

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

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## Education

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<b>Case Western Reserve University</b> , 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	
<b>University of Geneva</b> , Geneva, Switzerland	Apr. 2014 - Feb. 2015
Postgraduate Diploma, Geological and Climate Related Risk	
<u>Dissertation</u> : Fragility Analysis of Reinforced Concrete Frame Buildings.	
<b>Sapienza University of Rome</b> , 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.	
<b>Shahjalal University of Science and Technology</b> , Sylhet, Bangladesh	Jan. 2005 - June 2009
B.S., Civil and Environmental Engineering	

## Professional Experience

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<b>Asset Management Consultant/Structural Engineer</b>	Aug. 2022 - Present
National Asset Management Team	
Arcadis U.S. Inc., Midwest	
<b>Postdoctoral Researcher, NIST Center for Community Resilience Planning</b>	Aug. 2020 - July 2022
Dept. of Civil, Environmental & Architectural Engineering	
University of Kansas, Lawrence, Kansas	
<b>Graduate Research and Teaching Assistant</b>	Aug. 2016 - July 2020
Department of Civil Engineering	
Case Western Reserve University, Cleveland, Ohio	
<b>Assistant Professor</b>	May. 2013 - Aug. 2016
Institute of Earthquake Engineering Research	
Chittagong University of Engineering and Technology, Chittagong, Bangladesh	
<b>Research Engineer</b>	Oct. 2010 - Dec. 2011
Bangladesh University of Engineering and Technology, Dhaka, Bangladesh	
<b>Project Engineer</b>	June 2010 - Sep. 2010
Trust Alliance Technology Limited, Dhaka, Bangladesh	
<b>Structural Engineer</b>	July 2009 - May. 2010
Asian Disaster Preparedness Center, Dhaka, Bangladesh	

## Awards and Honors

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

## Publications

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### Peer-reviewed Journal Articles (Under Revision)

1. **Mazumder, R. K.**, Rana, S., Wang, X., Ansary, M. A. and Li, Y. (202X). Community-Level Seismic Risk, Resilience and Socioeconomic Consequence Assessment in Developing Countries: HAZUS Earthquake Model-Based Cost- Effective Framework and Application, *Natural Hazards Review, ASCE*.
2. **Mazumder, R. K.\***, and Sutley, E. J. (202X). Modeling the Influence of Social Vulnerability on Housing Functionality Restoration, *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*.

### Peer-Reviewed Journal Articles

3. **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.ijdr.2024.104929](https://doi.org/10.1016/j.ijdr.2024.104929)
4. 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*. doi:[10.1061/JWRMD5.WRENG-6256](https://doi.org/10.1061/JWRMD5.WRENG-6256)
5. **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](https://doi.org/10.1115/1.4062741)
6. **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](https://doi.org/10.1016/j.rcns.2023.07.005)
7. **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](https://doi.org/10.3389/fbuil.2023.1005264)
8. 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](https://doi.org/10.1016/j.rcns.2023.07.002)
9. 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](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003392) [2023 ASCE Beach Reads' Article]
10. **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](https://doi.org/10.1080/15732479.2020.1864415)
11. 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](https://doi.org/10.1061/JPSEA2.PSENG-1303)
12. 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](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000582)
13. 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](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000668)
14. **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](https://doi.org/10.1016/j.strusafe.2020.102047) [One of the most cited articles published in Structural Safety since 2019]

15. **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.jobbe.2021.103162](https://doi.org/10.1016/j.jobbe.2021.103162)
16. **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](https://doi.org/10.1061/(ASCE)WR.1943-5452.000136)
17. 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](https://doi.org/10.1061/AJRUA6.0001178)
18. **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](https://doi.org/10.1061/(ASCE)PS.1949-1204.0000487)
19. **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](https://doi.org/10.1061/(ASCE)PS.1949-1204.0000418) [Editor's Choice Article]
20. 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](https://doi.org/10.1016/j.ijdrr.2020.101569)
21. **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](https://doi.org/10.1061/(ASCE)WR.1943-5452.0001034)
22. **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](https://doi.org/10.1016/j.ijdrr.2018.11.023)
23. **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](https://doi.org/10.1061/(ASCE)IS.1943-555X.0000426)
24. **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>
25. **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>
26. **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>
27. **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)

28. 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](https://doi.org/10.1177/1475240920916046)
29. 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](https://doi.org/10.1007/978-3-319-70060-1)

## Journal Manuscript (In-Preparation)

1. **Mazumder, R. K.\*** and Li, Y. (202X). Risk-based Asset Management Planning of Water Distribution System Integrating Climate and Economic Justice Tool, to be submitted to *Nature Sustainability*.
2. Rana, S., **Mazumder, R. K.\***, Asadi, E., and Wang, X. (202X). Multi-Criteria Decision-Making Using AHP and Fuzzy-TOPSIS for Prioritizing Buildings for Seismic Rehabilitation, to be submitted to *Journal of Building Engineering*.
3. **Mazumder, R. K.\***, Roy, S., Kaddoura, K., and Koo, D. (202X). State-of-the-Art Review: Materials Characteristics of Water and Wastewater Mains, , to be submitted to *Journal of Pipeline Systems Engineering and Practice, ASCE*.
4. **Mazumder, R. K.\***, Roy, S., Chettri, S., Rana, S., and Dutta, S. (202X). Cyclone Resiliency Analysis for Coastal Community: A Scenario-based Recovery and Mitigation Planning, to be submitted to *Computer-Aided Civil and Infrastructure Engineering*.
5. Li, W., **Mazumder, R. K.\***, and Li, Y. (202X). Probabilistic Seismic Risk Analysis of Buried Water Pipelines, to be submitted to *Journal of Infrastructures Systems, ASCE*.
6. **Mazumder, R. K.\***, Enderami, S. A., Loerzel, J., and Sutley, E. J. (202X). Racial Equity and Historical Housing Disparities Impact on Present-Day Community Resilience, to be submitted to *Journal of Infrastructures Systems, ASCE*.
7. Ahmed M. A., **Mazumder, R. K.\*** and Li, Y. (202X). Development of Fragility Assessments of Glass Panels in Windows and Doors for Low Timber Buildings Subjected by Hurricane and Tornado Loading, to be submitted to *Journal of Structural Engineering, ASCE*.

**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 Socio-economic 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., Padgett, 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](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](https://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](https://doi.org/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](https://doi.org/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/ICASPI3.313](https://doi.org/10.22725/ICASPI3.313)
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](http://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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/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](https://doi.org/10.17603/ds2-5ysj-a554)

## Research Proposals 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, (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, 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 - 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 - 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 - Dec 2014).
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 - 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

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### 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-Linear 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**

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### **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**

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### **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

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### 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)
- **Guest Editor**, Structural Engineering International, Artificial Intelligence in Structural Engineering, November 2025

### 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:

- 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)