Ram Krishna Mazumder, Ph.D.

2680 Euclid Heights Boulevard, Apt 205E, Cleveland, OH 44106
Email: rxm562@case.edu, Phone: 216 855 2016
Google Scholar: https://goo.gl/E9k4AJ, Website: https://rxm562.github.io/

Education

Case Western Reserve University, Ohio, USA — Aug. 2016 - July 2020
Ph.D., Civil Engineering
Dissertation: Risk-Based Asset Management Framework for Water Distribution Systems
Advisor: Prof. Yue Li

University of Geneva, Geneva, Switzerland — Apr. 2014 - Feb. 2015
Postgraduate Diploma, Geological and Climate Related Risk
Dissertation: Fragility Analysis of Reinforced Concrete Frame Buildings.

Sapienza University of Rome, Rome, Italy — Dec. 2011 - Dec. 2012
M.S., Evaluation, Control and Reduction of Seismic Risk
Dissertation: Non-Linear Pushover Analysis of Masonry Walls.

Shahjalal University of Science and Technology, Sylhet, Bangladesh — Jan. 2005 - June 2009
B.S., Civil and Environmental Engineering

Professional Experience

Asset Management Consultant (Research) — Aug. 2022 - Present
National Asset Management Team
Arcadis U.S. Inc., Akron, Ohio

Postdoctoral Researcher, NIST Center for Risk-Based Community Resilience Planning — Aug. 2020 - July 2022
Dept. of Civil, Environmental & Architectural Engineering
University of Kansas, Lawrence, Kansas

Graduate Research and Teaching Assistant — Aug. 2016 - July 2020
Department of Civil Engineering
Case Western Reserve University, Cleveland, Ohio

Lecturer/Assistant Professor — May. 2013 - Aug. 2016
Institute of Earthquake Engineering Research
Chittagong University of Engineering and Technology, Chittagong, Bangladesh

Research Engineer — Oct. 2010 - Dec. 2011
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh

Project Engineer — June 2010 - Sep. 2010
Trust Alliance Technology Limited, Dhaka, Bangladesh

Structural Engineer — July 2009 - May. 2010
Asian Disaster Preparedness Center, Dhaka, Bangladesh

Awards and Honors

2020 **Kenneth M. Haber Award**, School of Grad Studies, Case Western Reserve University
2020 **The Best Poster Award**, American Society of Civil Engineers (ASCE), Pipelines 2020
2019 **ASCE - Utility Engineering and Surveying Institute (UESI) Scholarship**, Pipelines 2019
2019 **Service Award**, Graduate Student Council, Case Western Reserve University
2018 **The Roy Harley Prize**, School of Grad Studies, Case Western Reserve University
2015 **German Research Center for Geosciences (GFZ) Fellowship**, for training on Seismic Hazard
2014 **Wilsdorf Foundation and Solidarity Int. Fellowship**, for PG Specialization at University of Geneva
2011 **Erasmus Mundus Master Scholarship**, for M.S. at Sapienza University of Rome

Publications

Peer-Reviewed Journal Articles

1. Enderami, S. A., Sutley, E. J., **Mazumder, R. K.**, and Dumler, M. D. (2023). Virtual Testbeds for Community Resilience Analysis: Step-by-Step Development Procedure and Future Orientation, *Resilient Cities and Structures*.

2. **Mazumder, R. K.**, Modanwal, G. and Li, Y. (2023) Synthetic Data Generation using Generative Adversarial Network (GAN) for Burst Failure Risk Analysis of Oil and Gas Pipelines, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*. doi:10.1115/1.4062741

3. **Mazumder, R. K.**, Enderami, S. A., and Sutley, E. J. (2023). A Novel Framework to Study Community-level Social and Physical Impacts of Hurricane-induced Winds Through Synthetic Scenario Analysis, *Frontiers in Built Environment*, 9:1005264. doi:10.3389/fbuil.2023.1005264

4. Wang, X., **Mazumder, R. K.**, Salarieh, B., Salman, A. M., Shafieezadeh, A., and Li, Y. (2022). Machine Learning for Risk and Resilience Assessment in Structural Engineering: Progress and Future Trends, *Journal of Structural Engineering, ASCE*, 148(8), 03122003. doi:10.1061/(ASCE)ST.1943-541X.0003392

5. **Mazumder, R. K.**, Salman, A. M., and Li, Y. (2022). Post-Disaster Sequential Recovery Planning for Water Distribution Systems using Topological and Hydraulic Metrics, *Journal of Structure and Infrastructure Engineering*, 1-16. doi:10.1080/15732479.2020.1864415

6. Li, W., **Mazumder, R. K.**, and Li, Y. (2022). Topology-based Seismic Resilience Metrics for System-Level Performance Evaluation and Recovery Strategy of Water Distribution System, *Journal of Pipeline Systems Engineering and Practice, ASCE*, 14(1), 04022070. doi:10.1061/JPSEA2.PSENG-1303.

7. Enderami, S. A., **Mazumder, R. K.**, Dumler, M. D., and Sutley, E. J. (2022). Virtual Testbeds for Community Resilience Analysis: State of the Art Review and Consensus Study, *Natural Hazards Review, ASCE*, 23(4), 03122001. doi:10.1061/(ASCE)NH.1527-6996.0000582

8. Daniel, L., **Mazumder, R. K.**, Enderami S. A., Sutley, E. J., and Lequesne, R. D. (2022). A Community Capitals Framework for Linking Buildings and Organizations for Enhancing Community Resilience through the Built Environment, *Journal of Infrastructure Systems, ASCE*, 28(1), 04021053. doi:10.1061/(ASCE)IS.1943-555X.0000668.

9. **Mazumder, R. K.**, Rana, S., and Salman, A. M. (2021). First Level Seismic Risk Assessment of Old Unreinforced Masonry (URM) Using Fuzzy Synthetic Evaluation, *Journal of Building Engineering*, 44, 103162. doi:j.jobe.2021.103162

10. **Mazumder, R. K.**, Salman, A. M., and Li, Y. (2021). Failure Risk Analysis of Pipelines using Data-Driven Machine Learning Algorithms, *Structural Safety*, 89, 102047. doi:10.1016/j.strusafe.2020.102047 **[One of the most cited articles published in Structural Safety since 2019]**

11. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2021). Asset Management Decision Support Model for Water Distribution Systems: Impact of Water Pipe Failure on Road and Water Networks, *Journal of Water Resources Planning and Management, ASCE,* 147(5), 04021022. doi:10.1061/(ASCE)WR.1943-5452.000136

12. Li., W., **Mazumder, R. K.**, and Li, Y. (2021). Reliability Analysis of Buried Water Pipelines Under Active Corrosion: A Finite Element Analysis Approach, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part A. Civil Engineering*,7(4), 04021064. doi:10.1061/AJRUA6.0001178

13. **Mazumder, R. K.**, Fan, X., Salman, A. M., Li, Y., and Yu, X. (2020). Framework for Seismic Damage and Renewal Cost Analysis of Buried Water Pipelines, *Journal of Pipeline Systems Engineering and Practice, ASCE*, 11(4), 04020038. doi:10.1061/(ASCE)PS.1949-1204.0000487

14. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2020). Seismic Functionality and Resilience Analysis of Water Distribution Systems, *Journal of Pipeline Systems Engineering and Practice, ASCE*, 11(1), 04019045. doi:10.1061/(ASCE)PS.1949-1204.0000418 **[Editor's Choice Article]**

15. Haque, D. M. E., Mimi, A., **Mazumder, R. K.**, and Salman, A.M. (2020). Evaluation of Natural Hazard Risk for Coastal Districts of Bangladesh Using the INFORM Approach, *International Journal of Disaster Risk Reduction*. 48: 101569. doi:10.1016/j.ijdrr.2020.101569

16. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2019). Reliability Analysis of Water Distribution Systems using Physical Probabilistic Pipe Failure Method, *Journal of Water Resources Planning and Management, ASCE*, 145(2): 04018097. doi:10.1061/(ASCE)WR.1943-5452.0001034

17. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2018). Performance Evaluation of Water Distribution Systems and Asset Management: State-of-the-Art Reviews, *Journal of Infrastructure Systems, ASCE*, 24(3): 03118001. doi:10.1061/(ASCE)IS.1943-555X.0000426

18. **Mazumder, R. K.**, and Salman, A. M. (2018). Seismic Damage Assessment Using GIS and RADIUS: A Case Study of Sylhet City, Bangladesh, *Int. Journal of Disaster Risk Reduction*, 34 (2019), 243-254, doi:10.1016/j.ijdrr.2018.11.023

19. **Mazumder, R. K.**, Uddin, S., Dey, R., and Ansary, M. A. (2016). Analytical Fragility Curves for Reinforced Concrete Building Using Single Point Scaled Spectrum Matched Ground Motion Analyses, *Malaysian Journal of Civil Engineering*, 28(3):394-406, https://mjce.utm.my/index.php/MJCE/article/view/433

20. **Mazumder, R. K.**, and Ansary, M. A. (2014). Application of Capacity Spectrum Method based on ATC 40 and BNBC 1993, *Journal of Advanced Structures and Geotechnical Engineering*, 03(04):364-367, http://basharesearch.com/1030411.html

21. **Mazumder, R. K.**, Khair, A., Sakib, N., Bhuiyan, A. R., and Alam, J. (2014). Rapid Assessment Procedure for Seismic Evaluation of Existing Buildings: A Case Study for CUET Campus, *J. of South Asian Disaster Studies*, 5(1-2):09-26

Peer-reviewed Journal Papers (Diversity & Equity)

22. Donkor, F. K. and **Mazumder, R. K.**, Hosseinzadeh, S., and Roy, S. (2020). A User-Centric Design Approach to Understand International Education in the Contemporary World: Motivations and Gender Preferences for Studying in Europe, *Journal of Research in International Education*, 19(1), 54-68. doi:10.1177/1475240920916046

23. Donkor F.K. and **Mazumder, R. K.** (2020). Women and the Environment: Southern Perspectives and Global Implications, *in Gender Equality, Encyclopedia of the UN Sustainable Development Goals*. doi:10.1007/978-3-319-70060-1

Peer-reviewed Journal Papers (Under Review)

24. **Mazumder, R. K.**, and Sutley, E. J. (202X). Post-Earthquake Community Resilience Analysis: Integrating Essential Infrastructure Systems Services with Building Functionality, *Journal of Infrastructure Systems, ASCE*.

25. **Mazumder, R. K.**, Enderami, S. A., Sutley, E. J., Rosenheim, N., Stanley, M. and Meyer, M. (202X). Estimating Long-term Homeless K-12 Students after a Catastrophic Flood Disaster, *Resilient Cities and Structures*.

Journal Manuscript (In-Preparation)

1. **Mazumder, R. K.**, Enderami, S. A., Loerzel, J., and Sutley, E. J. (202X). Racial Equity and Historical Housing Disparities Impact on Present-Day Community Disaster Resilience, to be submitted to *Journal of Infrastructures Systems*.

2. **Mazumder, R. K.**, and Sutley, E. J. (202X). Modeling the Influence of Social Vulnerability, Building Functionality Restoration, Resources, and Vacancies on Household-Level Housing Recovery , to be submitted to *International Journal of Disaster Risk Reduction*.

3. **Mazumder, R. K.**, Rana, S., Wang, X., Ansary, M. A. and Li, Y. (202X). A Python-based Earthquake Risk Assessment Framework for Predicting Physical and Socioeconomic Losses in Urban Areas, to be submitted to *International Journal of Disaster Risk Reduction*.

4. Thompson, T., **Mazumder, R. K.**, Sutley, E. J., Reed, D., Lequesne, R., Li, J., Kirkham, W. (202X). Longitudinal Repair and Recovery in Rural Kansas after an EF4 Tornado, to be submitted to *Natural Hazards Review, ASCE*.

Refereed Conference Articles

1. **Mazumder, R. K.**, and Sutley, E. J. (2022). Seismic Functionality Analysis of Buildings Integrating Essential Utilities and Road Accessibility, *the 12th National Conference on Earthquake Engineering (12NCEE)*, Salt Lake City, Utah, June 27-July 1, 2022.

2. Rahimi, M., **Mazumder, R. K.**, Nofal, O. M., Padgettd, J. E., Rosenheim, N., Darestanif, Y. M., Sutley, E. J., , and van de Lindt, J. W. (2022). Coastal community resilience assessment using hybrid natural-physical-social performance matrices: a case study for Galveston Island, *13th Int. Conference on Structural Safety and Reliability 2021-2022*, June 22-24, Shanghai, China.

3. **Mazumder, R. K.**, Enderami S. A., and Sutley, E. J. (2022). A Scenario-based Hurricane Analysis Framework for Community-level Building Damage Estimation, *14th Americas Conference on Wind Engineering*, May 17-19, 2022, Lubbock, Texas.

4. Enderami S. A., **Mazumder, R. K.**, and Sutley, E. J. (2022). Framework for Incorporating Community Social Vulnerability in the Assessment of the Hurricane-Induced Wind Risk to Residential Buildings, *14th Americas Conference on Wind Engineering*, May 17-19, 2022, Lubbock, Texas.

5. **Mazumder, R. K.**, Dumler, M., Enderami S. A., and Sutley, E. J. (2021). A Scenario-based Hurricane Analysis Framework for Community-level Building Damage Estimation, *6th American Association for Wind Engineering Workshop*, Clemson University, Clemson, SC, USA, May 12-14, 2021, 106-109.

6. **Mazumder, R. K.**, Salman, A. M., and Li, Y. (2021). Reliability Assessment of Oil and Gas Pipeline Systems at Burst Limit State Under Active Corrosion, *18th International Probabilistic Workshop*, May 12-14, 2021, Guimarães, Portugal, 653-660, doi:10.1007/978-3-030-73616-3-50

7. **Mazumder, R. K.**, Salman, A. M., Li, Y. and Yu, X. (2019). Reliability Assessment of Corroded Water Distribution Infrastructure, *ASCE UESI Pipelines 2019*, July 21-24, Nashville, TN, 343-353, doi:10.1061/9780784482490.036

8. **Mazumder, R. K.**, Salman, A. M., Li, Y. and Yu, X. (2019). Decision-making Framework for Water Distribution Systems using Fuzzy Inference and Centrality Analysis, *International Conference on Applications of Statistics and Probability in Civil Engineering*, May 26-30, Seoul, Korea, P-313, doi:10.22725/ICASP13.313

9. **Mazumder, R. K.**, Biswas, B.S.P., Helali, A. L. and Ansary, M. A. (2017). Ambient Vibration Analysis of Heritage Unreinforced Masonry Buildings in Bangladesh, *16th World Con. on Earthquake Engineering, Santiago Chile*, January 9-13, Paper N° 4176, www.wcee.nicee.org/wcee/article/WCEE2017-4176.pdf

10. **Mazumder, R. K.**, Dey, R., Uddin, S. and Bhuiyan, A. R. (2015). Structural Response Analysis of Reinforced Concrete Frame with Unreinforced Masonry Infill Walls, *Int. Conference on Recent Innovation in Civil Engineering for Sustainable Development*, Dec 11-13, DUET, Bangladesh, 564-569.

11. **Mazumder, R. K.** and Ansary, M. A. (2012). Application of Non-Destructive Testing Techniques for Structural Condition Assessment in Bangladesh, *1st Int. Conference on Advances in Civil Engineering*, 12-14 December, CUET, Chittagong, Bangladesh, ASEE 25.

12. **Mazumder, R. K.**, Ahmed, M. and Ansary, M. A. (2011). Seismic Risk Evaluation on Existing RC Frame Buildings for Northern Part of Sylhet City, Bangladesh, *Proc. of 10th Int. Symposium on New Technologies for Urban Safety of Mega Cities in Asia*, October 12-14, Chiang Mai, Thailand, 173-186.

Poster Presentations

13. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2021). Risk-Informed Asset Management Decision Support Model for Interdependent Water and Road Infrastructures, *ASCE UESI Pipelines 2021*, August 3-6, Virtual.

14. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2020). Seismic Damage and Renewal Cost Analysis of Buried Water Pipelines: A Python-based Computational Framework, *ASCE UESI Pipelines 2020*, August 10-13, Virtual. **[the Best Poster of Pipelines 2020]**.

15. **Mazumder, R. K.**, Salman, A. M., Li, Y., and Yu, X. (2018). Risk and Resilience of Aging Water Distribution Systems, *Structures Congress 2018*, April 19-21, Fort Worth, TX, USA.

Data Publication

1. **Mazumder, R. K.**, Enderami, S., and Sutley, E. (2022). Scenario Hurricane Risk Analysis, in Scenario-based Hurricane Risk Analysis (SHRA) Framework, *DesignSafe-CI*, doi:10.17603/ds2-jzcv-he68 v1

2. **Mazumder, R. K.**, Sutley, E. J., and Dumler, M. (2021). Data Report on Local Perceptions on Building Safety and Building Performance after the 2019 EF4 Linwood Tornado, *DesignSafe-CI*, doi:10.17603/ds2-hkcv-xp72

3. **Mazumder, R. K.**, Sutley, E. J., and Dumler, M. (2021). Data Report on Household Impact and Recovery Assessment: A longitudinal Investigation after the 2019 EF4 Linwood Tornado, *DesignSafe-CI*, doi:10.17603/ds2-87ne-d742

4. Wang, T, Dumler, M., **Mazumder, R. K.**, and Sutley, E. J. (2021). Tornado Risk Perception of University of Kansas Campus Community, *DesignSafe-CI*, doi:10.17603/ds2-dw38-z509

5. Sutley, E. J., Dumler, M., **Mazumder, R. K.**, Lequesne, R., Li, J., Kirkham, W., Reed, D., Kim, J., and Thompson, T. (2021). One-year Post-tornado Repair Progress: Wave 3, in StEER - 28 May 2019 Linwood, KS EF4 Tornado Field Assessment, *DesignSafe-CI*, doi:0.17603/ds2-5ysj-a554

Research Proposal and Grants

1. Community Disaster Resilience Assessment by Integrating Functionality of Buildings and Critical Infrastructure Systems, PI: Ram Mazumder, Co-PI: Sohel Rana, and Subhrajit Dutta, Sponsor: Coalition for Disaster Resilient Infrastructure (CDRI), amount: $15,000, (May 2023 - April 2024)

2. Analyzing Capabilities and Potentials of Machine Learning and Artificial Intelligence for Risk Assessment and Management of Structures, PI: Yue Li, Co-PIs: Xiaowei Wang, Ram Mazumder, Abdullahi Salman, Abdollah Shafieezadeh, Sponsor: ASCE/SEI Special Project, amount: $10,000, (Sep 2022 - July 2023)

3. Household Impact and Recovery Data, Instruments and Protocols: A longitudinal investigation after the May 28, 2019 EF4 Linwood, Kansas Tornado, PI: Ram Mazumder, Co-PI: Elaina Sutley, Sponsor: Natural Hazards Center Weather-Ready Research, supported by National Science Foundation (NSF), amount:$2,500, (April 2021 - Sep 2021)

4. Tornado Risk Perception Data, Instruments and Protocols: Survey of Contractors and KU Campus Community, PI: Ram Mazumder, Co-PI: Elaina Sutley, Sponsor: Natural Hazards Center Weather-Ready Research, supported by NSF, amount: $1,250, (April 2021 - Sep 2021).

5. Structural Safety Assessment of Existing Buildings at CUET Campus - Phase I and II, PI: A. R. Bhuiyan, Co-PI: Ram Mazumder, Sponsor: University Grants Commission of Bangladesh, Scientific Grant - 2014-15, amount: $3,800, (Jan 2014 - Aug 2015)

6. Seismic Risk Assessment of Important Building in Chittagong City, PI: A. R. Bhuiyan, Co-PI: Ram Mazumder, Sponsor: University Grants Commission of Bangladesh, Scientific Grant - 2014, amount: $1,600, (Jan 2015 - Dec 2015).

7. Seismic Safety Assessment of Govt Primary School Buildings in Chittagong, PI: A. R. Bhuiyan, Co-PI: Ram Mazumder, Sponsor: University Grants Commission of Bangladesh, Scientific Grant - 2015, amount: $1,800, (Jan 2015 - Dec 2015)

8. Foundations of holistic resilience analyses and socially equitable decision making for interdependent critical infrastructures, Sponsor: Kansas NSF EPSCoR, amount: $24M, PI: Elaina Sutley, Role: Contributor.

9. Multi-Level Resilience-Based Transportation Asset Management Framework using Bayesian Network, Sponsor: National Center for Transportation Infrastructure Durability and Life-Extension at Washington State University, supported by the U.S. Department of Transportation, amount: $125,000, PI: Yue Li, Role: Contributor.

10. A First Step Toward a Longitudinal Study of Homeowners' Proactive Actions for Managing Wildfire Risks, Quick Response Grant, Sponsor: Natural Hazards Center supported by NSF, amount: $3,000, PI: Yue Li, Role: Contributor.

11. NSF Research Experiences for Undergraduates (NSF REU), PI: Yue Li, Role: Contributor.

Teaching Experience

1. Graduate Assistant, Department of Civil Engineering, Case Western Reserve University:

Role: Teaching Assistant

ECIV 426: Probabilistic Analysis Fall 2018, Fall 2019

Course Description: This course is designed to provide students with an in-depth understanding of fundamentals of probability and statistics. Uncertainty and decision analysis; Probability models for structural loads and strength; Probabilistic analysis of engineering systems; Estimation of the reliability of structures and infrastructure systems; and Monte Carlo simulation.

ECIV 324: Timber and Masonry Design Spring 2019

Course Description: Introduction to wood material. Design for timber beams and columns to resist vertical and lateral loads. Design of nailed and bolted connections. Introduction to masonry materials and design of wall.

ECIV 310: Strength of Materials Fall 2018, Spring 2019, Fall 2019, Spring 2020

Course Description: Mechanical properties of materials, deformations, stresses, strains and their transformation. Torsion of structural and machine elements, pressure vessels and beams under combined loading. Deflection and statically indeterminate beams. Energy methods and column stability.

ENGR 200: Statics Fall 2017, Spring 2018, Summer 2020

Course Description: An introduction to the analysis, behavior and design of structural systems. Concepts of equilibrium; geometric properties and distributed forces; stress, strain and mechanical properties of materials; and, linear elastic behavior of elements.

2. Lecturer/Assistant Professor, Institute of Earthquake Engineering Research, CUET, Bangladesh:

Role: Instructor

EQE 6108: Dynamics of Structures Spring 2014, Spring 2015

Course Description: Modeling of structures as single and multi-degree of freedom dynamic systems and their response to various forms of dynamic excitation. The eigenvalue problem, damping, and design for dynamic response. Analytical response calculation including modal, response spectrum, and time history methods.

EQE 6110: Performance-Based Seismic Design of Structures Fall 2014, Fall 2015

Course Description: Fundamentals of performance based design methods; Analysis methods: nonlinear static analysis, time history analysis; Modelling of key structural members; Codes guideline for performance based design of structures.

EQE 6111: Assessment and Strengthening of Existing Structures Fall 2014, Fall 2015

Course Description: Introduction to Seismic Hazard Analysis; Defining Performance Objectives; Basic Evaluation and Retrofit Strategies; Condition Assessment of Structures; Non-Liner Pushover Analysis; Inelastic Time History Analysis; Seismic Assessment Guidelines, (e.g. ATC, FEMA), Analyzing Case Studies.

Training: Structural Analysis and Design of RC Buildings Summer 2014, Summer 2015

Post-Doctoral Research Projects

University of Kansas Aug. 2020 – July 2022

Advisor: Dr. Elaina J. Sutley

Project - 1: Center of Excellence for Risk-Based Community Resilience Planning, NIST

• Modelling of post-disaster recovery and restoration of buildings and infrastructure systems. Analyzing role of historical housing disparities in households recovery and community disaster resilience.

Project - 2: Assessing the Role of Buildings and Organizations in Community Disaster Resilience

• Modelling of community resilience through holistic integration of the technical, organizational, social, and economic systems imperative to a community's functionality.

Project - 3: Post-disaster Housing Functionality Recovery

• Modelling of rural housing recovery considering repair, functionality restoration, stability and accessibility, recovery resources, re-occupancy.

Project - 4: Measuring Racial Inequities in Community Disaster resilience

• Measuring unevenness in the spatial distribution of damage, measures disparities in utility outages and restoration rates, along socioeconomic and demographic lines.

Service and Outreach

Editorship

• **Associate Editor**, Journal of Pipeline Systems Engineering and Practice, ASCE (since March 2021)
• **Review Editor**, Sustainable Design and Construction, in Frontiers in Built Environment (since Aug 2022)
• **Review Editor**, Earthquake Engineering, in Frontiers in Built Environment (since Nov 2022)

Peer reviewer for:

• Journal of Structural Safety; • Journal of Structural Engineering; • Journal of Sustainable Cities and Society;
• Journal of Water Resources Planning and Management; • Journal of Pipeline Systems Engineering and Practice;
• Journal of Testing and Evaluation; • International Journal of Disaster Risk Reduction; • PLOS One; • Energies
• ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering.

Professional Membership

• Associate Member, American Society of Civil Engineers (ASCE)
• Member, Earthquake Engineering Research Institute (EERI)
• Member, American Water Works Association (AWWA)
• Member, International Association of Life Cycle Civil Engineering (IALCCE)
• Member, Institute of Engineers, Bangladesh (IEB)

Committee Service in Professional Society:

• Member, ASCE-UESI Younger Member Engagement Committee
• Member, ASCE-UESI Technical Committee on Seismic Design of Buried Pipelines
• Member, ASCE-UESI Technical Committee on Testing for Seismic Evaluation of Pipeline Systems
• Member, ASCE-SEI Technical Council on Life-Cycle Performance, Safety, Reliability and Risk of Structural Systems
• Member, ASCE Ohio Infrastructure Report Card Committee 2021

Certificate and Fellowship Courses:

• UNIV 400C Future Faculty Preparation, Case Western Reserve University
• Didactics in University Teaching, UNESCO-IHE, CUET, Bangladesh
• Rapid Response Mapping in Disasters, UNOSAT, Geneva, Switzerland
• Seismology and Seismic Hazard Assessment, GFZ, Potsdam, Germany
• Earthquake Risk Mitigation, IIT Roorkee, India
• Machine Learning, e-Learning through Coursera by Stanford University
• Python Data Structure, e-Learning through Coursera by University of Michigan

Volunteer and leadership activities:

• Vice-President (2018 - 2019), Graduate Student Council, Case Western Reserve University
• Vice-President (2018-2020), North American Chapter, Erasmus Mundus Students and Alumni Association
• President (2017) and Vice-President (2015-17), South Asian Chapter, Erasmus Mundus Students and Alumni Association

License:

• Fundamentals of Engineering (FE)