Ram Krishna Mazumder, Ph.D., P.E.

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Education

Case Western Reserve University, Ohio, USA	Aug. 2016 - July 2020

Ph.D., Civil (Structural) Engineering
<u>Dissertation</u>: Risk-Based Asset Management Framework for Water Distribution Systems.
<u>Advisor</u>: Prof. Yue Li

University of Geneva, Geneva, Switzerland	Apr. 2014 - Feb. 2015

Postgraduate Diploma, Geological and Climate Related Risk
<u>Dissertation</u>: Development of Fragility Curves for Reinforced Concrete Frame Buildings.

Sapienza University of Rome, Rome, Italy	Dec. 2011 - Dec. 2012

M.S., Evaluation, Control and Reduction of Seismic Risk
<u>Dissertation</u>: 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

Assistant Professor of Structural Engineering	Aug. 2025 -

Dept. of Civil Engineering & Construction, Georgia Southern University, Statesboro, GA

Asset Management Consultant/Structural Engineer	Aug. 2022 - Present

National Asset Management Team, Arcadis U.S. Inc., Midwest

Postdoctoral Researcher, NIST Center for 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

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 (Under Revision)

1. **Mazumder, R. K.***, Roy, S., Kaddoura, K., and Koo, D. (202X). State-of-the-Art Review of Water and Wastewater Pipeline Characteristics and Inventory Updating Framework for Asset Management Plan, *Journal of Pipeline Systems Engineering and Practice, ASCE*.

2. **Mazumder, R. K.***, Roy, S., Chettri, S., Rana, S., and Dutta, S. (202X). A Framework for Cyclone Retrofit and Risk Portfolio Analysis to Enhance Community Resilience, *Resilient Cities and Structures*.

3. Esteghamati, M. Z., Namin, A. Paal, S, Wang, X., **Mazumder, R. K.**, Salman, A. M., Shafieezadeh, A., and Li, Y. (202X). Making the black-box transparent: Explainable machine learning for structural design and assessment, to be submitted to *Journal of Structural Engineering, ASCE*.

Peer-Reviewed Journal Articles

4. **Mazumder, R. K.***, and Sutley, E. J. (2025). Modeling the Influence of Social Vulnerability on Housing Functionality Restoration, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*. doi:10.1061/AJRUA6/RUENG-1526 (Accepted).

5. **Mazumder, R. K.**, Rana, S., Wang, X., Ansary, M. A. and Li, Y. (2025). Community-Level Seismic Risk and Retrofitting Portfolios in Developing Countries: Cost-Effective Assessment Framework and Application, *Natural Hazards Review, ASCE*, 26(2), 05025003. doi:10.1061/NHREFO.NHENG-2175

6. **Mazumder, R. K.***, and Sutley, E. J. (2024). A Multi-Step Framework for Measuring Post-Earthquake Recovery: Integrating Essential Infrastructure System's Serviceability in Building Functionality, *International Journal of Disaster Risk Reduction*. doi:10.1016/j.ijdrr.2024.104929

7. Li, W., **Mazumder, R. K.***, Bastidas-Arteaga, E. and Li, Y. (2024). Seismic Performance Evaluation of Corroded Water Distribution Systems Considering Firefighting, *Journal of Water Resources Planning and Management, ASCE*, 150(2), 04023075. doi:10.1061/JWRMD5.WRENG-6256

8. **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*, 1-21. doi:10.1115/1.4062741

9. **Mazumder, R. K.***, Enderami, S. A., Sutley, E. J., Rosenheim, N., Stanley, M. and Meyer, M. (2023). Estimating Long-term Homeless K-12 Students after a Catastrophic Flood Disaster, *Resilient Cities and Structures*, 2.2: 82-92. doi:10.1016/j.rcns.2023.07.005

10. **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

11. 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*, 2.2: 42-56. doi:10.1016/j.rcns.2023.07.002

12. 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 [2023 ASCE Beach Reads' Article]

13. **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

14. 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

15. 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

16. 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

17. **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]**

18. **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

19. **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

20. 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

21. **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

22. **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]**

23. 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

24. **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

25. **Mazumder, R. K.***, and Salman, A. M. (2019). 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

26. **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

27. **Mazumder, R. K.***, Utsob, M. T. U., and Bhuiyan, M. R. (2018). Seismic Vulnerability Assessment of Medical Facilities: A GIS-based Application for Chittagong, Bangladesh, *Malaysian Journal of Civil Engineering*, 30(1), 97-112, https://journals.utm.my/mjce/article/view/15720

28. **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://journals.utm.my/mjce/article/view/15983

29. **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

30. **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 & Education)

31. 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

32. 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

Journal Manuscript (In-Preparation)

1. Li, W., **Mazumder, R. K.***, and Li, Y. (202X). Probabilistic Seismic Risk Analysis of Buried Water Pipelines, *Journal of Pipeline Science and Engineering, ASCE*.

2. **Mazumder, R. K.*** and Li, Y. (202X). Risk-based Asset Management Planning of Water Distribution System, to be submitted to *Nature Sustainability*.

3. Ahmed, M. A., **Mazumder, R. K.*** and Li, Y. (202X). Analytical Fragility Curves for Window Glass Panels of Residential Buildings Subjected to Extreme Wind Loads, to be submitted to *Journal of Structural Engineering, ASCE*.

4. Kulkarni, T., Karve., D. and **Mazumder, R. K.*** (202X). An Intelligible Machine Learning-Based Geo-Statistical Model for Prioritizing Pipes for Condition Assessment, to be submitted to *Journal of Pipeline Science and Engineering*.

5. Rana, S., **Mazumder, R. K.***, Asadi, E., and Wang, X. (202X). An Entropy-TOPSIS Multi-Criteria Decision-Making Model for Preliminary Seismic Assessment and Prioritization of URM Building Portfolios, *Journal of Building Engineering*.

   Note: * refers to the corresponding authorship.

Refereed Conference Articles

1. **Mazumder, R. K.**, Modanwal, G. and Li, Y. (2024). Generative Adversarial Network (GAN) Informed Burst Failure Risk Analysis of Oil and Gas Pipelines, *ASCE UESI Pipelines 2024*, Calgary, Canada, July 27-31.

2. **Mazumder, R. K.**, and Dutta, S. (2024). Post-Earthquake Community Functionality Analysis Considering Socioeconomic and Policy Context, *18th World Conference on Earthquake Engineering*, Milan, Italy, June 30 - July 5.

3. **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.

4. Rahimi, M., **Mazumder, R. K.**, Nofal, O. M., Padgettd, J. E., Rosenheim, N., Darestanif, Y. M., Sutley, E. J., van de Lindt, J. W., Peacock, W. G., and Hamideh, S. (2022). A multi-hazard hurricane recovery and restoration approach for the built environment, *13th Int. Conference on Structural Safety and Reliability 2021-2022*, June 22-24, Shanghai, China, https://www.researchgate.net/profile/Ram_Krishna_Mazumder

5. **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, https://par.nsf.gov/servlets/purl/10394601

6. 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, https://par.nsf.gov/servlets/purl/10394600

7. **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, tigerprints.clemson.edu

8. **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

9. **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

10. **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

11. **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

12. **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.

13. **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.

14. **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

15. **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.

16. **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 ASCE UESI Pipelines 2020]**.

17. **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 Proposals and Grants

1. Community Disaster Resilience Assessment by Integrating Functionality of Buildings and Critical Infrastructure Systems, PI: <u>Ram Mazumder</u>, Co-PI: Sohel Rana, and Subhrajit Dutta, Sponsor: Coalition for Disaster Resilient Infrastructure (CDRI), amount: $15,000, (July 2023 - June 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, <u>Ram Mazumder</u>, 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: <u>Ram Mazumder</u>, Co-PI: Elaina Sutley, Sponsor: Natural Hazards Center Weather-Ready Research, supported by National Science Foundation (NSF), amount:$2,500, (April - Sep 2021)

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

5. Structural Safety Assessment of Existing Buildings at CUET Campus - Phase I and II, PI: A. R. Bhuiyan, Co-PI: <u>Ram Mazumder</u>, 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: <u>Ram Mazumder</u>, Sponsor: University Grants Commission of Bangladesh, Scientific Grant - 2014, amount: $1,600, (Jan - Dec 2014).

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

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.

EQE 6302: Geotechnical Aspects of Earthquake Engineering Spring 2015

Course Description: Introduction to geotechnical earthquake engineering; plate tectonics, various types of earthquakes and faulting, ground motion parameters, fundamentals of waves propagation, magnitude and intensity scales, time histories, fourier and response spectra, site characterization; seismic hazard analysis.

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: Post-disaster Community Functionality Recovery, NIST

• Studied community resilience through the holistic integration of building functionality recovery, where the functionality of buildings is estimated by integrating structural performance, utility serviceability, and physical accessibility.

Project - 2: Assessing the Role of Social Vulnerability in Housing Functionality Recovery, NSF

• Assessing the role of household social vulnerability in post-disaster housing recovery. Studied residential building damage, household social vulnerability, probabilities of obtaining recovery resources, and household-level housing recovery.

Project - 3: Measuring Racial Inequities in Community Disaster Resilience and K-12 Student Homelessness, NIST

• Evaluated unevenness in the spatial distribution of damage, disparities in utility outages and restoration rates along socioeconomic and demographic lines, student dislocation and return, and students' long-term recovery following a hurricane.

Doctoral Research

Case Western Reserve University Aug. 2016 – July 2020

Advisor: Dr. Yue Li

Project : NSF Multi-agent Sustainable Water Decision Theory: Nexus Water, Road, & Social Contractual Systems

• Developed a physical probabilistic model for time-variant reliability analysis of water distribution systems.

• Formulated a python-based open-source tool to estimate seismic damage & renewal cost of water distribution systems.

• Developed seismic resilience and functionality analysis framework of water networks using probabilistic approaches.

• Formulated a post-disaster sequential recovery planning framework to find an optimal recovery path that maximizes the functionality of water distribution systems during the repair process.

• Developed a decision-support tool for interdependent water and road networks utilizing fuzzy hierarchical inference and complex network theory to prioritize maintenance tasks.

• Investigated the feasibility of machine learning applications in failure risk analysis of corroded steel pipelines.

Service and Outreach

Editorship
• **Associate Editor**, Journal of Pipeline Systems Engineering and Practice, ASCE (since March 2021)
• **Associate Editor**, Journal of Structural Design and Construction Practice, ASCE (since Oct 2024)
• **Associate Editor**, Frontiers in Built Environment (since May 2024)

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
• Journal of Cold Regions Science and Technology;   • Journal of Performance of Constructed Facilities

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:
• Chair, Research Symposium, ASCE UESI Pipelines Conference 2025
• Vice-Chair, Drinking Water Systems Assessment, ASCE Ohio Infrastructure Report Card Committee 2025
• Lead, Conference Opportunity Committee, ASCE UESI Pipelines Conference, since 2023
• Member, ASCE-UESI Younger Member Engagement Committee
• Member, ASCE-UESI Technical Committee on Seismic Design of Buried Pipelines
• 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

Volunteer and leadership activities:
• Vice-President of Student Life (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:
• Professional Engineering (PE Civil and Structural, State of Wyoming, License No. PE 20228)
• IAM Certificate, Institute of Asset Management (Reg. No. 6132571)
• Fundamentals of Engineering (FE)