ARVIN EBRAHIMKHANLOU

Assistant Professor, PhD, PE
Civil, Architectural and Environmental Engineering, Drexel University
3141 Chestnut Street, 251 Curtis Hall
Philadelphia, PA 19104
Office: AEL 273-D
Email: ae628@drexel.edu
LinkedIn ID: arvine
ORCID: 0000-0002-0740-5807 ▪ Scopus ID: 56196179400 ▪ ResearcherID: B-8593-2017
Google Scholar: jI8mX1kAAAAJ&hl ▪ Publons: a/1202557 ▪ ResearchGate: Arvin_Ebrahimkhanlou
Research website: https://research.coe.drexel.edu/caee/arvin/

SUMMARY AND BIOGRAPHY

Dr. Arvin Ebrahimkhanlou is an Assistant Professor in the Civil, Architectural and Environmental Engineering Department at Drexel University with a courtesy appointment in the Mechanical Engineering and Mechanics Department. He received his Ph.D. from and completed his post-doc at The University of Texas at Austin. Dr. Arvin's research is in the area of robotic-based and Artificial Intelligence (AI)-based assessment of civil infrastructures as well as mechanical and aerospace structures. Dr. Arvin specializes in robotics, artificial intelligence, machine learning, data analysis, signal processing, uncertainty quantification, computer vision, and wave propagation. The results of Dr. Arvin's research have published in 28 highly cited journal papers, 52 conference articles, and a U.S. patent. His scholarly efforts have had a quantifiable impact on the field and been cited 1422 times so far. Such efforts have also been recognized by several awards, including the Fellowship Award of the American Society for Nondestructive Testing (ASNT). Moreover, Dr. Arvin has served more than 193 times as a reviewer on several top-tier journals. Arvin has a keen passion for teaching and has been recognized for his outstanding teaching performance. In addition to scholarly activities, he has served as the vice-chair of the ASNT 2020 and 2021 Research Symposium and has been conference session chair and program organizer at multiple conferences. Dr. Arvin is a distinguished alumnus of Sharif University for obtaining his bachelor's degree with the highest honors and an active member of several professional societies.

EDUCATION

- Postdoc, **The University of Texas at Austin**, Austin, TX   Aug. 2018-Aug. 2020
- Ph.D., **The University of Texas at Austin**, Austin, TX   Aug. 2015-Dec. 2018
     Advisor: Dr. Salvatore Salamone ▪ Major: Structural Engineering ▪ GPA: 4.00
        Dissertation: Advanced pattern recognition techniques for wave-based structural health monitoring

- M.Sc., **Georgia Tech**, Atlanta, GA (distance education)   Aug. 2019-Dec. 2020
     Major: Computer Science ▪ GPA: 4.00

- M.Sc., The State University of New York at Buffalo (UB), Buffalo, NY   Aug. 2013-Aug. 2015
     Major: Structural Engineering ▪ GPA: 4.00

- B.Sc., **Sharif University**, Tehran, Iran   Sep. 2007-Sep. 2011
     Major: Civil Engineering ▪ GPA: 4.00 ▪ Graduated with highest honor (summa cum laude)

EMPLOYMENT HISTORY

- Assistant Professor, Drexel University, Philadelphia, PA   Jan. 2023-Present
- Assistant Professor, New Mexico Tech, Socorro, NM   Aug. 2020-Dec. 2022
- Postdoctoral Fellow, The University of Texas at Austin, Austin, TX   Sep. 2018-Aug. 2020
- Graduate Research Assistant, The University of Texas at Austin, Austin, TX   Sep. 2015-Aug. 2018
- Teaching Assistant, The State University of New York at Buffalo, Buffalo, NY   May. 2015-Jul. 2015
- Research Assistant, The State University of New York at Buffalo, Buffalo, NY   Jan. 2014-Aug. 2015
- Teaching Assistant, The State University of New York at Buffalo, Buffalo, NY   Aug. 2013-Dec. 2013
- Structural Engineer, Tazand Civil/Structural Consulting Engineers, Tehran, Iran   Jun. 2011-Sep. 2011
    Seismic assessment and rehabilitation of a 10-story building according to ASCE41-06 specifications using friction or viscose dampers, fiber reinforced polymers (FRP), steal jacketing, and micro piling. The structure had concrete shear walls and the analysis (pushover) was performed in Perform3D.

RESEARCH INTERESTS

- Robotic-based and Artificial Intelligence (AI)-based Infrastructure Assessment
- Computer Vision and Machine Learning for SHM/NDE
- Internet of Things (IoT) and Mixed Reality (MR) for SHM/NDE
- Wave Propagation (Guided Ultrasonic Waves and Acoustoelasticity)
- Acoustic Emission

HONORS AND AWARDS

Undergraduate student teams' honors and awards.
- NASA RMC Lunabotics Competition 2023 (Drexel): placed 18th out of 49 national teams   May 2023
- NASA RMC Lunabotics Competition 2022 (New Mexico Tech)   May 2022
    Placed 11th out of 71 national teams.
    Nova Award for Stellar Systems Engineering by a first-year team
    Best Project Management Plan
- Teamwork Award (New Mexico Tech)   May 2022
    2022 Excellence Senior Design Conference at the University of Texas at Dallas
- NASA MINDS Competition 2022 (New Mexico Tech)   Apr. 2022
    Finalist in the Senior Category
- NASA MINDS Competition 2021 (New Mexico Tech)   Apr. 2021
    Finalist in the Underclassman Category
    2nd in Overall Design, Build, and Demonstration
    2nd in Poster Presentation
    3rd in Best Technical Paper

Students' awards (student's name is indicated in parentheses).
- Best Student Paper, 3rd Place (Pedram Bazrafshan), SPIE 2024 Smart Structures and NDE   Mar. 2024
- George Hill, Jr. Endowed Fellowship, (Pedram Bazrafshan), Drexel University   Mar. 2024
- Travel Award (Ali Ghadimzadeh Alamdari), SPIE 2024 Smart Structures and NDE   Jan. 2024

- GSA Travel Grant to attend 14th IWSHM conference, (Pedram Bazrafshan), Drexel University Aug. 2023
- Harry Brown, Jr. Fellowship (Ali Ghadimzadeh Alamdari), Drexel University   May 2023
- Provost's Best In-Person Presentation at 2023 Drexel Emerging Graduate Scholars Conference, Drexel University (Pedram Bazrafshan)   Apr. 2023
- Chuck Pennoni Civil Engineering Fellowship, Drexel University (Pedram Bazrafshan)   Mar. 2023
- Honorable Mention (Pedram Bazrafshan), AEWG 63   May 2022
- Travel Grant (Pedram Bazrafshan), ASNT 30th Research Symposium   Apr. 2022
- Travel Grant (Hamed Momeni), ASNT 30th Research Symposium   Apr. 2022
- Travel Award (Pedram Bazrafshan), SPIE Smart Structures and NDE   Dec. 2021
- Silver Scholarship (Mario Escarcega), New Mexico Tech   Mar. 2021
- Undergraduate Research Scholarship (Mario Escarcega), New Mexico Alliance for Minority Participation (NMAMP), New Mexico Tech   Feb. 2021
- Undergraduate Research Scholarship (Mario Escarcega), New Mexico Alliance for Minority Participation (NMAMP), New Mexico Tech   Oct. 2020

National and International Awards

- **Outstanding Paper Award**, **American Society for Nondestructive Testing**   Sep. 2022
    The ASNT Outstanding Paper Award is presented to a person or persons to encourage a high degree of effort toward technical, educational, or managerial achievement in NDT through publication in Materials Evaluation and Research in Nondestructive Evaluation. Selection is based on originality, appropriateness & accuracy of supporting material, usefulness of the contribution, and clarity of the work.
- Most Cited Ultrasonics Article since 2017, Journal of Ultrasonics   Aug. 2020
- **Best Research Article prize of the journal of Aerospace**   Feb. 2020
    (Nominations were selected by the editorial office of Aerospace based on the number of citations, views and downloads from the website. All research articles published in 2018 were eligible for consideration).
- Top 1% reviewer in cross-field, Web of Science   Sep. 2019
- **Best Student Paper Award, Acoustic Emission Working Group, 60th conference**   Jun. 2018
- Structural Health Monitoring and Control Student Paper Competition, Third Place, EMI May 2018
- **Fellowship, American Society for Nondestructive Testing, 2018 Fellowship Award** Apr. 2018
- Travel Award, American Society for Nondestructive Testing, 27th Research Symposium Mar. 2018
- Travel Award, American Society for Nondestructive Testing, 26th Research Symposium Mar. 2017
- Honorable Mention, Acoustic Emission Working Group, 58th conference   May 2016
- Travel Award, American Society for Nondestructive Testing, 25th Research Symposium Apr. 2016
- Travel Award, SPIE Smart Structures and NDE   Mar. 2016

The University of Texas at Austin, USA

- Dean's Prestigious Fellowship, Graduate School, The University of Texas at Austin Jun. 2018
- Kolodzey Travel Grant, Department of Civil Engineering, The University of Texas at Austin Jun. 2018
- Travel Award, Graduate Engineering Council (GEC), The University of Texas at Austin Apr. 2018
- Honor Society Membership, Sigma Xi: The Scientific Research Honor Society   Jul. 2017
- Fellowship, John A. Focht Endowed Presidential Graduate Scholarship in Civil Engineering Jul. 2017
- Travel Grant, Graduate Student Assembly, The University of Texas at Austin   Apr. 2017

- Professional Development Award, The University of Texas at Austin   Dec. 2016
- Fellowship, Phil M. Ferguson Endowed Presidential Scholarship in Civil Engineering   Sep. 2016
- Professional Development Award, The University of Texas at Austin   May 2016

The State University of New York at Buffalo, USA
- Honorable Mention, Graduate Poster Competition, School of Engineering   Apr. 2015
- First Prize, Graduate Students Poster Competition, Department of Civil Engineering   Mar. 2015
- Travel Award, American Society for Nondestructive Testing, 24th Research Symposium   Mar. 2015

Sharif University, Iran
- Dr. Tavakoli Prize, Department of Civil Engineering   May 2012
- Summa Cum Laude (holding the highest GPA among 100 B.Sc. students in class of 2011)   Apr. 2012

PROFESSIONAL CERTIFICATIONS

- Professional Engineer, Texas Board of Professional Engineers   Aug. 2023
- Engineer in Training, Texas Board of Professional Engineers   Jul. 2019
- Fundamental of Engineering, National Council of Examiners for Engineering and Surveying   Jun. 2019
- Certified LabVIEW Associate Developer (CLAD), National Instruments   Jan. 2016
- Ultrasonic Testing (level II), American Society for Nondestructive Testing (ASNT)   Oct. 2011

PROFESSIONAL MEMBERSHIPS

- American Society of Nondestructive Testing (ASNT)
- International Society for Optics and Photonics (SPIE)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineers (ASME)
- American Institute of Steel Construction (AISC)
- Acoustic Emission Working Group (AEWG)

PUBLICATIONS

Citations: 1422 (according to Google Scholar accessed on April 01, 2024)
Google scholar link: https://scholar.google.com/citations?user=jI8mX1kAAAAJ&hl=en

Peer-reviewed Journal Papers
[J1] Ali Ghadimzadeh Alamdari and **Arvin Ebrahimkhanlou** "A Multi-Scale Robotic Approach for Precise Crack Measurement in Concrete Structures", Automation in Construction 158, No. 105215 (Feb 2024) https://doi.org/10.1016/j.autcon.2023.105215

[J2] Pedram Bazrafshan, Thinh On, Sina Basereh, Pinar Okumus, **Arvin Ebrahimkhanlou**, "A graph-based method for quantifying crack patterns on reinforced concrete shear walls," Computer-Aided Civil and Infrastructure Engineering 39 (4), pp. 498–517 (**cover paper** of the Special Issue: Computational Concrete Engineering, February 2024) https://doi.org/10.1111/mice.13009

[J3] Hamed Momeni, and **Arvin Ebrahimkhanlou**, "High dimensional data analytics for structural health monitoring: A review," *Smart Material and Structure 31, No. 4* (Mar. 2022), *043001* https://doi.org/10.1088/1361-665X/ac50f4

[J4] Stylianos Livadiotis, Konstantinos Sitaropoulos, **Arvin Ebrahimkhanlou**, Salvatore Salamone, "Acoustic emission monitoring of corrosion in steel pipes using Lamb-type helical waves," *Structural Health Monitoring* (Jun. 13, 2022) https://doi.org/10.1177/14759217221105644

[J5] Amir Hossein Asjodi, Kiarash M. Dolatshahi, **Arvin Ebrahimkhanlou**, "Spatial analysis of damage evolution in cyclic-loaded reinforced concrete shear walls" *Journal of Building Engineering* 49, No. 104032 (May 2022), https://doi.org/10.1016/j.jobe.2022.104032

[J6] **Arvin Ebrahimkhanlou**, Melanie B Schneider, Brennan Dubuc, Salvatore Salamone, "A deep learning framework for acoustic emission sources localization and characterization in complex aerospace panels", *Material Evaluation* 79(4) (April 01, 2021) https://doi.org/10.32548/2021.me-04179 **(2022 Outstanding Paper Award, American Society for Nondestructive Testing)**

[J7] Brennan Dubuc, Konstantinos Sitaropoulos, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Acoustic emission diagnostics of corrosion monitoring in prestressed concrete using hidden Markov and semi-Markov models", *Structural Health Monitoring* (Dec. 15, 2020) https://doi.org/10.1177%2F1475921720976937

[J8] Stylianos Livadiotis, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Monitoring internal corrosion in steel pipelines: a two-step helical guided wave approach for localization and quantification", *Structural Health Monitoring* (November 10, 2020) https://journals.sagepub.com/doi/pdf/10.1177/1475921720970139

[J9] Korkut Kaynardag, Giuseppe Battaglia, **Arvin Ebrahimkhanlou**, Antonina Pirrotta, Salvatore Salamone "Identification of bending modes of vibration in rails by a laser Doppler vibrometer on a moving platform," *Experimental Techniques* (September, 11 2020) https://doi.org/10.1007/s40799-020-00401-9

[J10] **Arvin Ebrahimkhanlou**, Jongkwon Choi, Trevor Hrynyk, Salvatore Salamone, Oguzhan Bayrak, "Acoustic emission monitoring of containment structures during post-tensioning," *Engineering Structures* 209 (15 April 2020): 109930, doi: 10.1016/j.engstruct.2019.109930

[J11] **Arvin Ebrahimkhanlou**, Brennan Dubuc, and Salvatore Salamone, "A generalizable deep learning framework for localizing and characterizing acoustic emission sources in riveted metallic panels," *Mechanical Systems and Signal Processing* 130 (Sep. 01, 2019):248-72, doi: 10.1016/j.ymssp.2019.04.050

[J12] Brennan Dubuc, Stylianos Livadiotis, **Arvin Ebrahimkhanlou**, Salvatore Salamone, "Crack-induced guided wave motion and modal excitability in plates using elastodynamic reciprocity", *Journal of Sound and Vibration* (accepted on February 25, 2020) doi: 10.1016/j.jsv.2020.115287

[J13] Apostolos Athanasiou, **Arvin Ebrahimkhanlou**, Jarrod Zaborac, Trevor D. Hrynyk, and Salvatore Salamone, "A machine learning approach based on multifractal features for crack assessment of reinforced concrete shells," *Computer-Aided Civil and Infrastructure Engineering* (Nov. 06, 2019):1–14 doi: 10.1111/mice.12509

[J14] Brennan Dubuc, **Arvin Ebrahimkhanlou**, Stylianos Livadiotis, and Salvatore Salamone, "Inversion algorithm for Lamb-wave-based depth characterization of acoustic emission sources in plate-like structures," *Ultrasonics* 99 (2019) no. 105975, doi: 10.1016/j.ultras.2019.105975

[J15] **Arvin Ebrahimkhanlou**, Apostolos Athanasiou, Trevor D. Hrynyk, Oguzhan Bayrak, and Salvatore Salamone, "Fractal and Multifractal Analysis of Crack Patterns in Prestressed Concrete Girders," *ASCE Journal of Bridge Engineering* 24 (2019) no. 7: 04019059, doi: 10.1061/(ASCE)BE.1943-5592.0001427

[J16] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Stress monitoring of prestressing strands in corrosive environments using modulated higher-order guided ultrasonic waves," *Structural Health Monitoring* 19(1) (2020) (first published Apr. 12, 2019), doi: 10.1177/1475921719842385

[J17] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Corrosion monitoring of prestressed concrete structures by using topological analysis of acoustic emission data," *Journal of Smart Materials and Structures* 28 (2019) no. 5: 055001, doi: 10.1088/1361-665X/ab0e96

[J18] Stylianos Livadiotis, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "An algebraic reconstruction imaging approach for corrosion damage monitoring of pipelines," *Smart Materials and Structures* 28(5):055036, doi: 10.1088/1361-665X/ab1160

[J19] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Computation of propagating and non-propagating guided modes in nonuniformly stressed plates using spectral methods," *Journal of the Acoustical Society of America* 143 no. 6 (2018):3220-30, doi: 10.1121/1.5040140

[J20] **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Single-sensor acoustic emission source localization in plate-like structures using deep learning," *Aerospace* 5, no. 2 (2018): 50 Special Issue: Selected Papers from IWSHM 2017 doi: 10.3390/aerospace5020050 (**invited paper, Best Paper Award among papers published in the journal of Aerospace in 2018**)

[J21] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Localization of multiple acoustic emission events occurring closely in time in thin-walled pipes using sparse reconstruction," *Journal of Intelligent Material Systems and Structures* 29, no. 11 (2018): 2362–2373, doi: 10.1177/1045389X18770857

[J22] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Higher order longitudinal guided wave modes in axially stressed seven-wire strands," *Ultrasonics* 84 (2018): 382-391, doi: 10.1016/j.ultras.2017.12.003

[J23] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "A Probabilistic Framework for Single-Sensor Acoustic Emission Source Localization in Thin Metallic Plates," *Smart Materials and Structures* 26, no. 9 (September 1, 2017): 95026, doi:10.1088/1361-665X/aa78de

[J24] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "The effect of applied stress on the phase and group velocity of guided waves in anisotropic plates," *Journal of the Acoustical Society of America* 142 no. 6 (2017): 3553-3563, doi: 10.1121/1.5016969

[J25] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Acoustic emission source localization in thin metallic plates: a single-sensor approach based on edge reflections," *Ultrasonics* 78 (2017): 134-145, doi: 10.1016/j.ultras.2017.03.006

[J26] Brennan Dubuc, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Effect of pressurization on helical guided wave energy velocity in fluid-filled pipes," *Ultrasonics* 17 (2016): 145-154, doi: 10.1016/j.ultras.2016.11.013

[J27] **Arvin Ebrahimkhanlou**, Brennan Dubuc, and Salvatore Salamone, "Damage localization in metallic plate structures using edge reflected lamb waves," *Smart Materials and Structures* 25 (2016): 085035, doi:10.1088/0964-1726/25/8/085035

[J28] **Arvin Ebrahimkhanlou**, Alireza Farhidzadeh, and Salvatore Salamone, "Multifractal analysis of crack patterns in reinforced concrete shear walls," *Structural Health Monitoring* 15 no. 1 (2016): 81-92, doi: 10.1177/1475921715624502

Book Chapters

[B1] **Arvin Ebrahimkhanlou** and Pedram Bazrafshan, "Chapter 4: Machine Learning and Data Mining for Acoustic Emission", Acoustic Emission e-Textbook, Volume 1, 2021-22
https://sites.google.com/aewg-us.org/aetextbookvol1/home

Patents

[P1] Salvatore Salamone and **Arvin Ebrahimkhanlou**, "Spark acoustic emission simulator", United States Patent 16/980,673, March 2018

Refereed Conference Proceedings

The presenter is indicated with an asterisk.

[C1] Pedram Bazrafshan*, **Arvin Ebrahimkhanlou**, "An entropy-based probabilistic model for acoustic emission RA-value-average frequency data," in Proc. of SPIE 12951, 89, Health Monitoring of Structural and Biological Systems XVIII, 12951-89, (presented on March 28, 2024 at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 25-28, 2024) (**3rd Place in Best Student Paper**)

[C2] Ali Ghadimzadeh Alamdari*, **Arvin Ebrahimkhanlou**, "Multi-scale robotic scanning of surface cracks in concrete structures," in Proc. of SPIE 12950, 35, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XVIII, 12950-35, doi: (presented on March 27, 2024at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 25-28, 2024) (**student travel award**)

[C3] Ali Ghadimzadeh Alamdari*, **Arvin Ebrahimkhanlou**, "A laser-based quality control of screw penetration in mass timber connections," in Proc. of SPIE 12951, 81, Health Monitoring of Structural and Biological Systems XVIII, 12951-81, (presented on March 28, 2024 at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 25-28, 2024) (**student travel award**)

[C4] Pedram Bazrafshan*, **Arvin Ebrahimkhanlou**, "Detection of cracking mechanism transition on reinforced concrete shear walls using graph theory," in Proc. of SPIE 12950, 28, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XVIII, 12950-28, (presented on March 26, 2024 at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 25-28, 2024)

[C5] Ali Ghadimzadeh Alamdari*, **Arvin Ebrahimkhanlou**, "A non-contact method for robotic measurement of warping in steel girders: case study of I-95 overpass after fire," in Proc. of SPIE 12949, 28, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2024, 12949-25, (presented on March 26, 2024 at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 25-28, 2024) (**student travel award**)

[C6] Hamed Momeni and **Arvin Ebrahimkhanlou***, "High-Dimensional Data Analytics for Sparse Recovery of Guided-Waves Dispersion Curves Using B-Splines," in *Proc. of 14th International Workshop on Structural Health Monitoring: Designing SHM for Sustainability, Maintainability, and Reliability*, ISBN: 978-1-60595-693-0, ed. Saman Farhangdoust, Alfredo Guemes, and Fu-Kuo Chang, (Stanford: Destech Publications, 2023), 796-803, doi: 10.12783/shm2023/36815 (presented at 14th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 10-12, 2023).

[C7] Pedram Bazrafshan* and **Arvin Ebrahimkhanlou**, "A Robotic-Based Framework for Quantifying Surface Cracks of Concrete Shear Walls," in *Proc. of 14th International Workshop on Structural Health Monitoring: Designing SHM for Sustainability, Maintainability, and Reliability*, ISBN: 978-1-60595-693-0, ed. Saman Farhangdoust, Alfredo Guemes, and Fu-Kuo Chang, (Stanford: Destech Publications, 2023), 1263-8, doi: 10.12783/shm2023/36868 (presented at 14th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 10-12, 2023).

[C8] Ali Ghadimzadeh Alamdari*, **Arvin Ebrahimkhanlou**, "A robotic approach for crack detection through the integration of cameras and LiDARs," in Proc. of SPIE 12486, 21-29, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, (April 18, 2023), 1248606, doi: https://doi.org/10.1117/12.2658110 (presented at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 12-16, 2023).

[C9] Pedram Bazrafshan*, **Arvin Ebrahimkhanlou**, "A virtual-reality framework for graph-based damage evaluation of reinforced concrete structures," in Proc. of SPIE 12487, 45-49, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XVII, (April 18, 2023), 1248707, doi: https://doi.org/10.1117/12.2657736 (presented at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 12-16, 2023).

[C10] Pedram Bazrafshan*, Thinh On, and **Arvin Ebrahimkhanlou,** "Machine learning-based damage detection of RC wall using graph features of crack patterns", in Proc. of ASNT Research Symposium 2022, https://doi.org/10.32548/RS.2022.003 (presented at the 30th ASNT Research Symposium: Advancing NDE Technologies, Research, and Engineering in a Changing World, Hilton St. Louis Frontenac, St. Louis, Missouri, USA, Jun. 20-23, 2022) (**student travel award**)

[C11] Hamed Momeni* and **Arvin Ebrahimkhanlou,** "A hybrid physics-based/data-driven damage detection method for Lamb wave structural health monitoring", in Proc. of ASNT Research Symposium 2022, https://doi.org/10.32548/RS.2022.030 (presented at the 30th ASNT Research Symposium: Advancing NDE Technologies, Research, and Engineering in a Changing World, Hilton St. Louis Frontenac, St. Louis, Missouri, USA, Jun. 20-23, 2022) (**student travel award**)

[C12] John Racette*, Simon Lotero, Jeffrey Gordon, Chris Dinelli, **Arvin Ebrahimkhanlou**, Sihua Shao, Pedram Roghanchi, Mostafa Hassanalian "Hybrid UGV and Drone System for Mine Rescue Assistance" 2022 AIAA Aviation and Aeronautics Forum and Exposition, Unique and Unusual Missions 2022-3287 https://doi.org/10.2514/6.2022-3287 (presented at the AIAI Aviation Forum, Jun. 27-Jul. 01, 2022 Chicago, IL)

[C13] Pedram Bazrafshan*, Thinh On, **Arvin Ebrahimkhanlou**, "A computer vision-based crack quantification of reinforced concrete shells using graph theory measures" in Proc. of SPIE 12046, 152-158, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, (April 18, 2022), 120460J, doi: https://doi.org/10.1117/12.2612359 (presented at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 06-09, 2022).

[C14] Hamed Momeni* and **Arvin Ebrahimkhanlou**, "High-dimensional data analytics applications in SHM and NDE: tensor analysis of thermal videos" in Proc. of SPIE 12046, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2022; 120460S (April 18, 2022) 120460S doi: https://doi.org/10.1117/12.2613214 (presented at SPIE Smart Structures/NDE, Hilton Long Beach Hotel, Long Beach, California, USA, March 06-09, 2022).

[C15] Hamed Momeni* and Arvin Ebrahimkhanlou "Load-Displacement Behavior Clustering of RC Shear Walls Using Functional Data Analysis" Grimmelsman, K. (eds) Dynamics of Civil Structures, Volume 2. Conference Proceedings of the Society for Experimental Mechanics Series. Springer, Cham. https://doi.org/10.1007/978-3-030-77143-0_16 (presented at IMAC XXXIX (39th) - 2021 A Conference and Exposition on Structural Dynamics Rosen Plaza Hotel, Orlando, Florida Feb 8 - 11, 2021)

[C16] Hamed Momeni*, Sina Basereh, Pinar Okumus, Arvin Ebrahimkhanlou "A video-based crack detection in concrete surfaces" Madarshahian, R., Hemez, F. (eds) Data Science in Engineering, Volume 9. Conference Proceedings of the Society for Experimental Mechanics Series. Springer, Cham.

https://doi.org/10.1007/978-3-030-76004-5_29 (presented at IMAC XXXIX (39th) - 2021 A Conference and Exposition on Structural Dynamics Rosen Plaza Hotel, Orlando, Florida Feb 8 - 11, 2021

[C17] Mario Escarcega*, Meghan Cephus, Skyler Hughes, Nakii Tsosie, Kimberley Kelso, Raechelle Sandoval, **Arvin Ebrahimkhanlou**, "Acoustic Emission-Based Structural Health Monitoring for Future Lunar Pipelines" (Presented at 2021 IMECE International Mechanical Engineering Congress and Exposition, Virtual, Nov 01-05, 2021)

[C18] Melinda Stevens, Samuel Arellano, Diego Rodriguez, James Wilson, Zady Gutierrez, Noah Trudell, Hamed Momeni*, **Arvin Ebrahimkhanlou** "Robotic-Based Repair of Concrete Structures: A Surface Crack Filler Robot" (Presented at the 2021 IMECE International Mechanical Engineering Congress and Exposition, Virtual, Nov 01-05, 2021)

[C19] Mario Escarcega*, Savannah Bradley, Parker Randall, Gabriel Campos, Luke Strebe, Hamed Momeni, and **Arvin Ebrahimkhanlou**, "Corrosion Monitoring and Mitigation in Reinforced Concrete Structures Using Novel 3D-Printed Valves and Internet-of-Things Approach" (Presented at the 2021 IMECE International Mechanical Engineering Congress and Exposition, Virtual, Nov 01-05, 2021)

[C20] Hamed Momeni* and **Arvin Ebrahimkhanlou**, "Applications of High-Dimensional Data Analytics in Structural Health Monitoring and Non-Destructive Eva of High-Dimensional Data Analytics in Structural Health Monitoring and Nondestructive Evaluation: Thermal Videos Processing Using Tensor-Based Analysis" (Presented at the 2021 IMECE International Mechanical Engineering Congress and Exposition, Virtual, Nov 01-05, 2021).

[C21] Brenden Herkenhoff, Isabel Morris, **Arvin Ebrahimkhanlou**, and Mostafa Hassanalian, "Application and Potential Design of an Amphibious Drone Hub: Water Lily and Bioinspiration Concepts" 2021 AIAA Aviation and Aeronautics Forum and Exposition, Design Engineering: Innovative & Creative Designs in Aerospace and Other Areas, doi: 10.2514/6.2021-2783 (presented at the AIAI Aviation Forum, Aug, 02-06, 2021).

[C22] Mario Escarcega, Kimberley Kelso, Raechelle Sandoval, Meghan Cephus, Nakii Tsosie, Skyler Hughes, **Arvin Ebrahimkhanlou** "Nondestructive evaluation of resource-carrying lunar pipelines" (presented at the ASNT Research Symposium, Apr. 27-29, 2021).

[C23] Hamed Momeni* and **Arvin Ebrahimkhanlou**, "Clustering of Load-Displacement Behavior of Structural Elements Using Functional Principal Component Analysis" (presented at the ASNT Research Symposium, Apr. 27-29, 2021).

[C24] Mario Escarcega, Savannah Bradley, Gabriel Campos*, Parker Randal, Luke Strebe, Hamed Momeni, and **Arvin Ebrahimkhanlou**, "Corrosion Monitoring and Mitigation in Reinforced Concrete Structures Using Novel 3D-Printed Valves and Internet-of-Things Approach" (presented at the ASNT Research Symposium, Apr. 27-29, 2021).

[C25] Hamed Momeni*, Sina Basereh, Pinar Okumus, and Arvin Ebrahimkhanlou, "Surface crack detection in concrete structures using video processing techniques" in Health Monitoring of Structural and Biological Systems XV 76. ISBN: 9781510640153, 2021, doi: 10.1117/12.2583323 (presented at SPIE Smart Structures/NDE, Digital Forum, USA, Mar. 22-26, 2021).

[C26] Mario Escarcega*, Savannah Bradley, Parker Randall, Gabriel Campos, Luke Strebe, Hamed Momeni, and **Arvin Ebrahimkhanlou** "Corrosion monitoring and mitigation in concrete structures using a 3D printing and Internet of Things approach", Proc. SPIE 11591, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2021, 115910X (Mar. 22, 2021); doi: 10.1117/12.2583360 (presented at SPIE Smart Structures/NDE, Digital Forum, USA, Mar. 22-26, 2021)

[C27] Hamed Momeni*, Sina Basereh, Pinar Okumus, and **Arvin Ebrahimkhanlou**, "A video-based crack detection in concrete surfaces" in Data Science in Engineering, Volume 9, 245–252. ISBN: 9783030760045, 2021, doi: 10.1007/978-3-030-76004-5_29 (presented at IMAC 39th IMAC, A Conference and Exposition on Structural Dynamics, Feb. 08-11, 2021).

[C28] Hamed Momeni* and **Arvin Ebrahimkhanlou**, "Load-Displacement Behavior Clustering of RC Shear walls Using Functional Data Analysis" in Dynamics of Civil Structures, Volume 2 153–158. ISBN: 9783030771430, 2021 doi: 10.1007/978-3-030-77143-0_16 (presented at IMAC 39th IMAC, A Conference and Exposition on Structural Dynamics, Feb. 08-11, 2021).

[C29] Brennan Dubuc*****, **Arvin Ebrahimkhanlou**, Konstantinos Sitaropoulos, Salvatore Salamone, "Elastodynamic-reciprocity-based analysis of guided wave motion due to finite-length through-thickness tensile and shear cracks in plates" in *Proc. of SPIE 11381, Health Monitoring of Structural and Biological Systems XIV*, (April 22, 2020), *113811T*, doi: 10.1117/12.2557322 (presented at SPIE Smart Structures/NDE, Digital Forum, USA, Apr. 27- May 01, 2020).

[C30] Brennan Dubuc*****, Stylianos Livadiotis, **Arvin Ebrahimkhanlou**, Salvatore Salamone, "Elastodynamic-reciprocity-based analysis of guided wave motion due to finite-length through-thickness tensile and shear cracks in plates," in *Proc. of SPIE 11380, Health Monitoring of Structural and Biological Systems XIV*, (April 22, 2020), 113800L, doi: 10.1117/12.2557320 (presented at SPIE Smart Structures/NDE, Digital Forum, USA, April 27- May 01, 2020).

[C31] **Arvin Ebrahimkhanlou***, Melanie B Schneider, Brennan Dubuc, and Salvatore Salamone, "Single Sensor Localization and Characterization of Acoustic Emission Sources in Metallic Panels: A Deep Learning Approach," in *Proc. of 12th International Workshop on Structural Health Monitoring: Enabling Intelligent Life-cycle Health Management for Industry Internet of Things (IIOT)*, ISBN: 978-1-60595-601-5, ed. Fu-Kuo Chang and Kopsaftopoulos Fotis, vol. 2 (Stanford: Destech Publications, 2019), 2437-41, doi: 10.12783/shm2019/32385 (presented at 12th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 10-12, 2019).

[C32] Brennan Dubuc*****, **Arvin Ebrahimkhanlou**, Stylianos Livadiotis, and Salvatore Salamone, "Lamb Wave-Based Depth Characterization of Acoustic Emission Sources in Complex Metallic Plate-Like Structures," in *Proc. of 12th International Workshop on Structural Health Monitoring: Enabling Intelligent Life-cycle Health Management for Industry Internet of Things (IIOT)*, ISBN: 978-1-60595-601-5, ed. Fu-Kuo Chang and Kopsaftopoulos Fotis, vol. 1 (Stanford: Destech Publications, 2019), 1415-21, doi: 10.12783/shm2019/32262 (presented at 12th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 10-12, 2019).

[C33] Stylianos Livadiotis*****, **Arvin Ebrahimkhanlou**, and Salvatore Salamone,, "Structural Health Monitoring of Pipelines by Means of Helical Guided Ultrasonic Waves and an Algebraic Reconstruction Technique," in *Proc. of 12th International Workshop on Structural Health Monitoring: Enabling Intelligent Life-cycle Health Management for Industry Internet of Things (IIOT)*, ISBN: 978-1-60595-601-5, ed. Fu-Kuo Chang and Kopsaftopoulos Fotis, vol. 2 (Stanford: Destech Publications, 2019), 1885-92, doi: 10.12783/shm2019/32318 (presented at 12th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 10-12, 2019).

[C34] **Arvin Ebrahimkhanlou**, Jongkwon Choi*, Trevor D. Hrynyk, Salvatore Salamone, and Oguzhan Bayrak, "Data Mining For Acoustic Emission Monitoring of a Nuclear Containment Wall During Post-tensioning," in *Proc. SMiRT 25, transactions, division V* (2019), 1059821, (presented at 25th Structural Mechanics in Reactor Technology conference (SMiRT 25), The Westin Charlotte, Charlotte, North Carolina, USA, August 04-09,2019).

[C35] **Arvin Ebrahimkhanlou***, Salvatore Salamone, Arash Ebrahimkhanlou, Amir Reza Ghiami Azad, Kerry Kreitman, Todd Helwig, Eric Williamson, and Michael Engelhardt, "Acoustic emission monitoring of strengthened steel bridges: Inferring the mechanical behavior of post-installed shear connectors," in *Proc. of SPIE 10971, Nondestructive Characterization and Monitoring of Advanced Materials, Aerospace, Civil Infrastructure, and Transportation XIII*, ed. A. L. Gyekenyesi (April 01, 2019), 109710H, doi: 10.1117/12.2514231 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2019).

[C36] **Arvin Ebrahimkhanlou***, Brennan Dubuc, and Salvatore Salamone, "A deep learning-based framework for two-step localization and characterization of acoustic emission sources in metallic panels using only one sensor," in *Proc. of SPIE 10972, Health Monitoring of Structural and Biological Systems XII*, ed. Paul Fromme (April 01, 2019), 1097209, doi: 10.1117/12.2514228 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2019).

[C37] Brennan Dubuc*****, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Data fusion approach for characterization of corrosion-induced stress change in prestressing strands using modulated higher-order guided ultrasonic waves," in *Proc. of SPIE 10972, Health Monitoring of Structural and Biological Systems XII*, ed. Paul Fromme (April 01, 2019), 109721D, doi: 10.1117/12.2513772 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2019).

[C38] Stylianos Livadiotis*****, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "A helical-based ultrasonic imaging algorithm for structural health monitoring of cylindrical structures," in *Proc. of SPIE 10972, Health Monitoring of Structural and Biological Systems XII*, ed. Paul Fromme (April 01, 2019), 1097205, doi: 10.1117/12.2514308 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2019).

[C39] **Arvin Ebrahimkhanlou***, Jongkwon Choi, Trevor D. Hrynyk, Salvatore Salamone, and Oguzhan Bayrak, "Detection of the onset of delamination in a post-tensioned curved concrete structure using hidden Markov modeling of acoustic emissions," in *Proc. of SPIE 10598, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, ed. Hoon Sohn (March 27, 2018), 1059821, doi: 10.1117/12.2296624 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2018).

[C40] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Single-sensor acoustic emission source localization in plate-like structures: a deep learning approach," in *Proc. of SPIE 10600, Health Monitoring of Structural and Biological Systems XII*, ed. Tribikram Kundu (March 27, 2018), 106001O, doi: 10.1117/12.2296613 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2018).

[C41] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "A spectral method for computing guided waves in stressed plates and rods," in *Proc. of SPIE 10600, Health Monitoring of Structural and Biological Systems XII*, ed. Tribikram Kundu (April 03, 2018), 106001Z, doi: 10.1117/12.2296652 (presented at SPIE Smart Structures/NDE, Embassy Suites by Hilton Denver, Denver, Colorado, USA, March 03-07, 2018).

[C42] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "A Deep Learning Approach for Single-sensor Acoustic Emission Source Localization in Plate-like Structures," in *Proc. of 11th International Workshop on Structural Health Monitoring: Real-Time Material State Awareness and Data-Driven Safety Assurance*, ISBN: 978-1-60595-330-4, ed. Fu-Kuo Chang and Kopsaftopoulos Fotis, vol. 2, no. 39 (Stanford: Destech Publications, 2017), 2139–46, doi: 10.12783/shm2017/14103 (presented at 11th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 12-14, 2017).

[C43] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Simultaneous Localization and Classification of Acoustic Emission Sources in Plates Using a Guided Wave-Based Sparse Reconstruction," in *Proc. of 11th International Workshop on Structural Health Monitoring, Real-Time Material State Awareness and Data-Driven Safety Assurance*, ISBN: 978-1-60595-330-4, ed. Fu-Kuo Chang and Kopsaftopoulos Fotis, vol. 1, no. 217 (Stanford: Destech Publications, 2017), 1779–86, doi: 10.12783/shm2017/14059 (presented at 11th International Workshop on Structural Health Monitoring, Stanford University, California, USA, September 12-14, 2017).

[C44] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "A Probabilistic Model for Visual Inspection of Concrete Shear Walls," in *Proc. of SPIE 10168, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, ed. Jerome P. Lynch (April 12, 2017), 101680Y, doi: 10.1117/12.2258614 (presented at SPIE Smart Structures/NDE, Portland Marriott Downtown Waterfront Hotel, Portland, Oregon, USA, March 25-29, 2017).

[C45] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Probabilistic location estimation of acoustic emission sources in isotropic plates with one sensor," in *Proc. of SPIE 10170, Health Monitoring of Structural and Biological Systems*, ed. Tribikram Kundu and Paul Fromme (April 05, 2017), 1017029, doi: 10.1117/12.2258618 (presented at SPIE Smart Structures/NDE, Portland Marriott Downtown Waterfront Hotel, Portland, Oregon, USA, March 25-29, 2017).

[C46] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Sparse Reconstruction Localization of Multiple Acoustic Emissions in Large Diameter Pipelines," in *Proc. of SPIE 10168, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, ed. Jerome P. Lynch (April 12, 2017), 101682I, doi: 10.1117/12.2257505 (presented at SPIE Smart Structures/NDE, Portland Marriott Downtown Waterfront Hotel, Portland, Oregon, USA, March 25-29, 2017).

[C47] **Arvin Ebrahimkhanlou***, Brennan Dubuc, and Salvatore Salamone, "A Guided Ultrasonic Imaging Approach in Isotropic Plate Structures Using Edge Reflections," in *Proc. of SPIE 9803, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, ed. Jerome P. Lynch (April 20, 2016), 98033I, doi: 10.1117/12.2219314 (presented at SPIE Smart Structures/NDE, JW Marriott Las Vegas Resort & Spa, Las Vegas, Nevada, USA, March 20-24, 2016). (**travel award**)

[C48] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Helical Guided Waves in Liquid-filled Cylindrical Shells Subjected to Static Pressurization Stress," in *Proc. of SPIE 9805, Health Monitoring of Structural and Biological Systems*, ed. Tribikram Kundu (April 1, 2016), 98050T, doi: 10.1117/12.2218897 (presented at SPIE Smart Structures/NDE, JW Marriott Las Vegas Resort & Spa, Las Vegas, Nevada, USA, March 20-24, 2016).

[C49] **Arvin Ebrahimkhanlou***, Brennan Dubuc, and Salvatore Salamone, "Damage Localization in Plate-like Structures Using Guided Ultrasonic Waves Edge Reflections," in *Proc. of 10th Workshop on Structural Health Monitorin:, System Reliability for Verification and Implementation*, ISBN: 978-1-60565-111-9, ed. Kopsaftopoulos Fotis and Fu-Kuo Chang, (Stanford: Destech Publications, 2015), 2521–28, doi: 10.12783/SHM2015/313 (presented at 10th International Workshop on Structural Health Monitoring, Stanford University, California, USA, August 31-September 03, 2015).

[C50] **Arvin Ebrahimkhanlou***, Alireza Farhidzadeh, and Salvatore Salamone, "Multifractal Analysis of Two-Dimensional Images for Damage Assessment of Reinforced Concrete Structures," in *Proc. of SPIE 9435, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems*, ed. Jerome P. Lynch, (March 27, 2015): 94351A, doi: 10.1117/12.2084052 (presented at SPIE Smart Structures/NDE, Town & Country Resort and Convention Center, San Diego, California, USA, March 8–12, 2015).

[C51] Alireza Farhidzadeh, **Arvin Ebrahimkhanlou***, and Salvatore Salamone, "Corrosion damage estimation in multi-wire steel strands using guided ultrasonic waves," in *Proc. of SPIE 9437, Structural Health Monitoring and Inspection of Advanced Materials, Aerospace, and Civil Infrastructure*, ed. Peter J. Shull (April 1, 2015), 94371F,doi: 10.1117/12.2084053 (presented at SPIE Smart Structures/NDE, Town & Country Resort and Convention Center, San Diego, California, USA, March 8–12, 2015).

[C52] Alireza Farhidzadeh*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "A vision-based technique for damage assessment of reinforced concrete structures," in *Proc. of SPIE 9064, Health Monitoring of Structural and Biological Systems*, ed. Tribikram Kundu (March 9, 2014), 90642H, doi: 10.1117/12.2044875 (presented at SPIE Smart Structures/NDE, Town & Country Resort and Convention Center, San Diego, California, USA, March 9–13, 2014).

Conference Presentations

The presenter is indicated with an asterisk.

[C53] **Arvin Ebrahimkhanlou***, "Non-Destructive Evaluation: Crack Detection Through AI and Robotics," (presented at the annual conference of National Academy of Building Inspection Engineers (NABIE), Sofitel Rittenhouse Square, Philadelphia, PA, USA, Jan. 26-28, 2024) (**Invited talk**)

[C54] Pedram Bazrafshan* and **Arvin Ebrahimkhanlou**, "Delamination detection using an entropy-based probabilistic model for RA value-average frequency," (presented at the 64th meeting of Acoustic Emission Working Group (AEWG), Crown Plaza Hotel Princeton NJ, NJ, USA, Sep. 26-28, 2023)

[C55] Pedram Bazrafshan* and **Arvin Ebrahimkhanlou**, "Graph-based damage evaluation of reinforced concrete structures using a virtual-reality framework," (presented at Drexel Emerging Graduate Scholars (DEGS) 2023 conference, Bossone Research Enterprise Center, Drexel University, Pennsylvania, USA, Apr. 19, 2023) **(Provost's Award for Best in-Person Oral Research Presentation)**

[C56] Pedram Bazrafshan*, Quincy Bradfield, **Arvin Ebrahimkhanlou**, "An Energy-efficient Acoustic Emission Acquisition System," (presented at the 63rd meeting of Acoustic Emission Working Group (AEWG), Stress Engineering, Huston, Texas, USA, May. 16-18, 2022) (**honorable mention**)

[C57] **Arvin Ebrahimkhanlou***, Brennan Dubuc, and Salvatore Salamone, "Acoustic Emission Monitoring, Localization and Sizing" (presented at the 5th Multifunctional Materials for Defense Workshop, 4100 North Fairfax Drive, Arlington, Virginia, USA, Aug. 26-30, 2019)

[C58] **Arvin Ebrahimkhanlou***, Salvatore Salamone, Arash Ebrahimkhanlou, Amir Reza Ghiami Azad, Kerry Kreitman, Todd Helwig, Eric Williamson, and Michael Engelhardt, "Acoustic emission monitoring of post-installed shear connectors on steel bridges" (presented at the 61st meeting of Acoustic Emission Working Group (AEWG) and 9th International Conference on Acoustic Emission (ICAE), Manufacturing times Digital (MxD), Chicago, Illinois, USA, Jun. 17-20, 2019) (**waived registration**)

[C59] **Arvin Ebrahimkhanlou***, Brennan Dubuc, Melanie Schneider, and Salvatore Salamone, "A deep learning-based two-step localization and characterization of acoustic emission sources in metallic panels using only one sensor" (presented at the 61st meeting of Acoustic Emission Working Group (AEWG) and 9th International Conference on Acoustic Emission (ICAE), Manufacturing times Digital (MxD), Chicago, Illinois, USA, Jun. 17-20, 2019) (**waived registration**)

[C60] Stylianos Livadiotis*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "A helical-based ultrasonic imaging algorithm for structural health monitoring of large-diameter metallic pipelines" (presented at the Structures Congress 2019, Structural Engineering Institute (SEI) of ASCE, Hyatt Regency, Orlando, Florida April 24–27, 2019)

[C61] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Bio-inspired localization of acoustic emission sources in metallic panels: a deep learning approach" (presented at the ASNT Annual Conference 2018, Marriott Marquis-George R Brown Convention Center, Houston, Texas, USA, Oct. 28-31, 2018)

[C62] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "A Deep Learning Approach to Localization of Acoustic Emission Sources in Plate-like Structures with One Sensor" (presented at the 60th meeting of Acoustic Emission Working Group (AEWG), The Mills House Wyndham Grand Hotel, Charleston, South Carolina, USA, Jun. 19-20, 2018)

[C63] **Arvin Ebrahimkhanlou***, Jongkwon Choi, Trevor D. Hrynyk, Salvatore Salamone, and Oguzhan Bayrak, "Acoustic Emission Monitoring of a Nuclear Containment Wall during Post-tensioning: Data Mining and Knowledge Discovery" (presented at the 60th meeting of Acoustic Emission Working Group (AEWG), The Mills House Wyndham Grand Hotel, Charleston, South Carolina, USA, Jun. 19-20, 2018) (**Best Student Paper Award**)

[C64] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Localization of acoustic emission sources in plate-like structures using a stack of autoencoders and a convolutional neural network: a single-sensor comparison" (presented at the ASCE Engineering Mechanics Institute (EMI) Conference 2018, Massachusetts Institute of Technology (MIT), Cambridge, Massachusett, USA, May 29-Jun. 01, 2018)

[C65] **Arvin Ebrahimkhanlou***, Jongkwon Choi, Trevor D. Hrynyk, Salvatore Salamone, and Oguzhan Bayrak "Acoustic Emission Monitoring of a Nuclear Containment Wall during Post-tensioning: Data Mining and Knowledge Discovery" (presented at the ASCE Engineering Mechanics Institute (EMI) Conference 2018, Massachusetts Institute of Technology (MIT), Cambridge, Massachusett, USA, May 29-Jun. 01, 2018) (**Third place in Student Paper Competition**)

[C66] Korkut Kaynardag*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Modal based detection of cracks in railway tracks and applicability of moving laser Doppler vibrometer" (presented at the ASCE Engineering Mechanics Institute (EMI) Conference 2018, Massachusetts Institute of Technology (MIT), Cambridge, Massachusett, USA, May 29-Jun. 01, 2018)

[C67] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, Vinutha Kancharla, and Salvatore Salamone, "Experimental study of guided wave and acoustic emission corrosion monitoring in post-tensioned strands and prestressed concrete" (presented at the ASCE Engineering Mechanics Institute (EMI) Conference 2018, Massachusetts Institute of Technology (MIT), Cambridge, Massachusett, USA, May 29-Jun. 01, 2018)

[C68] Apostolos Athanasiou*, **Arvin Ebrahimkhanlou**, Salvatore Salamone, and Trevor Hrynyk, "Real-time crack identification in concrete structures using computer vision" (presented at the Structures Congress 2018, Structural Engineering Institute (SEI) of ASCE, Fort Worth Convention Center, Fort Worth, Texas, USA, Apr. 19-21, 2018)

[C69] **Arvin Ebrahimkhanlou***, Jongkwon Choi, Trevor D. Hrynyk, Salvatore Salamone, and Oguzhan Bayrak, "Acoustic emission monitoring of a nuclear containment structure during post-tensioning: data mining and knowledge discovery" (presented at the 27th ASNT Research Symposium, DoubleTree by Hilton Universal Orlando, Orlando, Florida, USA, March 26-29, 2018) (**travel award**)

[C70] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Propagation and Stress Measurement Application of Higher Order Guided Modes in Axially Loaded Seven-Wire Strands," (presented at Transportation Research Board (TRB) 97th Annual Meeting, Walter E. Washington Convention Center, Washington, District of Columbia, USA, January 7-11, 2018)

[C71] **Arvin Ebrahimkhanlou***, Brennan Dubuc, and Salvatore Salamone, "Uncertainty quantification for single sensor localization of acoustic emission sources in plate-like structures" (presented at ASME 2017

International Mechanical Engineering Congress and Exposition (IMECE), Tampa Convention Center, Tampa, Florida, USA, November 3-9, 2017)

[C72] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "A probabilistic, single-sensor approach for acoustic emission source localization in metallic plates" (presented at the 26th ASNT Research Symposium, Hyatt Regency Jacksonville Riverfront, Jacksonville, Florida, USA, March 13-16, 2017) (**travel award**)

[C73] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "A Model-Based Guided Ultrasonic Imaging and Acoustic Emission Source Localization in Isotropic Plate Structures using Edge Reflections" (presented at ASME 2016 International Mechanical Engineering Congress and Exposition (IMECE), Phoenix Convention Center, Phoenix, Arizona, USA, November 11-17, 2016)

[C74] Brennan Dubuc*, **Arvin Ebrahimkhanlou**, and Salvatore Salamone, "Helical guided ultrasonic waves for pipeline structural health monitoring" (presented at ASME 2016 Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS), Stowe Mountain, Stowe, Vermont, USA, September 28-30, 2016)

[C75] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Image Processing and Multifractal Analysis of Crack Patterns on Concrete Shear Walls" (presented at Structural Engineering Education Reunion (STEER) conference, Pickle Research Campus, Austin, Texas, USA, September 22-23, 2016), (**invited paper**)

[C76] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "An Acoustic Emission Source Localizer in Isotropic Plate Structures using Edge Reflections" (presented at the 58th meeting of Acoustic Emission Working Group (AEWG), Drexel University, Philadelphia, Pennsylvania, USA, May 22-25, 2016) (**Honorable Mention**)

[C77] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "An Acoustic Emission Source Localizer in Isotropic Plate Structures using Edge Reflections" (presented at the 25th ASNT Research Symposium, Astor Crowne Plaza, New Orleans, Louisiana, USA, April 11-14, 2016) (**travel award**)

[C78] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Introducing Bayesian Network for Probabilistic Damage Quantification of Concrete Shear Walls based on Visual Inspection" (presented at the 25th ASNT Research Symposium, Astor Crowne Plaza, New Orleans, Louisiana, USA, April 11-14, 2016) (**travel award**)

[C79] Brennan Dubuc, **Arvin Ebrahimkhanlou***, and Salvatore Salamone, "Leaky Guided Waves in Triaxially Stressed Multilayered Media" (presented at the 25th ASNT Research Symposium, Astor Crowne Plaza, New Orleans, Louisiana, USA, April 11-14, 2016)

[C80] **Arvin Ebrahimkhanlou*** and Salvatore Salamone, "Visual Inspection of Reinforced Concrete Shear Walls using Multifractal Analysis of Crack Pattern Images" (presented at the 24th ASNT Research Symposium, Hyatt Regency Orange County, Anaheim, California, USA, March 16-19, 2015) (**travel award**)

[C81] Ehsan Dehghan Niri, Brennan Dubuc, **Arvin Ebrahimkhanlou***, and Salvatore Salamone, "Multi-Helical Acoustic Emission Damage Localization in Cylindrical Structures" (presented at the 24th ASNT Research Symposium, Hyatt Regency Orange County, Anaheim, California, USA, March 16-19, 2015)

Technical reports

[T1] Mariah Gammill, Mario Escarcega, Mostafa Hassanalian, **Arvin Ebrahimkhanlou** "Digital Twin Data Acquisition System for Institutional Facility Management: the participation of NMT in building the Digital Twin of the ETV testbed," NASA Phase I STTR # 80NSSC21C0372, Jan. 10, 2022

[T2] Mariah Gammill, Mario Escarcega, **Arvin Ebrahimkhanlou**, Mostafa Hassanalian "Digital Twin Data Acquisition System for Institutional Facility Management: the design of indoor and outdoor UxS nests and AI damage Classification.," NASA Phase I STTR # 80NSSC21C0372, Nov. 01, 2021

[T3] Mario Escarcega, Mariah Gammill, **Arvin Ebrahimkhanlou**, Mostafa Hassanalian "Digital Twin Data Acquisition System for Institutional Facility Management: UxS & Nest Configuration for Infrastructure Inspection, Identified Facility Systems, and Tools for Building Digital Twins," NASA Phase I STTR # 80NSSC21C0372, Aug. 10, 2021

[T4] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Integrated Structural Health Monitoring Systems for Navy Structures," Office of Naval Research N00014-17-1-2361, 2020

[T5] Raissa Ferron, Salamone Salvatore, Michael Rung, Savitha Srinivasan, Brennan Dubuc, **Arvin Ebrahimkhanlou**, **"**Evaluation of Long-term Strength and Durability Properties of Pre-stressed Concrete Girders with Microcracking", TxDOT project number 0-6922, 2020, http://library.ctr.utexas.edu/ctr-publications/0-6922-1.pdf

[T6] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "A Vision-Based Technique for Damage Assessment of Civil Structures," National Science Foundation, CMMI 1551138, 2017

Posters

[P1] Samuel Arellano, Zady Gutierrez, Diego Rodriguez, Melinda Stevens, Noah Trudell, James Wilson, Hamed Momeni*, and **Arvin Ebrahimkhanlou**, "Robotic-based Repair of Concrete Structures: A surface crack filler robot" (presented at IMECE: Computational Nondestructive Evaluation and Structural Health Monitoring, November 01-04, 2021)

[P2] Mario Escarcega* and **Arvin Ebrahimkhanlou** "Acoustic Emission-Based Structural Health Monitoring for Future Lunar Pipelines" (Presented at the 2021 New Mexico Alliance for Minority Participation Virtual Student Research Conference, Oct 08, 2021)

[P3] Liliana Figueroa, Arvin Ebrahimkhanlou, "Design Methodology of Olfactory Sensors for Robotic and Intelligent Systems Applications," NSF REU poster presentation (Jul. 30, 2021)

[P4] Hamed Momeni* and **Arvin Ebrahimkhanlou**, "AI-based damage assessment of buildings after earthquakes using drones" (Presented at the 2021 New Mexico Institute of Mining and Technology Virtual Student Research Symposium (SRS), April 14-16, 2021)

[P5] Melinda Stevens*, Samuel Arellano, Zady Gutierrez, Diego Rodriguez, Noah Trudell, James Wilson, and **Arvin Ebrahimkhanlou**, "Crack Filler Robot and Digital Twinning" (Presented at the 2021 New Mexico Institute of Mining and Technology Virtual Student Research Symposium (SRS), April 14-16, 2021)

[P6] Mario Escarcega*, Meghan Cephus, Skyler Hughes, Nakii Tsosie, Kimberley Kelso, Raechelle Sandoval, **Arvin Ebrahimkhanlou**, "Acoustic Emission-Based Structural Health Monitoring for Future Lunar Pipelines" (Presented at the 2021 New Mexico Institute of Mining and Technology Virtual Student Research Symposium (SRS), April 14-16, 2021)

[P7] Mario Escarcega*, Savannah Bradley, Parker Randall, Gabriel Campos, Luke Strebe, Hamed Momeni, and **Arvin Ebrahimkhanlou**, "Corrosion Monitoring and Mitigation in Reinforced Concrete Structures Using Novel 3d-Printed Valves and Internet-of-Things Approach" (Presented at the 2021 New Mexico Institute of Mining and Technology Virtual Student Research Symposium (SRS), April 14-16, 2021)

[P8] Hamed Momeni* and **Arvin Ebrahimkhanlou,** "Application of High-dimensional Data Analysis in Aerospace Structural Health Monitoring and Nondestructive Testing" New Mexico Research Symposium (NMRS) 2020 (virtual conference November 9-13, 2020)

[P9] Savannah Bradley* and **Arvin Ebrahimkhanlou,** "Structural Health Monitoring of Aerospace Structures via Acoustic Emissions" New Mexico Research Symposium (NMRS) 2020 (virtual conference November 9-13, 2020)

[P10] Mario Escarcega* and **Arvin Ebrahimkhanlou,** "Structural Health Monitoring of Lunar Pipes for Resource Extraction" New Mexico Research Symposium (NMRS) 2020 (virtual conference November 9-13, 2020)

[P11] Mario Escarcega* and **Arvin Ebrahimkhanlou,** "A Review of Experimental Damage used to Conduct Structural Health Monitoring of Pipelines" NM Alliance for Minority Participation Undergraduate Research (presented virtually at NM Alliance for Minority Participation Undergraduate Research conference, October 09, 2020)

[P12] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Visual inspection of reinforced concrete shear walls: A multifractal analysis and a Bayesian network model" (presented at the Purdue prospective faculty workshop (PPFW) at Purdue University, West Lafayette, Indiana, USA, February 27, 2016) (**paid travel**)

[P13] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Optimal Guided Ultrasonic Damage Localization in Plate Structures using Edge Reflections" (presented at the annual Graduate And Industry Networking (GAIN) hosted by the Graduate Engineering Council (GEC) at the University of Texas at Austin, Austin, Texas, USA, February 2, 2016)

[P14] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Image Processing and Multifractal Analysis for Damage Assessment of Reinforced Concrete Shear Walls" (presented at the annual welcome party and open house hosted by Ferguson Structural Laboratory (FSEL), the University of Texas at Austin, Austin, Texas, USA, October 2, 2016)

[P15] **Arvin Ebrahimkhanlou** and Salvatore Salamone, "Benefiting from Reflections for Active Ultrasonic Damage Localization in Plate Structures" (presented at the Department of Civil, Structural, and Environmental Engineering, The State University of New York at Buffalo, Buffalo, NY, USA, March 27, 2015 (Link) and at the School of Engineering, the State University of New York at Buffalo, Buffalo, New York, USA, April 22 (Link)) (**First Prize** in the department and **Honorable Mention** in the school of engineering)

[P16] **Arvin Ebrahimkhanlou**, Alireza Farhidzadeh, and Salvatore Salamone, "Application of image processing in visual inspection of reinforced concrete structures" (presented at the Department of Civil, Structural, and Environmental Engineering, the State University of New York at Buffalo, Buffalo, New York, USA, March 7, 2014)

Dissertation

• **Arvin Ebrahimkhanlou**, "Advanced pattern recognition techniques for wave-based structural health monitoring," Ph.D. dissertation, Department of Civil Architectural and Environmental Engineering, The University of Texas at Austin, Austin, USA, 2018 (under embargo until two years after graduation, defense date: Aug. 24, 2018)

> Committee members: Dr. Salvatore Salamone, Prof. Michael Engelhardt, Prof. Loukas Kallivokas, Dr. Michael R. Haberman, and Dr. Trevor D. Hrynyk

Invited Lectures/Seminars

• **Arvin Ebrahimkhanlou**, "Acoustic- and Vision-based Infrastructure Sensing" (Department of Civil, Architectural & Environmental Engineering, Drexel University, Philadelphia, Pennsylvania, USA, April 20, 2022) (**invited talk**)

• **Arvin Ebrahimkhanlou**, "Vision-based infrastructure Sensing" (Department of Materials Engineering, New Mexico Tech, Socorro, New Mexico, USA, April 08, 2022) (**invited talk**)

• **Arvin Ebrahimkhanlou**, "Acoustic emission monitoring" (Department of Civil Engineering, New Mexico Tech, Socorro, New Mexico, USA, April 20, 2021) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Acoustic- and Vision-based Structural Health Monitoring: Analytical Modeling and Data Processing" (Department of Mechanical Engineering, New Mexico Tech, Socorro, New Mexico, USA, August 27, 2020) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Structural Health Monitoring of Civil Infrastructures: An Ultrasonic Perspective", (Department of Civil and Environmental Engineering, Worcester Polytechnic Institute, Worcester, Massachusetts, USA, April 08, 2020) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Structural Health Monitoring of Civil Infrastructures: An Ultrasonic Perspective" (Sonny Astani Department of Civil and Environmental Engineering, University of Southern California, Los Angeles, California, USA, March 19, 2020) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Analytical Modeling and Data Processing for Acoustic- and Vision-based Structural Health Monitoring of Civil Infrastructures" (Civil and Environmental Engineering Department, Utah State University, Logan, Utah, USA, February 25, 2020) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Analytical Modeling, Data Processing, and Uncertainty Quantification for Acoustic- and Vision-based Structural Health Monitoring" (Department of Mechanical Engineering, New Mexico Tech, Socorro, New Mexico, USA, February 06, 2020) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Acoustic Emission Monitoring of a Large-scale Containment Wall during Post-tensioning: Data Mining and Knowledge Discovery", EERI Distinguished Lecturer Series (Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin, Austin, Texas, USA, July 26, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "A Pattern-based Approach to Acoustic and Visual Monitoring of Structural Systems" (Department of Mechanical Engineering, University of Massachusetts Lowell, Lowell, Massachusetts, USA, April 06, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Pattern-based Monitoring of Structural Systems using Acoustic and Visual Sensing" (Department of Engineering Technology, Purdue University Northwest, Hammond, Indiana, USA, March 30, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Acoustic and Visual Sensing of Structural Systems: A Pattern-based Paradigm" (Via Department of Civil & Environmental Engineering, Virginia Tech, Blacksburg, Virginia, USA, March 15, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Structural Health Monitoring of Airplanes: A Guided Ultrasonic Wave-based Approach" (Department of Engineering, St. Mary's University, San Antonio, Texas, USA, March 02, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Advanced Pattern Recognition Techniques for Wave-Based Structural Health Monitoring of Metallic Panels" (Seminars in Acoustics, organized by Acoustics Program in the Mechanical Engineering Department, The University of Texas at Austin, Austin, Texas, USA, February 02, 2018) (**invited talk**)

- **Arvin Ebrahimkhanlou**, "Showcase of projects: Fractal analysis, Bayesian networks, and guided ultrasonic waves" (presented to nondestructive testing students at the Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin, Austin, Texas, USA, April 2016)

COURSES TAUGHT

<u>Drexel University, USA</u>

- Introduction to Artificial Intelligence for Engineers (CIVE T-480/T-580)   winter 2024
    Prepared and delivered lectures, designed homework assignments, evaluated term projects
    Overall instructor rating: TBD
    Overall course rating: TBD
    Enrolled students: 8 (2 (T-480) + 6 (T-580))

- Structural Analysis I (CIVE 302)   fall 2023
    Prepared and delivered lectures, designed and graded homework assignments and exams, oversaw
    delivery of lab sections by the TA
    Overall instructor rating: 3.60
    Overall course rating: 4.17
    Enrolled students: 42
- Advanced Structural Analysis (CIVE 703)   spring 2023
    Prepared and delivered lectures, designed and graded homework assignments and term projects
    Overall instructor rating: 4.56
    Overall course rating: 4.00
    Enrolled students: 13
- Introduction to Artificial Intelligence for Engineers (CIVE T-580)   winter 2023
    Prepared and delivered lectures, designed homework assignments, evaluated term projects
    Overall instructor rating: 4.91
    Overall course rating: 4.64
    Enrolled students: 13

<u>New Mexico Tech, USA</u>

- Dynamic Systems and Control (MENG 405)   fall 2022
    Delivered hybrid lectures (synchronous lectures for face-to-face that were recorded for
    asynchronous review), designed homework assignments, and exams
    Instructor rating: 4.42
    Enrolled students: 21
- Dynamic Systems and Control Lab (MENG 405L-01 and MENG 405L-02)   fall 2022
    Designed the laboratory experiments and oversaw TAs
    Enrolled students: 23 (8 (405L-01) + 15 (405L-02))
- Numerical Methods and Analysis (MENG 305)   fall 2022
    Delivered hybrid lectures (synchronous lectures for face-to-face that were recorded for
    asynchronous review), designed and graded homework assignments, exams, and final project
    Instructor rating: 4.35
    Enrolled students: 34
- Artificial Intelligence (MENG 489-07/589-05)   spring 2022
    Delivered hybrid lectures (synchronous lectures for face-to-face and online students that were
    recorded for asynchronous review), designed homework assignments, exams, and final project
    Instructor rating: 4.93
    Enrolled students: 18 (8 (489-07) + 1 (489-07D) + 1 (589-05) + 8 (589-05D))

- Numerical Methods and Analysis (MENG 305)   spring 2022
    Delivered lectures, designed and graded homework assignments, exams, and final project
    Instructor rating: 4.8
    Enrolled students: 20
- AI for STEM (ST589D AI for STEM)   spring 2022
    Recorded asynchronous lecture modules, designed homework assignments and final project
- Directed Study: Senior thesis (MENG 491-01D)   fall 2021
    Student name: Skyler S. Hughes
    Thesis title: Multivariable Spidron Fractals in the Context of Force Absorption: An Analysis via the Finite Element Method
- AI in Everyday Life (MENG 489-01D/ MENG 589-01D)   summer 2021
    Delivered online lectures (synchronous and recorded for asynchronous review), designed homework assignments and final project
    Instructor rating: 4.88/5.0
    Enrolled students: 18 (6 (489-01D) + 12 (589-01D))
- Artificial Intelligence for Robotics (MENG 108-02D- summer STEEM course)   summer 2021
    Delivered online lectures (synchronous and recorded for asynchronous review), designed and graded homework assignments
    Instructor rating: N/A
    Enrolled students: 9 high school students
- Graduate-Faculty Seminar (MENG-585D-01D)   spring 2021
    Invited speakers to deliver online talks (co-taught with Dr. Mostafa Hassanalian)
    Instructor rating: 4.64/5.0
    Enrolled students: 33
- Numerical Methods and Analysis (MENG 305)   spring 2021
    Delivered hybrid lectures (synchronous lectures for face-to-face and online students that were recorded for asynchronous review), designed and graded homework assignments, exams, and final project
    Instructor rating: 4.89/5.0
    Enrolled students: 33 (16 online students and 17 face-to-face students)
- Artificial Intelligence (MENG 489-07/589-05)   spring 2021
    Delivered hybrid lectures (synchronous lectures for face-to-face and online students that were recorded for asynchronous review), designed and graded homework assignments, exams, and final project
    Instructor rating: 4.56/5.0
    Enrolled students: 29 (9 (489-07) + 11 (489-07D) + 3 (589-05) + 6 (589-05D))
- Numerical Methods and Analysis (MENG 305)   fall 2021
    Delivered hybrid lectures (synchronous lectures for face-to-face and online students that were recorded for asynchronous review), designed homework assignments and final project
    Instructor rating: 4.8/5.0
    Enrolled students: 33 (10 online students and 23 face-to-face students)

CONTRIBUTED COURSES/TEACHING ASSISTANT

The University of Texas at Austin, USA
- Structural Health Monitoring & Nondestructive Evaluation (CE 397)   spring 2020
  Designed and delivered laboratory demonstrations, mentored student projects, delivered a research-related lecture.
  Enrolled students: 21
  Instructor: Dr. Salvatore Salamone
- Structural Health Monitoring & Nondestructive Evaluation (CE 397)   spring 2019
  Designed and delivered laboratory demonstrations, mentored student projects, delivered a research-related lecture.
  Enrolled students: 18
  Instructor: Dr. Salvatore Salamone
- Structural Health Monitoring & Nondestructive Evaluation (CE 397)   spring 2018
  Designed and delivered laboratory demonstrations, mentored student projects, delivered a research-related lecture
  Enrolled students: 18
  Instructor: Dr. Salvatore Salamone
- Structural Health Monitoring & Nondestructive Evaluation (CE 397)   spring 2017
  Designed and delivered laboratory demonstrations, mentored student projects, delivered a research-related lecture.
  Enrolled students: 15
  Instructor: Dr. Salvatore Salamone
- Structural Health Monitoring & Nondestructive Evaluation (CE 397)   spring 2016
  Designed and delivered laboratory demonstrations, mentored student projects, delivered a research-related lecture.
  Enrolled students: 15
  Instructor: Dr. Salvatore Salamone

The State University of New York at Buffalo, USA
- Statics (CIE 207) (Teaching Assistant)   summer 2015
  Delivered recitation; held office hours; graded homework assignments, midterm and final exams
  Enrolled students: 47
  Instructor: Prof. Shahid Ahmad (email: sahmad@buffalo.edu)
- Civil Engineering Materials (CIE 327) (Teaching Assistant)   fall 2013
  Delivered recitation (**flipped classroom**); held office hours; graded homework assignments, midterm and final exams
  Enrolled students: 106
  Instructor: Prof. Cemal Basaran

<u>Sharif University, Iran</u>
- Computer Application in Civil Engineering (20-350) (Teaching Assistant)   spring 2012
  Delivered recitation; held office hours; designed and graded homework assignments, two midterms, final exams, term projects
  Enrolled students: 27
  Instructor: Prof. Mohammad Mehdi Ahmadi (email: mmahmadi@sharif.edu)
- Solid Laboratory I (20-101) (Teaching Assistant)   fall 2012
  Delivered laboratory demonstrations and graded laboratory reports
  Enrolled students: 46
  Instructor: Dr. Vahid Khonsari (email: khonsari@sharif.edu)
- Dynamics (20-012) (Teaching Assistant)   fall 2008-spring 2009
  Delivered recitation and prepared PowerPoint slides for the course
  Enrolled students: ~50
  Instructor: Dr. Ali Bakhshi (email: bakhshi@sharif.edu)

<u>Tutoring</u>
- Theory of Structures
- Scientific Computation
- Statistic & Probability

SUPERVISION OF STUDENT RESEARCH

Graduation data indicated in parentheses.

Drexel University

<u>Ph.D. Students</u>
- Pedram Bazrafshan (Dec. 2026): Passed Ph.D. candidacy exam Sep. 07, 2023
- Ali Ghadimzadeh Alamdari (Dec. 2027)

<u>Franklin institute STEM scholar</u>
- Demetrius Montague, senior high school intern, summer 2023

New Mexico Tech

<u>Ph.D. Students</u>
- Hamed Momeni (Dec. 2022)

<u>M.S. Students</u>
- Elham Rahimi (Dec. 2020) (co-advised by Dr. Pedram Roghanchi)
- Younes Shekarian (Dec. 2020) (co-advised by Dr. Pedram Roghanchi)

<u>Undergraduate researchers</u>
- Mario Escarcega (May 2022)
- Skyler S. Hughes (May 2023)

<u>NSF REU</u>
- Evan Joseph Dramko, Junior Student in Computer science from North Dakota State University Main Campus, Summer 2022

- Abraham Christian Meyer, Senior Student in Mechanical Engineering from Utah State University, Summer 2022
- Liliana Figueroa, Junior Student in Aerospace, Aeronautical and Astronautical Engineering, Sacramento City College, Summer 2021

MENTORING OF STUDENT RESEARCH

The University of Texas at Austin

Graduate Students

- Melanie B Schneider, Master Student at The University of Texas at Austin working on guided ultrasonic methods for sizing defects in plate-like structures, Oct. 2018-May. 2020
- Apostolos Athansiou, Ph.D. Student at The University of Texas at Austin conducting research on the application of vision-based and augmented reality technology for inspecting concrete structures, Sep. 2017-Dec. 2020
- Stylianos Livadiotis, Ph.D. Student at The University of Texas at Austin conducting research on the application of vision-based and augmented reality technology for inspecting concrete structures, Aug. 2017-Aug. 2020
- Vinutha Kancharla, Master Student at The University of Texas at Austin conducting research on guided-ultrasonic-wave-based structural health monitoring methods for prestressed concrete, Oct. 2017-May 2018
- My Kim Vu, Master Student at The University of Texas at Austin working on guided ultrasonic methods for sizing defects in plate-like structures, Sep. 2017-Feb. 2018
- Marina Cantal Nakajima, Master Student at The University of Texas at Austin conducting research on acoustic emission monitoring of prestressed/post-tensioned steel strand, May 2017-Dec. 2017
- Marco Manconi, Graduate Visiting Student from Polytechnic University of Turin, Italy, concluding master's thesis at The University of Texas at Austin, thesis title: Acoustic emission monitoring of post-installed shear connectors, Mar. 2016-Nov. 2016
- Alessandro Musumeci, Graduate Visiting Student from Polytechnic University of Turin, Italy, concluding master's thesis at The University of Texas at Austin, thesis title: Fractal and multifractal analysis of pre-stressed concrete beams, Apr. 2016-Dec. 2016

Undergraduate Students

- Deyuan Zhang, Undergraduate Research Assistant at the University of Texas at Austin   fall 2017
- Xinran Li, Undergraduate Visiting Student from Tianjin University, China   spring 2017
- Caitlyn N Kallus, Undergraduate Research Assistant at the University of Texas at Austin   fall 2016
- Marco Munoz, Undergraduate Research Assistant at the University of Texas at Austin   spring 2016

PROFESSIONAL SERVICES

Advising design clinic teams (Capstone projects)
- Concrete Crack Monitoring and Mitigation   fall 2020 – spring 2021
- Crack Filler Robot   spring 2021
- NASA MINDS: Monitoring Artemis Water Extraction Pipelines   fall 2020 – spring 2021
- NASA Lunabotics: Robotic Mining Competition   fall 2021 – spring 2022
- NASA MINDS: Lunar Excavator Damage Monitoring   fall 2021 – spring 2022

- NASA Lunabotics: Infrastructure to Stay Competition   fall 2022 – fall 2023

NSF Panel
- Served on a panel in the Civil, Mechanical, and Manufacturing Innovation Division   2021

Diversity and inclusion
- The Franklin Institute STEM Scholar: hosted an under-represented high school senior, Demetrius Montague, as a summer intern in ARVIN's lab   summer 2023

Vice-chair of Program Organizing Committee, ASNT Research Symposium
ASNT 30th Research Symposium, Westminster, CO 2021
ASNT 29th Research Symposium, Williamsburg, VA 2020

Reviewer for peer-reviewed journals
Total of 193 verified reviews according to Web of Science https://www.webofscience.com/wos/author/record/1603828 accessed on Apr. 01, 2024 (In parenthesis the number of reviewed papers is indicated.)
- Smart Materials and Structures (5)
- Engineering Structures (4)
- Structural Health Monitoring (29)
- Automation in Construction (5)
- The Journal of the Acoustical Society of America (1)
- Journal of Vibration and Control (1)
- Structural Control and Health Monitoring (11)
- Experimental Mechanics (1)
- ASCE Journal of Bridge Engineering (3)
- Mechanical Systems and Signal Processing (3)
- Construction and Building Material (2)
- Ultrasonics (18)
- Journal of Civil Structural Health Monitoring (6)
- Journal of Intelligent Material Systems and Structures (2)
- Measurement Science and Technology (23)
- Earthquake Engineering and Engineering Vibration (1)
- Sensors and Actuators A: Physical (1)
- Sensors (14)
- Materials Evaluation (18)
- Applied Sciences (12)
- Applied Acoustics (1)
- Measurement (1)
- Case Studies in Construction Materials (1)
- IEEE Transactions on Industrial Informatics (10)
- ASME Journal of Mechanical Design (1)
- IEEE Metrology for Aerospace (1)
- Korean Society of Civil Engineers (5)
- International Journal of Pavement Research and Technology (1)

- International Journal of Coal Science & Technology (1)
- American Journal of Civil Engineering (1)
- BAOJ Nanotechnology (1)
- International Journal of Advanced Robotics and Automation (1)
- International Journal of Distributed Sensor Networks (1)
- Geothermics (1)
- Journal of Sound and Vibration (1)

Conference session chair
- "Acoustic Emission and Guided Ultrasonic Waves", ASNT Research Symposium 2021, Virtual, 2021
- "Acoustic Emission", ASNT Annual Conference 2018, Houston, TX 2018
- "Tech Session II: Infrastructure", 60th Acoustic Emission Working Group meeting, Charleston, SC 2018
- "NDE in Civil Infrastructure", ASNT 27th Research Symposium, Orlando, FL 2018
- "Structural Health Monitoring I", ASNT 26th Research Symposium, Jacksonville, FL 2017
- "Guided Waves", ASNT 25th Research Symposium, New Orleans, LA, 2016
- "Structural Health Monitoring I", ASNT 24th Research Symposium, Anaheim, CA, 2015

ASNT Council / Committee Participation
- Engineering Council (since 2021)
- Research Council (since 2015)

Book editor
- "Hydraulics (a series of classified four-choice questions)", Seri-e-omran, Tehran, 2011, ISBN: 978-600-524-652-0, in Farsi (Link). This book helps undergraduate student to prepare themselves for the Iranian National University Examination for M.Sc. studies in civil engineering.

Conference program organizer committee
- ASNT 30th Research Symposium, Virtual Event 2021
- ASNT 29th Research Symposium, Williamsburg, VA 2020
- ASNT 28th Research Symposium, Anaheim, CA 2019
- ASNT 27th Research Symposium, Orlando, FL 2018
- ASNT 26th Research Symposium, Jacksonville, FL 2017

Director
- ASNT Capital of Texas (the local section of Austin), 2016-2017
  > **Highlight:** 1) working with ASNT headquarters and local members to activate the local section of Austin (Capital of Texas) 2) hosting the president of the society, Mr. Kevin Smith, at the University of Texas at Austin and organizing his visit, which included two presentations

Webmaster
- Graduate Engineering Council (GEC), The University of Texas at Austin, USA, 2017-2018
Member
- UT Student Chapter of Earthquake Engineering Research Institute (UT-EERI), The University of Texas at Austin, USA, 2015-2016
  > **Highlight:** operating shake table tests on the building models of visiting high school students

Senator

- Faculty Senate Committee: Honorary Degrees & Awards Committee 2020-2021, New Mexico Tech
- Graduate Student Association (GSA), Department of Civil, Structural, and Environmental Engineering, The State University of New York at Buffalo, USA 2014-2015
- UB Student Chapter of Earthquake Engineering Research Institute (UB-EERI), The State University of New York at Buffalo, USA, 2014-2015 (Link)

> **Highlight:** contributing to the organization of a one-day tour to New York State Office of Emergency Management (NYS OEM) on April 20, 2015

MEDIA COVERAGE

- Construction Dive "Drexel researchers create AI system to spot cracks in infrastructure," Matthew Thibault   https://www.constructiondive.com/news/drexel-robot-inspections-infrastructure-concrete-cracks/706820/   Feb. 07, 2024
- Newswise, "Drexel Researchers Propose AI-Guided System for Robotic Inspection of Buildings, Roads and Bridges,"   https://www.newswise.com/articles/drexel-researchers-propose-ai-guided-system-for-robotic-inspection-of-buildings-roads-and-bridges   Jan. 31, 2024
- LiDAR News, "AI and Lidar for Robotic Infrastructure Inspection," https://blog.lidarnews.com/ai-and-lidar-for-robotic-infrastructure-inspection/   Feb. 02, 2024
- COSMOS, "Robots could be inspecting our buildings one day," https://cosmosmagazine.com/science/engineering/you-might-have-missed-improving-bowel-cancer-treatment-robot-inspectors-the-first-continents-and-fledgling-planets/   Feb. 05, 2024
- NBC Nightly News, "Deadly I-95 collapse will impact commuters and supply chain, Buttigieg warns" https://www.nbc.com/nbc-nightly-news/video/deadly-i-95-collapse-will-impact-commuters-and-supply-chain-buttigieg-warns/NBCN805637725   Jun. 12, 2023
- Fox-29, "I-95 Philadelphia collapse: What you need to know about the damaged highway, reconstruction" https://www.fox29.com/news/philadelphia-i-95-collapse-what-you-need-to-know-about-the-damaged-highway-and-reconstruction-efforts   Jun. 12, 2023
- The Daily Texan   Oct., 2018
  > Laura Morales, "UT engineering professor receives $300,000 grant for pipeline research," The Daily Texan, Oct. 16, 2018
- Materials Evaluation   Sep., 2017
  > Shant Kenderian, "ASNT Mentors, Research Council Mentoring Program: A Success Story," *Materials Evaluation*, 75(2017), no. 9, pp. 1191-96

TRAINING WORKSHOPS ATTENDED

- Future of the Building Industry (FoBI) Workshop **(paid travel expenses)**   Jun. 01-02, 2023
  > Durham School of Architectural Engineering and Construction, University of Nebraska–Lincoln, Omaha, Nebraska, USA
- NM-EPSCoR Early Career Leadership Workshop **(paid travel expenses)**   Jan. 02-04, 2022
  > NM-EPSCoR, Sevilleta, New Mexico, USA
- NSF-NHERI Wall of Wind Research Planning Workshop **(paid travel expenses)**   Jun. 14, 2019
  > Florida International University (FIU), Miami, Florida, USA
- NSF-NHERI Summer Institute **(paid travel expenses)**   Jul. 24-28, 2017

University of Texas at San Antonio (UTSA), San Antonio, Texas, USA
- Purdue Prospective Faculty Workshop (PPFW) **(paid travel expenses)**   Feb. 26-28, 2017
    Purdue University, West Lafayette, Indiana, USA
- NSF CAREER Proposal Writing Workshop   Nov. 15, 2016
    International Mechanical Engineering Congress & Exposition (IMECE), Phoenix, Arizona
- A series of seminars to prepare for a tenure-track faculty position   fall 2015-spring 2016
    Graduate Engineering Council (GEC), The University of Texas at Austin, Austin, Texas, USA
- NSF-CBMS Regional Conference on Topological Data Analysis   May 31-Jun. 04, 2016
    The University of Texas at Austin, Austin, Texas, USA
- Parallel Computing with MATLAB   Sep. 25, 2014
    Center for Computational Research, University at Buffalo, Buffalo, New York, USA
- Writing and Publishing Scientific Papers, a two-day workshop by Springer and Edanz Feb. 22-23, 2013
    Sharif University, Tehran, Iran

COMPUTER SKILLS

Programming languages
- Proficient with MATLAB, Python, C++, LabView, Java (working knowledge), R, VBA, Simulink

Engineering packages
- Experienced with SAP2000, Proficient with Perform3D, Experienced with ABAQUS and COMSOL, AutoCAD, Opensees, ETABS, RUAUMOKO, SAFE, Maple (working knowledge), Mathcad

Mechatronics and Internet-of-Things (IoT)
- Development boards: Arduino, Raspberry Pi, BeagleBone Black, Red Pitaya, ESP 32, ESP 8266
- Communication protocol: I^2C, SPI, TTL, UART, CAN

Deep learning and computer vision frameworks
- TensorFlow, DeepLab, CAFFE, CUDA

Miscellaneous
- LATEX, GID, Tecplot

LANGUAGES
- English: fluent (written and spoken)
- Farsi: mother tongue
- Arabic: basic (written)

WORK AUTHORIZATION
- Lawful permanent resident (green card holder), eligible to work without any restrictions.