

Abdullahi M. Salman, Ph.D.

Assistant Professor, Department of Civil & Environmental Engineering

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Google Scholar: <https://scholar.google.com/citations?user=lmL1ifMAAAAJ&hl=en>

EDUCATION

Michigan Technological University Ph.D., Civil Engineering	Sep. 2014 – Aug. 2016
Michigan Technological University M.S., Civil Engineering (Structures)	Aug. 2012 – May 2014
Curtin University of Technology B.Eng., Civil and Construction First Class Honors	Mar. 2007 – Jan. 2011

RESEARCH INTERESTS

- Resilient and sustainable civil infrastructure systems
- Community resilience
- Probabilistic natural hazard modeling
- Structural reliability analysis
- Risk assessment and management of civil infrastructure systems
- Risk-based & multi-criteria decision making

ACADEMIC EMPLOYMENT

<i>Assistant Professor</i> Department of Civil & Env. Engineering, The University of Alabama in Huntsville Huntsville, Alabama, USA	Aug. 2018 - present
<i>Research Associate</i> Department of Civil Engineering, Case Western Reserve University Cleveland, Ohio, USA	Sep. 2016 – Aug. 2018
<i>Teaching and Research Assistant</i> Department of Civil & Env. Engineering, Michigan Technological University Houghton, Michigan, USA	Sep. 2014 – Aug. 2016

AWARDS AND FELLOWSHIPS

- Michigan Tech Doctoral Finishing Fellowship, 2016
- Outstanding Graduate Student Teaching Award, Michigan Tech, 2016
- Shin Yang Best Graduate for Civil and Construction Award, Curtin University, 2011
- Samling Best Student Award, Curtin University, 2011
- Best Oral Presentation Award, Curtin University Technology, Science & Engineering Conference 2010

RESEARCH PROJECTS, GRANTS, AND CONTRACTS

- Title:** Support Testing of Planetary 3D Printed Concrete Structures for Subscale Landing Pad Fabrication
Sponsor: National Aeronautics and Space Administration (NASA), Marshall Space Flight Center
Role: Co-Principal Investigator (PI – Dr. Judith Schneider)
Amount: \$99,986
Duration: 1 year (Starting 01/04/2021)
- Title:** Reliability Analysis and Load Combinations for Tornado Wind Loads in ASCE 7-22
Sponsor: Advanced Research Associates Inc
Role: Principal Investigator
Amount: \$3,000
Duration: 3 months (09/14/2020 – 11/30/2020)
- Title:** Data-driven Resilience Assessment of Road Networks Subjected to Natural Hazards
Program: UAH New Faculty Research Program
Sponsor: UAH Office of the Vice President for Research and Economic Development (OVPRED)
Amount: \$10,000
Duration: 12/14/2018 – 7/31/2020
- Title:** Simulating the Storm Surge from a Category 5 Hurricane Making Landfall in Mobile Bay, Alabama
Program: The Research and Creative Experience for Undergraduates (RCEU) Program at The University of Alabama in Huntsville
Role: Principal Investigator
Amount: -
Duration: Ten weeks

PUBLICATIONS AND PRESENTATIONS

Journal Publications (Published or accepted)

- Merschman, E.*, Salman, A. M., Bastidas-Arteaga, E., & Li, Y. (2020). Assessment of the Effectiveness of Wood Pole Repair Using FRP Considering the Impact of Climate Change on Decay and Hurricane Risk. *Advances in Climate Change Research*. <https://doi.org/10.1016/j.accre.2020.10.001>
- Salman, A. M., Salarieh, B.*, Bastidas-Arteaga, E., & Li, Y. (2020). Optimization of Condition-Based Maintenance of Wood Utility Pole Network Subjected to Hurricane Hazard and Climate Change. *Frontiers in Built Environment – Computational Methods in Structural Engineering*, 6(73). doi:10.3389/fbuil.2020.00073
- Mazumder, R.K., Salman, A.M., & Li, Y. (2020). Failure Risk Analysis of Pipelines using Data-Driven Machine Learning Algorithms. *Structural Safety*, 89, 102047.
- Mazumder, R.K., Salman, A.M., Li, Y. (2020). Post-Disaster Sequential Recovery Planning for Water Distribution Systems Using Topological and Hydraulic Metrics. *Structure and Infrastructure Engineering*. <https://doi.org/10.1080/15732479.2020.1864415>
- Mazumder, R.K., Salman, A.M., Li, Y., & Yu, X. (2020). Asset Management Decision Support Model for Water Distribution Systems: Impact of Water Pipe Failure on Road and Water Networks. *ASCE J. of Water Resources Planning and Management*. (Accepted)
- Asadi E., Shen, Z., Zhou, H., Salman, A.M., & Li, Yu. (2020). Risk-informed Multi-criteria Decision Framework for Resilience, Sustainability, and Energy Analysis of Reinforced Concrete Buildings. *Journal of Building Performance Simulation*. 13(6), 804-823.
- Mazumder, R.K., Fan, X., Salman, A.M., Li, Y., & Yu, X. (2020). A Framework for Seismic Damage and Renewal Cost Analysis of Buried Water Pipelines. *ASCE Journal of Pipeline Systems – Engineering and Practice*, 11(4), 04020038.

8. Merschman, E.*, Doustmohammadi, M., Salman, A.M., Anderson, M. (2020). A Post-Disaster Decision Framework for Bridge Repair Prioritization to Improve Road Network Resilience. *Transportation Research Record: Journal of the Transportation Research Board*. <https://doi.org/10.1177/0361198120908870>
9. Braik, A., Salman, A.M., & Li, Y. (2020). Reliability-Based Assessment and Cost Analysis of Power Distribution Systems at Risk of Tornado Hazard. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part A: Civil Engineering*. 6(2), 04020014.
10. Haque, D. M. E., Mimi, A., Mazumder, R. K., & Salman, A. M. (2020). Evaluation of natural hazard risk for coastal districts of Bangladesh using the INFORM approach. *International Journal of Disaster Risk Reduction*, 101569. <https://doi.org/10.1016/j.ijdr.2020.101569>
11. Asadi, E., Salman, A.M., & Li, Y. (2019). Multi-Criteria Decision-Making for Seismic Resilience and Sustainability Assessment of Diagrid Buildings. *Engineering Structures*. 191: 229-246.
12. Mazumder, R.K., Salman, A.M., Li, Y., & Yu, X. (2020). Seismic Functionality and Resilience Analysis of Water Distribution Systems. *ASCE Journal of Pipeline System Engineering & Practice*. 11(1).
13. Mazumder, R.K. & Salman, A.M. (2019). Seismic Damage Assessment Using RADIUS and GIS: A Case Study of Sylhet City, Bangladesh. *International Journal of Disaster Risk Reduction*. 34. DOI: <https://doi.org/10.1016/j.ijdr.2018.11.023>
14. Braik, A., Salman, A.M., & Li, Y. (2019). Risk-Based Reliability and Cost Analysis of Utility Poles Subjected to Tornado Hazard. *ASCE Journal of Aerospace Engineering*. 32(4).
15. Mazumder, R.K., Salman, A.M., Li, Y., & Yu, X. (2019). Reliability Analysis of Water Distribution Systems using Physically-based Pipeline Failure Method. *ASCE J. of Water Resources Planning and Management*. 145(2): 04018097.
16. Salman, A.M. & Li, Y. (2018). A Probabilistic Framework for Multi-Hazard Risk Mitigation for Electric Power Systems Subjected to Seismic and Hurricane Hazards. *Structure & Infrastructure Engineering*. 14(11): 1499-1519.
17. Salman, A.M. & Li, Y. (2018). Flood Risk Assessment, Future Trend Modeling, and Risk Communication: A Review of Ongoing Research. *Natural Hazards Review, ASCE*. 19(3): 04018011.
18. Mazumder, R.K., Salman, A.M., Li, Y., & Yu, X. (2018). Performance Evaluation of Water Distribution Systems and Asset Management. *ASCE Journal of Infrastructure Systems*, 24(3): 03118001.
19. Salman, A. M., Li, Y., & Bastidas-Arteaga, E. (2017). Maintenance Optimization for Power Distribution Systems Subjected to Hurricane Hazard, Timber Decay and Climate Change. *Reliability Engineering & System Safety*. 168: 136-149.
20. Salman, A. M. & Li, Y. (2018). A Framework to Investigate the Effectiveness of Interconnection of Power Distribution Systems Subjected to Hurricanes. *Structure & Infrastructure Engineering*. 14(2): 203-217.
21. Salman, A.M. & Li, Y (2017). Multihazard Risk Assessment of Electric Power Systems. *ASCE Journal of Structural Engineering*, 143(3), 04016198.
22. Salman, A. M. & Li, Y. (2017). Assessing Climate Change Impact on System Reliability of Power Distribution Systems Subjected to Hurricanes. *ASCE Journal of Infrastructure Systems*, 23(1), 04016024.
23. Salman, A. M. & Li, Y. (2016). Age-dependent Fragility and Life-cycle Cost Analysis of Wood and Steel Power Distribution Poles Subjected to Hurricanes. *Structure & Infrastructure Engineering*, 12(8), 890-903.
24. Salman, A. M., Li, Y., & Stewart, M. G. (2015). Evaluating System Reliability and Targeted Hardening Strategies of Power Distribution Systems Subjected to Hurricanes. *Reliability Engineering & System Safety*. 144: 319-333.
25. Jayakumar, M. & Salman, A. M. (2011). Experimental Study on Sustainable Concrete with the Mixture of Low Calcium Fly Ash and Lime as a Partial Replacement of Cement. *Advanced Materials Research*, (250-253): 307-312.

Peer-Reviewed Conference Proceedings

1. Mazumder, R. K., Salman, A. M., Li, Y. (2020). Age-dependent Fragility Analysis of Underground Oil and Gas Pipelines. The 14th International Conference on Computational Structures Technology. Mallorca, Spain, September 8-10, 2020 (in review)
2. Asadi E., Shen, Z., Zhou, H., Salman, A.M., & Li, Yu. (2020). Life-Cycle Resilience and Sustainability Assessment of Reinforced Concrete Buildings with Thermal-Mass Shear Walls. *The Seventh International Symposium on Life-Cycle Civil Engineering*. Shanghai, China - October 27-30, 2020. (Paper accepted)
3. Mazumder, R. K., Salman, A. M. & Li, Y. (2019). Reliability Assessment of Corroded Water Distribution Infrastructure. *UESI Pipelines Conference*. Nashville, Tennessee, July 21-24, 2019.
4. Salman, A. M., Li, Y., & Bastidas-Arteaga, E. (2019). System-level Maintenance Optimization for Power Distribution Systems Subjected to Hurricanes. *13th International Conference on Applications of Statistics and Probability in Civil Engineering*. Seoul, South Korea, 26-30 May 2019. <http://hdl.handle.net/10371/153432>
5. Mazumder, R.K., Salman, A.M., Li, Y., & Yu, X. (2019). A Decision-making Framework for Water Distribution Systems using Fuzzy Logic and Centrality Analysis. *13th International Conference on Applications of Statistics and Probability in Civil Engineering*. Seoul, South Korea, 26-30 May 2019. URL: <http://hdl.handle.net/10371/153463>
6. Mortazavi, M., Heo, Y., & Salman, A.M. (2019). Sensitivity of Vapor Cloud Explosion Exceedance Analysis to the Ignition Probability Model for Offshore Process Systems. *13th International Conference on Applications of Statistics and Probability in Civil Engineering*. Seoul, South Korea, 26-30 May 2019. <http://hdl.handle.net/10371/153518>
7. Salman, A. M., Li, Y., & Bastidas-Arteaga, E. (2018). Impact of Climate Change on Optimal Wood Pole Asset Management. *6th International Symposium on Life-Cycle Civil Engineering*. Ghent Belgium, 28-31 October 2018.
8. Salman, A.M. & Li, Y (2017). Multi-Hazard Risk Assessment of Electric Power Systems Subjected to Seismic and Hurricane Hazards. *16th World Conference on Earthquake Engineering*. Santiago Chile, January 9-13, 2017.
9. Salman, A. M. & Li, Y. (2017). Evaluating Climate Change Risk and Adaptation Strategies for Power Distribution Systems Subjected to Hurricanes. *12th International Conference on Structural Safety & Reliability*. Vienna, Austria. 6 – 9 August 2017.
10. Salman, A. M. & Li, Y. (2017). A probabilistic Framework for Seismic Risk Assessment of Electric Power Systems. *X International Conference on Structural Dynamics, EURO DYN 2017*. Rome, Italy. 10 – 13 September 2017.

Non-peer-reviewed Conference Proceedings & Presentations

11. Mazumder, R. K., Salman, A. M., Li, Y., Yu, X. (2020). Seismic Damage and Renewal Cost Analysis of Buried Water Pipelines: A Python-based Computational Framework. *ASCE UESI Pipelines Conference*. San Antonio, Texas, August 9 - 12, 2020. (Won Best Poster Award)
12. Merschman, E.*, Doustmohammadi, M., Salman, A.M., Anderson, M. (2019). A Post-Disaster Decision Framework for Selection of Bridge Rehabilitation for Disrupted Transportation Networks. *Transportation Resilience 2019: An International Conference on Natural Hazards and Extreme Weather Events*. Washington, DC, November 13-15, 2019.
13. Asadi, E., Shen, Z., Zhou, H., Salman, A.M. and Li, Y. (2018). Multi-Criteria Decision Model for Risk-Based Life-Cycle Assessment of Building Structures. *The Future Smart and Resilient City*, Rice University, Houston, Texas, Oct. 4, 2018.
14. Salman, A. M., Li, Y., & Li, Q. (2018). Targeted Hardening of Electric Power Distribution Systems under Hurricane Hazard. *Structures Congress 2018*. Fort Worth, Texas, April 19–21, 2018.
15. Mazumder, R. K., Salman, A. M. & Li, Y. (2018). Risk and Resilience of Aging Water Distribution Systems. *Structures Congress 2018*. Fort Worth, Texas, April 19–21, 2018.

16. Salman, A. M. & Li, Y. (2017). Seismic Risk Assessment of Spatially Distributed Infrastructure Systems: Comparing Two Approaches. International Conference on Structural Engineering Dynamics, ICEDyn 2017. Ericeira, Portugal. 3 – 5 July, 2017.
17. Salman, A. M. & Li, Y. (2017). Uncertainty Quantification in Modeling the Impact of Climate Change on Hurricane Hazard. 2nd International Conference on Uncertainty Quantification in Computational Sciences and Engineering UNCECOMP 2017. Rhodes Island, Greece. 15-17 June 2017.
18. Salman, A. M. & Li, Y. (2016). A Probabilistic Framework for Comparing the Reliability of Wood and Steel Power Distribution Poles Subjected to Hurricanes. *16th Asian-Pacific Symposium on Structural Reliability and its Application*. Shanghai, China. 28-30 May 2016.
19. Salman, A. M. & Li, Y. (2016). Impact of Climate Change on Reliability of Electric Power Distribution Systems Subjected to Hurricanes in Coastal Regions. *OCEANEXT Interdisciplinary Conference*. Nantes, France. 8 – 10 June 2016.
20. Salman, A. M. & Fang, S. (2016). Quantification of Uncertainty in Probabilistic Seismic Risk Assessment of Electric Power Systems. *MAA MathFest*. Columbus, Ohio. 3 – 6 Aug. 2016.
21. Salman, A. M. (2010). Study on High Strength Concrete with Low Calcium Fly Ash and Lime. *Curtin University of Technology Science and Engineering Conference 2010*. Miri, Malaysia. 29 – 30 November 2010.

Reports

1. Marshall, Justin; Smith, Daniel; Lyda, Andrew; Roueche, David; Davis, Brett; DJIMA, Wilfrid; Heo, YeongAe; Kijewski-Correa, Tracy; Moravej, Mohammadtaghi; Rittelmeyer, Brandon; Salman, Abdullahi; Prevatt, David; Robertson, Ian; Mosalam, Khalid (2019) "StEER - Hurricane Dorian: Field Assessment Structural Team (FAST-1) Early Access Reconnaissance Report (EARR)." DesignSafe-CI. <https://doi.org/10.17603/ds2-4616-1e25>.
2. Roueche, David; Cleary, John; Barnes, Robert; Davis, Brett; Marshall, Justin; Rittelmeyer, Brandon; Smallegan, Stephanie; Guo, Yanlin; Hodges, Courtney; Kijewski-Correa, Tracy; Salman, Abdullahi; Turner, Kelly; Merschman, Eric; mulchandani, Harish; Prevatt, David; Robertson, Ian; Mosalam, Khalid (2019) "StEER - 3 March 2019 Tornadoes in the Southeastern US: Field Assessment Structural Team (FAST) Early Access Reconnaissance Report (EARR)." DesignSafe-CI. <https://doi.org/10.17603/ds2-qav0-t570>.
3. Roueche, David; Cleary, John; Gurley, Kurtis; Marshall, Justin; Pinelli, Jean-Paul; Prevatt, David; Smith, Daniel; Alipour, Alice; Angeles, Karen; Davis, Brett; Gonzalez, Camila; Lenjani, Ali; mulchandani, Harish; Musetich, Matthew; Salman, Abdullahi; Kijewski-Correa, Tracy; Robertson, Ian; Mosalam, Khalid, (2018-10-25), "StEER - HURRICANE MICHAEL: FIELD ASSESSMENT TEAM 1 (FAT-1) EARLY ACCESS RECONNAISSANCE REPORT (EARR)" , DesignSafe-CI [publisher], Dataset, doi:10.17603/DS2G41M
4. Alipour, Alice; Aly, Aly Mousaad; Davis, Brett; Gutierrez Soto, Mariantonieta; Kijewski-Correa, Tracy; Lenjani, Ali; Lichty, Benjamin; Miner, Nathan; Roueche, David; Salman, Abdullahi; Smith, Daniel; Sutley, Elaina; Mosalam, Khalid; Prevatt, David; Robertson, Ian, (2018-10-19), "STEER - HURRICANE MICHAEL: PRELIMINARY VIRTUAL ASSESSMENT TEAM (P-VAT) REPORT" , DesignSafe-CI [publisher], Dataset, doi:10.17603/DS2RH71
5. Kijewski-Correa, Tracy; Prevatt, David; Musetich, Matthew; Roueche, David; Mosalam, Khalid; Hu, Fan; Salman, Abdullahi; Peng, Han; Gonzalez, Camila; Robertson, Ian, (2018-09-25), "HURRICANE FLORENCE: FIELD ASSESSMENT TEAM 1 (FAT-1) EARLY ACCESS RECONNAISSANCE REPORT (EARR)" , DesignSafe-CI [publisher], Dataset, doi:10.17603/DS2TT3G

TEACHING EXPERIENCE

Assistant Professor, The University of Alabama in Huntsville Aug. 2018 – present
CE 484/584 – Steel Design
CE 483/583 – Reinforced Concrete Design
CE 380 – Civil Engineering Materials
CE 659 – Probabilistic Analysis & Reliability in Civil Engineering

Sub Instructor, Case Western Reserve University Oct. 2016 – Aug. 2018
ECIV 310 – Strength of Materials
ECIV 426 – Probability Analysis
ECIV 424 – Structural Dynamics

Graduate Teaching Assistant, Michigan Technological University Aug. 2015 – May 2016
CE 4213 - Structural Concrete Design
CE 4223 - Steel Design I

SUPERVISING AND MENTORING ACTIVITIES

The University of Alabama in Huntsville Aug. 2018 - present

- Ph.D. students: two (ongoing)
- Master's students: two (ongoing)
- Undergraduate students: one (one ongoing)
- RCEU student (one – summer 2020)

PROFESSIONAL EXPERIENCE

Road Sector Development Team – Federal Ministry of Works Abuja, Nigeria
Assistant Engineer Apr. 2011 – Apr. 2012

Bina Puri Construction Sdn. Bhd. Kota Kinabalu, Malaysia
Intern Dec. 2009 – Feb. 2010

TECHNICAL ACTIVITIES AND SERVICE

Conference and Symposium Organization

- Organizing a mini-symposium at ICOSSAR 2021 titled “Advances on probabilistic life-cycle analysis of deteriorating infrastructure”

Service in Professional Organizations

- Member - Multihazard Mitigation Committee, Structural Engineering Institute – American Society of Civil Engineers (ASCE).
- Secretary – ASCE/SEI Technical Council on Risk Assessment of Structural Infrastructure Facilities and Risk-Based Decision Making
- Member – Structural Extreme Event Reconnaissance (StEER) Network
- Member - Nearshore Extreme Events Reconnaissance (NEER) Association

Service at UAH

- Member – Faculty Senate (2019 – date)
 - Member – Faculty and Student Development Committee
- Member - CEE graduate education committee

Editorial

- Early Career Editorial Board Member – ASCE Natural Hazards Review

Peer reviewer for:

- Transportation Research Record
- Mathematical Problems in Engineering
- SN Applied Sciences
- Reliability Engineering & System Safety
- ASCE Journal of Infrastructure Systems
- ASCE Journal of Computing in Civil Engineering
- Engineering Structures
- IEEE Transactions on Power Delivery
- Frontiers in Built Environment – Bridge Engineering
- Frontiers in Built Environment – Computational Methods in Structural Engineering

Professional memberships

- American Society of Civil Engineers (ASCE)
- American Institute of Steel Construction (AISC)
- American Concrete Institute (ACI)

Certifications:

- Fundamentals of Engineering (FE), Michigan PE Board, October 2013

PROFESSIONAL DEVELOPMENT

- Workshop on Artificial Intelligence in Natural Hazards Engineering organized by the NHERI DesignSafe at the Texas Advanced Computing Center (TACC). February 18-19, 2020. University of Texas, Austin.
- The FIU NHERI Wall of Wind (WOW) Experimental Facility (EF) and the Lehigh NHERI Advanced Technology for Large Structural Systems (ATLSS) user workshop, Dec 6-7, 2018, Florida International University.
- RAPID Natural Hazard Reconnaissance Equipment Training Workshop, July 23-26, 2019, University of Washington.
- NSF NHERI Experimental Facility workshop, July 31-August 1, Oregon State University.

COMMUNITY ENGAGEMENT AND OUTREACH

- Member – Alabama Coastal Foundation