONS

- Licensed Professional Engineer (Texas)
- American Society of Civil Engineers (ASCE), Member
- Earthquake Engineering Research Institute (EERI), Member
- ASCE Engineering Mechanics Institute (EMI), Member
- ASCE Structural Engineering Institute (SEI), Member
- American Society for Engineering Education (ASEE), Member
- ASCE-EMI Structural Health Monitoring and Control Committee, Member
- ASCE-EMI Dynamics Committee, Member
- Society for Industrial and Applied Mathematics (SIAM)
- American Institute of Aeronautics & Astronautics (AIAA)

LEADERSHIP AND SERVICE

Conference, Minisymposia & Workshops organizing

- Engineering Mechanics Institute (EMI) Conference 2025, Anaheim, CA. Minisymposium Organizer (with Milad Roohi, Yashar Eftekhar Azam, and Eleonora Tronci): Leveraging structural sensing and monitoring for informed decision-making, mitigation, and post-event management.
- Rice Global Workshops, Building Ecologies, Summer 2024. Barcelona. Co-organizer with Juan José Castellón.
- Engineering Mechanics Institute Conference (EMI) and Probabilistic Mechanics & Reliability (PMC) Conference 2024, Chicago, IL. Minisymposium Organizer (with Milad Roohi, Yashar Eftekhar Azam, Doeun Choe, and Eleonora Tronci): Leveraging structural sensing and monitoring for informed decision-making, mitigation, and post-event management.
- International Engineering Mechanics Institute Conference 2023, Palermo, Italy. Mini-Symposium Organizer (with Alberto Di Matteo): Structural Monitoring and Identification of Complex Dynamical Systems
- ASCE Engineering Mechanics Institute Conference, 2018, Boston, MA. Session Chair (with Eleni Chatzi): Structural Identification & Damage Detection
- International Conference on Scientific Research 2018, Dominican Republic, Session Chair

Editorial roles

- *Frontiers in Built Environment* (Structural Sensing, Control and Asset Management section), Editorial Board, Associate Editor
- *Ciencia, Ingenierías & Aplicaciones,* International Journal, Editor

Journals peer-review roles

- Mechanical Systems and Signal Processing (Reviewer)

- ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering (Reviewer)
- ASCE Journal of Structural Engineering (Reviewer)
- ASCE Journal of Engineering Mechanics (Reviewer)
- Resilient Cities and Structures (Reviewer)
- Structural Control and Health Monitoring (Reviewer)
- Engineering Structures (Reviewer)
- Journal of Sound and Vibration (Reviewer)
- Nonlinear Dynamics (Reviewer)
- Soil Dynamics and Earthquake Engineering (Reviewer)
- Journal of Bridge Engineering (Reviewer)
- Structural Health Monitoring (Reviewer)
- Journal of Earthquake Engineering (Reviewer)
- Earthquakes and Structures, An International Journal (Reviewer)
- Natural Hazards (Reviewer)
- Journal of Vibration and Control (Reviewer)
- Vibration (Reviewer)
- Journal of Building Engineering (Reviewer)
- IEEE Access Journal (Reviewer)
- IEEE Transactions on Industrial Electronics Journal (Reviewer)
- Structural Monitoring and Maintenance Journal (Reviewer)
- Journal of the Astronautical Sciences (Reviewer)
- Iranian Journal of Science and Technology, Transactions of Civil Engineering (Reviewer)

Rice Department of Civil and Environmental Engineering Service and Leadership
- Professional Master's (MCEE) program director, Spring 2020 - Present
- Graduate Committee Member, Fall 2022 - Present
- Curriculum Committee Member, Spring 2022 - Present
- Accreditation Committee, Chair, Fall 2024 - Present
- Transfer Credit Advisor, Fall 2024 - Present
- Civil Engineering Major Advisor, Spring 2021 - Present
- Degree Certifier (BSCE and MCEE programs), Fall 2024 - Present

Rice School of Engineering Service and Leadership
- Curriculum and Course Review Committee (SCRC), School of Engineering

Rice University Service and Leadership
- Divisional Advisor for Baker College, Fall 2022 - Present
- Owl Days Faculty Classroom Sampler (2022,2023, 2024)

Other service roles
- American Concrete Institute (External Reviewer and Translator)
- Fulbright Scholarship, Program Ambassador and Committee Member (Dominican Republic) (2017-2019)

MENTORING

Postdoctoral Students

- Marc-Ansy Laguerre (Rice, with Prof. Reginald DesRoches) (May 2024- May 2026)
  Research Topic: Machine learning and artificial intelligence methods applied to earthquake engineering

Graduate Students

- Jacob Morgan (Master's student at MIT, with Prof. Oral Buyukozturk) (Spring 2024)
  Research Topic: Machine learning and artificial intelligence methods applied to earthquake engineering

Undergraduate Students

- Benjamin Gomez, Spring 2025

INDUSTRY AND CONSULTING EXPERIENCE

CONSULTANT   2024
Do Ho Ltd

- The Bridge Project: A Perfect Home

CONSULTANT   2022
EPSALABCO and Department of Tourism of the Dominican Republic

- Structural assessment of historic structures in the Zona Colonial using structural health monitoring

CONSULTANT   2021
Barrick Pueblo Viejo JV

- Instrumentation and structural assessment of the Highbay structure using structural health monitoring

STRUCTURAL ENGINEER   May 2009 – August 2010
LEXCO Engineering, Dominican Republic

- Finite element linear and nonlinear modeling of structures
- Response spectrum and nonlinear time-history seismic analyses
- Performance-based seismic design of reinforced concrete and steel structures
- Design of ribbed floor systems, truss floor systems, and floor vibration assessment
- Spread, mat, and piles footing design; retaining walls design

STRUCTURAL DESIGN AND APPROVAL REVIEWER   January 2009 – May 2009
Department of Transportation of the Dominican Republic

- Review structural designs for compliance with local and international building/seismic codes and regulations

MEDIA COVERAGE

- Uno Mas Uno program (live TV interview, Dominican Republic national news channel)
Topics: Earthquake hazard in the Caribbean; 2010 Haiti earthquake; improving civil infrastructure resiliency in the Dominican Republic.

OUTREACH AND MENTORSHIP

- Habitat for Humanity, Rice University student club, Sponsor   Fall 2024 - Present

- Engineers Without Borders - Central Houston | Rice University Chapter, Advisor   2021 - Present
- ASCE Student Chapter Advisor   2022 - Present
- Invited Panelist, Hispanic Association for Cultural Enrichment at Rice (HACER)   2024
- Future City Competition judge, Houston, TX   2023
- Mentoring of Houston ISD high school students working on STEM-related TPSP projects   2022
- Habitat for Humanity, Northwest Harris County, Houston, TX   2018

OTHER ACADEMIC AND PROFESSIONAL ACTIVITIES

- Collaboration with Do Ho Suh in the Bridge Project: The Perfect Home.
- Creative Ventures Fund grant ($33,000) to organize the workshop Building Ecologies in Barcelona (Spain); with Juan José Castellón from Rice Architecture
- Faculty panelist for the Hispanic Association for Cultural Enrichment at Rice activities