

Arash Taghinezhad, Ph.D.

Assistant Research Scientist | Institute for a Disaster Resilient Texas (IDRT)
Texas A&M University at Galveston | arasht@tamu.edu

 [linkedin.com/in/arash-taghinezhad-ph-d-869439156/](https://www.linkedin.com/in/arash-taghinezhad-ph-d-869439156/) |  github.com/arash26m

Working Experience

Assistant Research Scientist; Institute for a Disaster Resilient Texas (IDRT) **Nov. 2022–present**

Postdoctoral Researcher; Louisiana State University **Mar. 2019–Nov. 2022**

- Work on three research grant projects for U.S. Department of Housing and Urban Development (HUD, \$850K; Four universities and one organization); NOAA Sea Grant; and National Academies of Sciences, Engineering, and Medicine - Gulf Research Program (NAS; \$3.4 million grant; Seven universities and two organizations)
- Work on the cost-effectiveness of CDBG-DR grants: Flood mitigation and vulnerable populations
- Involve in developing a website for Sea Grant project (<https://floodsafehome.lsu.edu/>)
- Involve in developing a website for NAS project to educate residents about natural disasters (<https://www.hazardaware.org/>)
- Develop computer programs in R and Python to analyze research data (Wind average annual loss (AAL) calculator)
- Collaborate on a research project for understanding the insurance saving and long-term benefits of flood freeboard increase in residential buildings
- Track project's deliveries and collaborate with other team leaders on each project
- Mentor and direct graduate students on grant projects
- Advise and help Ph.D. students in the Department of Construction Management
- Participate in research activities for writing proposals, and publishing conference and journal papers
- Develop an authorship contribution calculator and several research guidelines for construction management graduate students at LSU
- Create a system for faculties and Ph.D. students to work remotely and track academic activities
- Perform research for the Louisiana Department of Transportation and Development (DOTD) to find the best construction project delivery practices for state DOTs
- Develop and conduct an online research survey

Research Assistant; Louisiana State University **2014–2019**

- Perform research for evaluating the benefit and cost of hazard mitigation in Louisiana to develop a technical report for the Louisiana Governor's Office of Homeland Security and Emergency Preparedness (GOHSEP)
- Develop an advanced statistical model to estimate flood mitigation project cost in the R program by examining several prediction models such as multiple regression, random forest, and neural networks
- Impute missing data for a project with missing data on 60% of properties by developing a method using generalized additive models in the R program
- Develop a methodology for probabilistic flood loss modeling by implementing Monte Carlo simulation in Excel
- Leading a collaborative work with two other graduate students for developing a program in Python for hurricane wind loss modeling by generalizing the loss functions in the HAZUS-MH Hurricane Model repository with 103 MB data

Teaching Assistant; Louisiana State University **Spring 2014**

- Teaching Assistant for Structural Principles & Practices
- Teaching Assistant for Construction Materials, Methods, and Equipment

Arash Taghinezhad

- Teaching Assistant for Mechanical and Electrical Systems

R&D Engineer and Estimator; SunSazeh Arvin, Inc., Mashhad, Iran **2009–2011**

- Designed and developed new steel-deck profiles for use in composite seismic roof systems for mid- & high-rise buildings
- Estimated project cost of roof construction in commercial and residential buildings

Engineering Intern; Kasra Toos, Inc., Mashhad, Iran **Summer 2007**

- Field engineer for a seven-story building construction

Educational Background

Ph.D. in Engineering Science (Construction Management concentration)

Louisiana State University (LSU)

May 2019

Title of dissertation: *Costs and Benefits of Flood Mitigation in Louisiana*

Major advisor: Dr. Carol J. Friedland

Related coursework: Scientific and professional writing for peers • Research methods • Concrete materials • Advanced material analysis • Lean construction • Hazard resistant construction • Geographic information systems • Distributed information systems engineering • Data mining and knowledge discovery (Computer Science Department)

Ph.D. Minor in Applied Statistics

Related coursework: Statistical techniques I & II • Regression analysis • Statistical methods for reliability and survival data • Principles and theory of statistics • Statistical data mining (Experimental Statistics Department)

Master of Science in Engineering Science (Construction Management concentration)

Louisiana State University

Dec. 2017

Title of project: *Prediction of Flood Mitigation Elevation Project Cost in Louisiana by Statistical Modeling of Current Mitigation Practices*

Major advisor: Dr. Carol J. Friedland

Master of Science in Construction Management

University Technology Malaysia (UTM)

Mar. 2013

Title of thesis: *Feasibility Study of Sustainability Inclusion in Construction Planning Process*

Major advisor: Dr. Abdul Kadir Bin Marsono

Related coursework: Construction project management • Project estimating • Project planning and scheduling • Construction technology • Construction site management and safety control • Construction law and contract • Financial management • Construction management information system • Software app. in geotechnical engineering • Seminar on global development, economic and social issues • Innovation and problem-solving

Bachelor of Science in Civil Engineering

Azad University, Iran

May 2008

Projects: Drawing of concrete buildings project • Steel structures project • Reinforced concrete structures project • Water & wastewater engineering project • Road construction project

Related coursework: Mathematics I & II • Physics • Chemistry of materials • Differential equations • Numerical calculations • Engineering statistics & probabilities • Statics • Dynamics • Strength of materials • Loading • Structural analysis I & II • Steel structures I & II • Reinforced concrete structures I & II • Principles of earthquake engineering • Soil mechanics • Foundation engineering • Technical drawing • Building driving • Geology and construction materials • Principles of architectural and urban development • Construction executive methods • Metal structure execution •

Arash Taghinezhad

Concrete structure execution • Mechanical & electrical installations • Engineering economy • Repair and maintenance • Concrete technology and lab • Prestressed & precast concrete • Surveying • Safety • Fluid mechanics • Hydraulics • Engineering hydrology • Water & wastewater engineering • Road construction • Road pavement • Railway design • Principles of traffic engineering • Transportation engineering

Certifications

- Risk Rating 2.0: What Floodplain Managers Need to Know; ASFPM **Oct. 2021**
- SQL Essential Training; Lynda.com **Jul. 2019**
- Python for Data Science Essential Training; Lynda.com **May 2019**
- LEED: Green Building Core Concepts and Strategy Course; Leading GREEN, University of Toronto **Oct. 2018**
- Using ASCE Standards to Design Coastal Structures; National Council of Structural Engineer Association (NCSEA) **May 2018**
- Benefit Cost Analysis; FEMA **Oct. 2016**

Research Interests

Hazard Resistant Construction and Mitigation | Economic Benefit of Mitigation | Flood and Wind Loss Modeling | Catastrophic Risk Assessment | Machine Learning and Statistical Data Analysis
Green Buildings

Technical Skills

Computer Software: • Microsoft Project • Primavera 6 • Hazus-MH • AutoCAD • ArcMap GIS • GeoStudio • PLAXIS • SAP • ETABS • SAFE • R (neuralnet; randomForest; rpart, gam, dplyr) • SAS • JMP • SPSS • Python (networkx; numpy; pandas; seaborn; math; sklearn) • HTML • Microsoft Office • Excel Visual Basic • Microsoft SQL Server • MySQL

Machine Learning (ML) & Artificial Intelligence (AI): • Multiple Linear Regression (MLR) • Generalized Additive Models (GAM) • Logistic Regression • Neural Networks • Decision Tree Learning • Random Forests • Support Vector Machines (SVM) • Cross-Validation • Bootstrap • Data Cleaning • Data Imputation • Model Selection • Data Visualization

Currently Learning: • Deep Learning with PyTorch • PySpark for Working with Big Data • Microsoft Azure Cloud

Other Skills: • Research • Teaching • Leadership • Collaboration • Problem Solving • Detail Oriented

Funded Grant Research Experience

The New First Line of Defense: Building Community Resilience through Residential Risk Disclosure
National Academics' Gulf Research Program; 2019–2022

Role: Postdoctoral research associate; Managing and advising graduate students to deliver project tasks; Develop wind mitigation avoided loss calculator

How Smarter Decision-Making by Renters and Homebuyers Will Increase Coastal Resilience

U.S. National Oceanic and Atmospheric Administration (NOAA) Sea Grants; 2019–2022

Role: Postdoctoral research associate; Directing graduate students to deliver project tasks and reporting to the bigger project team

Arash Taghinezhad

Cost Effectiveness of CDBG-DR: Flood Mitigation and Vulnerable Populations

U.S. Department of Housing and Urban Development (HUD); Proposal #48767; Grant: GR-00006210 LSUAM; 2019–2022

Role: As a research associate transient: Assist in analyzing the cost effectiveness of building-level flood mitigation efforts by HUD; Directing graduate students to deliver project tasks and reporting to the bigger project team

Synthesis on the Best Practices for State DOTs to Determine Project Delivery time, Project Management, and Ratio of Consultant to In-House Design

Louisiana Transportation Research Center (LTRC); March 2019–September 2019

Role: As a research associate transient: Develop survey questions, and write research papers

Multi-Scale Spatiotemporal Evaluation of Mitigation Effectiveness in Reducing Natural Hazard Damage and Loss

FEMA (sub-grantee through Louisiana GOHSEP), collaborative project with Arizona State University and East Tennessee State University; March 2015 – February 2018

Budget: \$475,673 + \$104,974 internal/external budgeted match = \$580,647

Role: As a lead graduate research assistant for building-level mitigation effectiveness: Developed data collection templates; collected data from the LAHM website; developed proper loss metrics for flood and wind mitigation project types; calculated avoided losses; and developed project technical report for building level avoided loss analysis.

Publications & Presentations

Journal Publications

- Gnan, E., Friedland, C. J., Rahim, M. A., Mostafiz, R. B., Rohli, R. V., Orooji, F., Taghinezhad, A., & McElwee, J. (2022). **Improved building-specific flood risk assessment and implications of depth-damage function selection.** *Frontiers in Water*, 4. <https://doi.org/10.3389/frwa.2022.919726>
- Gnan E, Friedland CJ, Mostafiz RB, Rahim MA, Gentimis T, Taghinezhad A and Rohli RV (2022), **Economically optimizing elevation of new, singlefamily residences for flood mitigation via life-cycle benefit-cost analysis.** *Front. Environ. Sci.* 10:889239. doi: 10.3389/fenvs.2022.889239
- Orooji, F., Friedland, C. J., Savio, R. D., Taghinezhad, A., Massarra, C. C., Bushra, N., & Rohli, R. V. (2022). **Generalized Cost-Effectiveness of Residential Wind Mitigation Strategies for Wood-Frame, Single Family House in the USA.** *Frontiers in Built Environment*, 7. <https://doi.org/10.3389/fbuil.2021.745914>
- Mostafiz RB, Friedland CJ, Rahman MA, Rohli RV, Tate E, Bushra N, and Taghinezhad A (2021). **Comparison of neighborhood-scale, residential property flood-loss assessment methodologies.** *Front. Environ. Sci.* 9:734294. doi: 10.3389/fenvs.2021.734294
- Taghinezhad, A., Friedland, C. J., Rohli, R. V., Marx, B. D., Giering, J., & Nahmens, I. (2021). **Predictive statistical cost estimation model for existing single family home elevation projects.** *Frontiers in Built Environment*, 7(80). <https://doi.org/10.3389/fbuil.2021.646668>
- Taghinezhad, A., Jafari, A., Kermanshachi, S., & Nipa, T. (2021). **Construction project management dimensions in transportation agencies: Case study of the US Department of Transportation.** *Practice Periodical on Structural Design and Construction*, 26(3), 06021002. [https://doi.org/doi:10.1061/\(ASCE\)SC.1943-5576.0000579](https://doi.org/doi:10.1061/(ASCE)SC.1943-5576.0000579)
- Taghinezhad, A., Friedland, C. J., Rohli, R. V., & Marx, B. D. (2020). **An imputation of first-floor elevation data for the avoided loss analysis of flood-mitigated single-family homes in**

Arash Taghinezhad

Louisiana, United States. *Frontiers in Built Environment*, 6(138).
<https://doi.org/10.3389/fbuil.2020.00138>

Taghinezhad, A., Friedland, C. J., & Rohli, R. V. (2020). **Benefit-cost analysis of flood-mitigated residential buildings in Louisiana.** *Housing and Society*, 1-18.
<https://doi.org/10.1080/08882746.2020.1796120>

Karji, A., Bernstein, S., Tafazzoli, M., Taghinezhad, A., & Mohammadi, A. (2020). **Evaluation of an interview-based internship class in the construction management curriculum: A case study of the University of Nebraska-Lincoln.** *Education Sciences*, 10(4), 109.
<https://doi.org/10.3390/educsci10040109>

Taghinezhad, R., Taghinezhad, A., Soltangharai, V., & PI, V. M. (2018). **Seismic vulnerability assessment of coupled wall RC structures.** *International Journal of Science and Engineering Applications*, 7(2).

Taghinezhad, R., Taghinezhad, A., MahdaviFar, V., & Soltangharai, V. (2018). **Evaluation of story drift under pushover analysis in reinforced concrete moment frames.** *International Journal of Research and Engineering*, 5(1).

Taghinezhad, R., Taghinezhad, A., MahdaviFar, V., & Soltangharai, V. (2017). **Numerical investigation of deflection amplification factor in moment resisting frames using nonlinear pushover analysis.** *International Journal of Innovations in Engineering and Science*, 2(12), 1-7.

Soltangharai, V., Zarean, M., MahdaviFar, V., Taghinezhad, R., & Taghinezhad, A. (2017). **Response modification factor for cold-formed steel structures using pushover analysis.** *International Journal of Engineering Science*, 15875.

Conference Proceedings

Taghinezhad, A., Jafari, A., & Kermanshachi, S. (2020). **Exploring project management practices in the U.S. transportation agencies: A literature review.** In *ASCE Construction Research Congress (CRC) 2020* (pp. 1375-1384). <https://doi.org/10.1061/9780784482889.147>

Conference Abstracts

Mostafiz, R. B., Friedland, C. J., Rahman, M. A., Rohli, R. V., Tate, E., Bushra, N., & Taghinezhad, A. (2021). **Comparison of flood loss assessment methodologies at the neighborhood scale.** Virtual paper presented at the American Association of Geographers (AAG), Seattle, Washington.

Lee, J., Mithila, S. P., Mostafiz, R. B., Lee, Y., Friedland, C. J., Gnan, E., Rohli, R. R., Farris, M., Taghinezhad, A., Jenkins, P., Tao, H. (2021). **“Flood Safe Home”: a web-based interactive decision-making tool for optimal freeboard recommendations to enhance flood resilience.** Paper presented at the American Association of Geographers (AAG), Seattle, Washington.

Orooji, F., Taghinezhad, A., Friedland, C. J., Mithila, S. P., & Lee, J. (2021). **Wind hazard risk assessment and mitigation for residential construction to support community decision-making.** Presented virtually at the Disaster PRIMR 2021, Texas A&M University.
<http://2021primr.tamu.edu/>

Gnan, E., Friedland, C., Taghinezhad, A., Gentimis, T., & McElwee, J. (2021). **A micro-scale flood risk assessment of a single residential building: A case study in Jefferson Parish, Louisiana, U.S.A.** *The 8th International Conference on Flood Management (ICFM8)*.
https://www.icfm.world/pdf/ICFM8_Book.pdf

Arash Taghinezhad

Mostafiz, R. B., Mithila, S. P., Lee, J., Lee, Y., Friedland, C., Gnan, E., Rohli, R., Farris, M., Taghinezhad, A., Jenkins, P., & Tao, H. (2021). **Communicating the value of freeboard through a decision-making tool for new home construction in Louisiana.** *The 8th International Conference on Flood Management (ICFM8)*.
https://www.icfm.world/pdf/ICFM8_Book.pdf

Taghinezhad, A., Friedland, C. J., and Rohli, R. V. (2020). **Wind mitigation avoided loss analysis for residential and non-residential buildings in Louisiana, U.S.A.** *HurriCon: Science at the Intersection of Hurricanes and the Populated Coast*, East Carolina University, Greenville, NC.

Friedland, C., Farris, M., Jenkins, P., Lee, Yongcheol, L., Rohli, R., Taghinezhad, A., Gnan, E., Mostafiz, R.B., & Tao, H. (July 2020). **Incentives and Barriers to Increased Freeboard to Enhance Flood Resilience: Louisiana Perspectives.** Research and Practice Highlight presented at the *45th Annual Natural Hazards Research and Applications Workshop*, Virtual.

Research Posters

Tao, H., Farris, M., Jenkins, P., Lee, Friedland, C., Yongcheol, L., Rohli, R., Taghinezhad, A., Gnan, E., Mostafiz, R.B., Mithila, S, Lee, J. (2021). **Freeboard incentives and barriers to enhance flood resilience in Louisiana.** *1st prize video poster presentation at State of the Coast Conference*, June 2-4.

Gnan, E. S., Friedland, C., Farris, M., Rohli, R., Lee, Y., Taghinezhad, A., Mostafiz, R. B., & Kodavatiganti, Y. (2020). **Flood hazard risk assessment.** Research poster presented at the *Louisiana Fisheries Forward*, Kenner, LA

Taghinezhad, A., Friedland, C., & Rohli, R. (2019). **Benefits of flood mitigation in Louisiana.** Research poster presented at the *LSU CMGSA*, Baton Rouge, LA.

Technical Reports

Friedland, C., Gall, M., Joyner, A., Rohli, R., Mecholsky, K., Heil, S., Mandhana, A., Taghinezhad, A., Ates, S., Wood, M., and Downs, J. (2018). **Executive summary: Economic value of mitigation spending in Louisiana.** *Governor's Office of Homeland Security & Emergency Management (GOHSEP)*.

Taghinezhad, A., Friedland, C., Rohli, R., Joyner, A., Gall, M., Mecholsky, K., Heil, S., Mandhana, A., and Ates, S. (2018). **Appendix A: Building level avoided loss. Economic benefit of mitigation in Louisiana.** *GOHSEP*.

Jafari, A., Kermanshachi, S., Safapour, E., and Taghinezhad, A. (2021). **Synthesis on the best practices for state DOTs to determine project delivery time, project management, and ratio of consultant to in-house design.** Baton Rouge, LA.

Thesis/Dissertation

Taghi Nezhad Bilandi, A. (2018). **Costs and benefits of flood mitigation in Louisiana.** *Doctoral dissertation, Louisiana State University*, Baton Rouge, LA.

Taghi Nezhad Bilandi, A. (2013). **Feasibility study of sustainability inclusion in construction planning process.** *Master thesis, Universiti Teknologi Malaysia, Johor Bahru, Malaysia*.

Arash Taghinezhad

Presentations

Conference Presentations

Wind hazard risk assessment and mitigation for residential construction to support community decision-making, *Presented virtually at the Disaster PRIMR 2021*, Texas A&M University **Feb. 2021**

Wind mitigation avoided loss analysis for residential and non-residential buildings in Louisiana, U.S.A., *Presented at the HurriCon: Science at the Intersection of Hurricanes and the Populated Coast*, East Carolina University, Greenville, NC. **Feb. 2020**

Other Presentations

Performing an R-Programming workshop for LSU Construction Management graduate students **Nov. 2018**

Lecture to Episcopal High School students about engineering careers **Mar. 2018**

Presenter in three-minute thesis (3MT[®]) competition at LSU **Nov. 2017**

Proposal Writing Experience

Participate in New Frontiers in Research Fund (NFRF) proposal, "Flood-resilient and climate-adaptive housing for vulnerable populations." Canada **2020**

Peer Review and Editorial Board Experience

Reviewer for *Construction Research Congress (CRC 2020)*, ASCE, Tempe, Arizona **2020**

Reviewer for *Journal of Engineering, Design and Technology*, Emerald **2020**