

## HUSSAM N. MAHMOUD, Ph.D., F. SEI

Department of Civil and Environmental Engineering  
Colorado State University  
Fort Collins, CO 80523-1372

Phone: (970) 491-6605

Fax: (970) 491-7727

Email: [hussam.mahmoud@colostate.edu](mailto:hussam.mahmoud@colostate.edu)  
<http://www.engr.colostate.edu/~hmahmoud/>

### **BIOGRAPHICAL SUMMARY**

Dr. Hussam Mahmoud is the *George T. Abell Professor of Infrastructure* in the Department of Civil Engineering at Colorado State University (CSU). He is the director of the Structural Laboratory at CSU. He is also the current advisor for the Steel Bridge competition and a former academic advisor for the ASCE Student Chapter. Before arriving at CSU, Dr. Mahmoud was the manager of the Network for Earthquake Engineers Simulation (NEES) Laboratory at the University of Illinois at Urbana-Champaign (UIUC), where he oversaw and conducted various large-scale hybrid simulations. Before joining UIUC, he was a research scientist at Lehigh University, where he managed and led various projects pertaining to the assessment and repair of civil infrastructure through laboratory testing and structural health monitoring.

Dr. Mahmoud has directly procured ~\$11.27M in external research funding (\$8.87M as PI, 0.7M as Co-PI, \$1.7M as Senior Personnel) out of ~\$50.98M in externally funded research. He **publishes** the results of his research in broad impacts journals such as Nature Climate Change, Nature Communications, PNAS, PNAS Nexus, and AGU Earth's Future. In addition, Dr. Mahmoud publishes in the most highly regarded journals in his field, such as Computer-Aided Civil and Infrastructure Engineering, ASCE Journal of Structural Engineering, ASCE Journal of Engineering Mechanics, Structural Safety, and Reliability Engineering and System Safety.

Dr. Mahmoud's current research group is focused on establishing *Socio-Physical and Hazard-Integrated Environments (SoPHIE)* under the theme of *Sustainable and Resilient Infrastructure and Communities*, focusing on establishing new frameworks for functionality recovery, performance-based design, and life-cycle analysis for the built environment and communities subjected to natural disasters and deterioration with considerations to climate change. **Three major thrusts** encompassing Dr. Mahmoud's research include conducting system-level sustainability and resilience analysis, quantifying building damage to extreme single and multiple hazards, and repairing and managing deteriorated infrastructure. The **first** research thrust pertains to spatial and temporal quantification of the resilience and the tradeoffs between sustainability and resilience for communities subjected to extreme natural hazards. This research is focused on establishing new procedures for estimating social and economic recovery trajectories of communities after major events, focusing on social institutions and critical facilities including health care systems.

The **second** research thrust focuses on assessing and developing resilient and sustainable structural systems subjected to natural and man-made hazards, including *single and multiple hazards*. This is accomplished by devising new structural systems and establishing new performance-based design and life-cycle analysis frameworks for systems subjected to fire, blasts, earthquakes, and wind loading. Various tools are utilized in Dr. Mahmoud's research to assess structures under extreme demands, including small and large-scale testing and advanced numerical and analytical simulations. Testing includes cyclic, pseudo-dynamic, hybrid simulations, shake table, and testing under elevated temperatures.

The **third** major thrust pertains to infrastructure deterioration, repair, failure, and management under high and low-cycle fatigue. Experimental testing and analytical methods are used to understand the behavior of structures and connections. Methods for upgrading infrastructure include the use of carbon fibers for repairing deteriorated infrastructure. He has conducted various studies on the assessment and management of hydraulic steel structures and major bridges across the U.S. and has proposed proto-type retrofits that have successfully been implemented on many bridges around the county.

Dr. Mahmoud **presents** his work frequently at national and international conferences and through invited keynotes, distinguished talks, and panels at venues such as the 27<sup>th</sup> and the 28<sup>th</sup> Conference of the Parties of

the UNFCCC (UN Climate Change Conference of the Parties, COP27 and COP28, The 2022/2023 UNESCO's African Continental Conference on Basic Science for Transformation, U.S. National Academies of Sciences Engineering and Medicine, the Royal Academy of Engineering, and the Royal Institute of International Affairs through the Chatham House's Hoffmann Centre for Sustainable Resource Economy. He chaired and organized numerous sessions at conferences, including those at the InterAcademy Partnership of the Senior Academies, the Worldwide Young Academies, the U.S. National Academies of Sciences Engineering and Medicine, the American Society of Civil Engineers, the National Center for Disaster Medicine and Public Health. He served as a **co-chair** of the 2019 National Academies Arab-American Frontiers Symposium held in Cairo, Egypt. He has been selected as a member and appointed co-chair of the U.S. National Academies Second Cohort of the New Voices in Science, Engineering, and Medicine. He is also leading the climate initiative within the Cohort. Dr. Mahmoud has been invited as a delegate to represent NASEM at different events including the G7 Summit on One Health organized by the Royal Society of Canada. He has also been invited to join a **working group and serve as a reviewer** for the World Health Organization (WHO) for the development of a guidance on risk and vulnerability assessment in communities, FEMA to evaluate their wildfire mitigation assessment studies, and the National Institute of Building Science (NIBS) to review their developed methodology for the assessment of natural hazard mitigation needs. He serves as an **advisor** to the World Bank on various critical infrastructure issues. He has also supported the Climate Resilience guide for the Smithsonian Institute as part of the Science for Global Goals Community Research Guides.

Dr. Mahmoud's work has received various **media coverage** through citations and interviews including The Lancet, Nature, Nature Climate Change, The U.N. Office for Disaster Risk Reduction, The U.S. National Academy of Engineering, The Smithsonian Magazine, CNN, BBC London, CBS Denver, CBS Business Insider, Yale Climate Connections, Forbes, among others.

Dr. Mahmoud serves on the **editorial board of various journals**, including Nature Scientific Reports, PLOS ONE, Structural Safety, Sustainable and Resilient Infrastructure, and Journal of Earthquake Engineering, and has served as a guest editor, associate editor, and technical reviewer for various reputable journals. He is the current elected chair of the ASCE Committees on Multi-Hazard Mitigation, the past elected chair of the ASCE Committees on Fatigue and Fracture and the ASCE Committee on Steel Bridges, and currently a member of the ASCE Committee on Performance-Based Design, the Engineering Mechanics Institute Committee on Objective Resilience, and the Steel Bridge Task Force of AISI. He is also a Board member of the American Metrological Society (AMS).

Dr. Mahmoud has experience **teaching** undergraduate and graduate structural engineering courses and has developed new graduate courses that directly tie to his group's research. Examples of graduate courses include Structural Dynamics and Earthquake Engineering (CIVE 767), Fundamentals of Vibrations (CIVE 562), and Fire Dynamics and Engineering (CIVE 580A7), with the latter course covering a wide range of topics pertaining to fire dynamics, structural fire engineering, and wildland-urban interface fires.

## **SYNERGISTIC ACTIVITIES**

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Dr. Mahmoud is the director of the Structural Laboratory at the Engineering Research Center at Colorado State University. He has substantially advanced the laboratory's capabilities by developing a large-scale temperature testing facility that is being used to evaluate structural response under elevated temperatures. The laboratory is also equipped with a uniaxial shake table, which was reconfigured, and its substructure redesigned by Dr. Mahmoud to withstand large amplitude cycles. In addition, state-of-the-art wind tunnels are available for wind loading simulations. With the current advances in testing capabilities, the structural laboratory at CSU can now be utilized for multi-hazard research under fire, seismic, and wind loadings to reduce the risk of structural failures under individual or combined hazards in support of more resilient communities. The laboratory has also been configured to conduct hybrid simulations under fire and fire following earthquakes.

In the field of **community resilience**, Dr. Mahmoud is currently part of a national effort to develop physics-based models to predict the recovery of communities following extreme hazards through a new \$40 million NIST-funded Center of Excellence for Risk-Based Community Resilience Planning, led by Colorado State University (10 years project ending 2025). Through this effort, he is responsible for developing a new framework for assessing **education and healthcare system functionality** following natural disasters. His efforts within the center also include developing new models to assess **communities' risk to wildfires** and understand the recovery trajectory of critical infrastructure following extreme events. He is also leading a major task on the resilience of coastal industrial communities to climate change and research projects pertaining to linking community resilience goals to individual building performance objectives.

In the field of **multi-hazards**, Dr. Mahmoud's current research includes the evaluation of **structural systems under earthquakes, winds, and fires with additional recent studies on blast and flooding**. The emphasis is on developing new performance-based design approaches that will result in safe and cost-effective systems. These performance-based approaches hinge on accurate predictions of structural response, which is another focus of Dr. Mahmoud's research. He is currently integrating newly developed fracture models that can be used to predict failures under extreme demands, including connection fracture and system collapse. Expanding on existing fracture models that account only for axial tension loading, the new models incorporate axial tension and shear cycles. In doing so, a more comprehensive range of stress triaxialities is investigated under realistic loading conditions. Moreover, experimental studies are conducted to assess structural components and systems under the abovementioned extreme events.

In the area of **infrastructure deterioration**, Dr. Mahmoud is currently conducting research to evaluate alternative **underwater fatigue retrofit methodologies for deteriorated steel structures**. In addition, various new studies are ongoing to assess **the multi-axial fatigue behavior of different structural components and systems utilized in harsh environmental conditions**. The results of the ongoing tests and numerical analysis are being used for devising new inspection and repair plans for deteriorated structures that are based on minimum life-cycle cost analysis. In addition, ongoing research is being conducted to evaluate the effect of deteriorated bridge joints on the life-cycle cost of bridges while accounting for the inspection, maintenance, and repair costs.

Dr. Mahmoud is currently **mentoring** six students from underrepresented groups. He is the previous **academic advisor** for the ASCE Student Chapter and the current advisor for the Steel Bridge at CSU. He is/was responsible for various activities, including organizing the 2014 ASCE regional competition at CSU. He served on the Graduate Admission committee and the Qualifying Exam Committee and currently serves on the Graduate Instruction Committee, the Diversity and Inclusion Committee, and the College Curriculum Committee. In addition, he has assisted with the applications of his students, resulting in numerous scholarships and awards from various organizations, including AISC, ASCE, industry, and CSU. Moreover, Dr. Mahmoud has hosted various international professors and visiting scholars. *He has graduated 36 M.S. and 8 Ph.D. students and currently hosting 2 post-docs and advising 6 Ph.D. and 1 M.S. students, 5 of whom are women.*

## EDUCATION

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<b>Ph.D.</b>	Civil Engineering University of Illinois, Urbana-Champaign, IL Thesis title: " <i>Seismic Behavior of Semi-Rigid Steel Frames</i> " Thesis Advisor: Amr Elnashai	Aug 2011
<b>M.S.</b>	Civil Engineering University of Minnesota, Minneapolis, MN Thesis title: " <i>Fatigue Crack Propagation in Welded Stiffened Center-Crack Tension Panels</i> " Thesis Advisor: Robert Dexter (deceased)	Aug 2003

**B.S.** Civil Engineering Feb 2001  
*Magna Cum Laude*  
 University of Minnesota, Minneapolis, MN

### **RESEARCH INTEREST**

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- Community resilience quantification and assessment.
- Hazard assessment, structural response, and mitigation.
- Structural performance under multiple extreme hazards.
- Infrastructure deterioration and fracture assessment.
- Inspection and management of civil infrastructure.
- Lifecycle of infrastructure as influenced by deterioration and subjected to service or extreme loads.

### **PROFESSIONAL EXPERIENCE**

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<p><i>George T. Abell Professor of Infrastructure</i>            Director, Structural Laboratory            Department of Civil and Environmental Engineering            Colorado State University</p>	<p>Aug 2018 ~ Present</p>
<p>Professor            Director, Structural Laboratory            Department of Civil and Environmental Engineering            Colorado State University</p>	<p>July 2022 ~ Present</p>
<p>Associate Professor            Director, Structural Laboratory            Department of Civil and Environmental Engineering            Colorado State University</p>	<p>July 2017 ~ July 2022</p>
<p>Visiting Scholar            Department of Civil Engineering            Tsinghua University</p>	<p>Summer 2017</p>
<p>Assistant Professor            Director, Structural Laboratory            Department of Civil and Environmental Engineering            Colorado State University</p>	<p>Aug 2011 ~ Jun 2017</p>
<p>Air Force Faculty Fellow            AFIT Wright Paterson Laboratory, Ohio</p>	<p>Jun 2014 ~ Aug 2014</p>
<p>Graduate Research Assistant            The University of Illinois at Urbana-Champaign</p>	<p>Aug 2008 ~ Jun 2011</p>
<p>Operations Manager for NEES@UIUC            The University of Illinois at Urbana-Champaign</p>	<p>Oct 2006 ~ Aug 2008</p>
<p>Research Engineer            ATLSS Center at Lehigh University</p>	<p>Aug 2003 ~ Oct 2006</p>
<p>Graduate Research Assistant            University of Minnesota</p>	<p>Aug 2001 ~ Jun 2003</p>

**RECOGNITIONS, AWARDS, AND SCHOLARSHIPS**

- 2024 Fellow, The US National Academies First Connections to Sustain Science in Latin America Symposium, Barranquilla, Colombia.
- 2024 Invited Member, Sigma Xi Honor Society.
- 2024 Selected member (extended from cohort Two) and Appointed Co-Chair of the U.S. National Academies Third Cohort of the New Voices in Science, Engineering, and Medicine.
- 2023 Invited Speaker – TEDx - [Wildfires and Pandemics](#) (TEDxMileHigh, Denver, CO).
- 2023 Fellow of the Structural Engineering Institute (SEI).
- 2022 Appointed Co-Chair of the U.S. National Academies Second Cohort of the New Voices in Science, Engineering, and Medicine.
- 2022 Fellow, First U.S.-Africa National Academies of Sciences, Engineering and Medicine's Symposium, Nairobi, Kenya.
- 2022 Best Paper of the Year – Fire Technology Journal: Framework for Post-Wildfire Investigation of Buildings: Integrating LiDAR Data and Numerical Modeling.
- 2021 Member of the U.S. National Academies Second Cohort of the New Voices in Science, Engineering, and Medicine (SEM) to Engage a Broad and Diverse Network of Outstanding and Emerging Leaders working in SEM fields Across the U.S (total of 22 members).
- 2021 George T. Abell Outstanding Mid-Career Faculty Award, Walter Scott Jr. College of Engineering, Colorado State University.
- 2021 Meroney Family Chi Epsilon Teaching Award, Department of Civil and Environmental Engineering, Colorado State University.
- 2021 Hosted by the National Research Center of Egypt in a webinar titled "Successful Egyptians Abroad" [https://www.youtube.com/watch?v=ELAAoRCfMVM&ab\\_channel=Conferenceunit](https://www.youtube.com/watch?v=ELAAoRCfMVM&ab_channel=Conferenceunit).
- 2021 Honorary Member of the Conference Focus Unit (CFU) HUB, National Research Center of Egypt.
- 2021 Best Paper Award, International Conference on Advances in Structural Mechanics and Applications (ASMA 2021), National Institute of Technology Silchar.
- 2020 Selected by the U.S. National Academy of Sciences to be a mentor for the COVID-19 "Jamming the Curve" Competition.
- 2020 Selected by the U.S. National Academy of Engineering to be a mentor for the "COVID-19 Call for Action Team" Competition.
- 2020 The Global Challenges Research Award from the School of Global Environmental Sustainability: Resilient Industry Supply Chains (RISC).
- 2020 Editor Choice – Nature Scientific Report: Unraveling the Complexity of Wildland Urban Interface Fires.
- 2019 Featured (Successful Egyptians Abroad) in Half a Page in Al-Ahram Newspaper, Ranked 1<sup>st</sup> Newspaper in Egypt.
- 2019 Fellow, Arab-American National Academies of Sciences, Engineering and Medicine's Symposium, Cairo, Egypt: *Symposium Co-Chair (Representing the U.S. Side)*.
- 2019 *Distinguished Lecture*: Vulnerability of Communities to Extreme Events: System of Systems Approaches, College of Engineering, New Mexico State University.
- 2019 Fellowship provided by the U.S. National Academies: Seismic Resilience of Schools & Hospitals in Algeria.
- 2018 George T. Abell Professor of Infrastructure, Civil & Environmental Engineering, Colorado State University.
- 2018 Montfort Professor Nominee (one of the only two nominations submitted by the College of Engineering for CSU-wide Professorship).
- 2018 First Bell: American Society of Engineering Education: Innovative Approaches for Sustainable and Resilient Communities <https://www.engr.colostate.edu/innovative-approaches-to-modeling-community-resilience/>
- 2018 Fellow, Arab-American National Academies of Sciences, Engineering and Medicine's

- Symposium, Kuwait, Kuwait: *Organizing committee member – Co-chairing a session on Next Generation Buildings & Infrastructure.*
- 2018 Invited to the Annual CSU 1870 Dinner to Present our Recent Research on Hurricane Impact Assessment, Fort Collins, CO.
- 2017 Fellow, U.S. National Academy of Engineering's 2017 China-America Frontiers of Engineering Symposium, Shanghai, China.
- 2017 Terry Peshia Early Career Faculty Award, American Institute of Steel Construction.
- 2016 Fellow, Arab-American National Academies of Sciences, Engineering and Medicine's Frontiers Symposium, Abu Dhabi, U.A.E.
- 2016 Outstanding Faculty Performance Award, Civil & Environmental Engineering, Colorado State University.
- 2015 Fellow, U.S. National Academy of Engineering's 2015 U.S. Frontiers of Engineering Symposium, National Academies' Beckman Center in Irvine, CA.
- 2015 Faculty Award for Excellence in Research, Civil & Environmental Engineering, Colorado State University.
- 2014 George T. Abell Outstanding Early-Career Faculty Award, College of Engineering, Colorado State University.
- 2014 Recipient of the Robert J. Dexter Memorial Lecture (selection made by committees from the American Iron and Steel Institute (AISI) and the American Association of State Highway (AASHTO) and Transportation Officials).
- 2014 Air Force Faculty Fellow/AFIT Wright Paterson Laboratory: Development of Corrosion Fatigue Models for Aging Aircrafts, Ohio.
- 2012 ASCE ExCEED Teaching Fellow, American Society of Civil Engineers.
- 2012 United States Delegate Invitee to the Second US-PRC Young Researcher's Earthquake Engineering Forum, Harbin, China.
- 2010 NEES Media Award – Beam-Column Connection Test (<https://cee.illinois.edu/news/nees-site-receives-media-awards>).
- 2010 Best Presentation Award in recognition of Outstanding Contributions by a Young Researcher, 5th International Conference on Urban Earthquake Engineering and 7th International Conference on Earthquake Engineering, Tokyo Institute of Technology.
- 2009 Tokyo Institute of Technology Travel Award, to attend the 5th International Conference on Urban Earthquake Engineering and the 7th International Conference on Earthquake Engineering, Tokyo Institute of Technology.
- 2003 Phi Beta Delta International Scholar.
- 2002 Travel Award to attend the Transportation Research Board Conference in Washington DC, Department of Civil & Environmental Engineering, University of Minnesota.
- 2002 The Claire and Simon Benson Award for Outstanding Performance, University of Minnesota.
- 2002 Graduated Magna Cum Laude, Institute of Technology, University of Minnesota
- 2002 Honor Graduate, University of Minnesota.
- 2001 Outstanding Achievement Award, ASCE Minnesota Chapter, University of Minnesota.
- 2001 Fellowship, ASCE Minnesota Chapter, University of Minnesota.
- 2001 James Grant Waits Scholarship, University of Minnesota.
- 2001 Minnesota Surveyors and Engineer Society Scholarship, University of Minnesota.
- 2001 National Dean's List.
- 2001 Dean's List, Fall Semester, University of Minnesota.
- 2000 Dean's List Fall, University of Minnesota.
- 2000 SEEDS, "Growing our Own Talent," recipient, Minnesota Department of Transportation.
- 2000 Sommerfeld Scholarship, University of Minnesota.
- 2000 National Dean's List.
- 2000 Tau Beta Pi Honor Society.
- 2000 Ulland Scholarship, University of Minnesota.

- 2000 Chi-Epsilon Honor Society.  
 1999 Dean’s List, Fall semester, University of Minnesota.

### **ADDITIONAL HONORS**

- 2023 Panelist – U.S. National Academy for Science, Engineering, and Medicine Climate Crossroads Summit: Exploring Intersections of Climate and Societal Challenges.
- 2023 Top Featured Article in Colorado State University News – Source: Moore Foundation’s \$2.7 million grant expands groundbreaking CSU civil engineering wildfire model.
- 2023 Invited Keynote – Walter Scott Jr. College of Engineering, Colorado State University: Current and Future Trends in STEM Education.
- 2023 Panelist – U.S. National Academy for Science, Engineering, and Medicine Workshop: Approaches to Justice and Equity Focused Energy and Climate Change.
- 2023 Organizer – U.S. National Academy for Science, Engineering, and Medicine Webinars, New Voices’ One Health Webinar Series: Exploring Linkages Among Environmental, Human and Plant Wellbeing.
- 2023 Top 100 Most Downloaded Engineering Scientific Reports Papers: Integrated Graph Measured Reveal the Survival Likelihood of Buildings in Wildfire Events ([Top 100 in Sustainability](#)).
- 2023 Top 100 Most Downloaded Engineering Scientific Reports Papers: Hidden Costs to Building Foundation Due to Sea Level Rise in a Changing Climate ([Top 100 in Engineering](#)).
- 2023 Invited Keynote – Center for Engineered and Engineered Urban Planning, Xi’an University of Architecture and Technology, Xi’an, China: Integrated Systems Approaches for Enhancing Urban Resilience.
- 2022 Award Reviewer for the U.S. National Academy for Science, Engineering, and Medicine.
- 2022 Invited Opening Remarks – The National Academies of Sciences, Engineering, and Medicine, The Water Institute of the Gulf, and the U.S. Army Corps of Engineering: Measuring What Matters - Towards a More Comprehensive and Equitable Evaluation of Benefits.
- 2022 Invited by the Sweden Embassy to Celebrate the 2022 American Nobel Laureates.
- 2022 Invited by the U.S. National Academy of Sciences to Celebrate the 2022 American Nobel Laureates.
- 2022 Delegation Member of the National Academies of Sciences Engineering and Medicine to the G7 Research Summit on One Health, Alberta, Canada.
- 2022 Member of the Organizing Committee and Representative of the NASEM New Voices for The Triennial Conference of the InterAcademy Partnership (IAP) and the Worldwide Meeting of the Young Academies (Hosted by the U.S. National Academy of Sciences (NAS) and the Royal Society of Canada (RSC) Co-organized by IAP, GYA, NAS, RSC, the RSC College, and the NAS New Voices Program).
- 2022 Chair of the National Academies of Sciences, Engineering, and Medicine (NASEM) workshop on Benefits, Applications, and Opportunities of Natural Infrastructure, organized by the Resilient America Program at NASEM, Athens, GA.
- 2022 Top Featured Article in Colorado State University News – Source: Climate change from the ground up: Researchers explore sea level rise impact on building foundations.
- 2022 Panelist – U.S. National Academies Workshop: Compounding and Cascading Events Mitigating Impacts: Developing Solutions and Avoiding Unintended Consequences.
- 2022 Session Co-Chair and Moderator - Triennial Conference of the InterAcademy Partnership (IAP) and the Worldwide Meeting of the Young Academies - “Science Advice by Young Academies on Critical Issues: Why does it matter?”, Biosphere 2, Arizona.
- 2022 Invited Keynote – Global Meet on Infrastructure and Construction (GMINFRA), Paris, France: Resilient Assessment of Healthcare Systems under Wildfires and Pandemics.
- 2021 Top Featured Article in Colorado State University News – Source: \$4.5 million CSU civil engineering study to simulate the impact of explosives on structures in virtual reality platform.
- 2021 Robert J. Dexter Memorial Lecture, Warren Lecture Series, Department of Civil, Environmental,

- and Geo-Engineering, University of Minnesota, Minneapolis, MN.
- 2021 Top Featured Article in Colorado State University News – Source: \$4.5 million CSU civil engineering study to simulate the impact of explosives on structures in virtual reality platform.
- 2021 Invited Listening Session by the Global Change Research Program (USGCRP) of the National Academies for Sciences, Engineering, and Medicine – Transportation/Infrastructure: Providing Input to the USGCRP on Research Needs Towards Sustainable and Resilient Infrastructure and Communities.
- 2021 Top Featured Article in Colorado State University News – Source: CSU civil engineers publish strategies for better managing health care systems during pandemics and natural disasters.
- 2021 Invited Keynote – 5<sup>th</sup> Annual Resilience Colloquium – Innovations for Guided Transformations, University of New Mexico (virtual): Resilience of Complex Healthcare Networks Subjected to Wildfire and Pandemics.
- 2021 Invited to the National Science Foundation’s Wildfire and the Biosphere Innovation Lab.
- 2021 Invited Keynote – 2<sup>nd</sup> International Conference on Science and Sustainable Development, Egyptian National Research Center, Cairo, Egypt: : Managing Resources for Healthcare Systems in an Era of COVID-19.
- 2021 Invited Keynote – International Conference on Advances in Structural Mechanics and Applications (ASMA-2021), National Institute of Technology, Silchar, India: Integrated Systems-Level Approaches for Resilience Assessment of Civil Infrastructure Subjected to Extreme Events.
- 2021 Invited Forum – The U.S. National Academy of Engineering (virtual): Complex Unifiable Systems (FOCUS) Program on Complex Food and Agricultural Systems: Engineering for Sustainability and Resilience.
- 2020 Invited Workshop – The Royal Institute of International Affairs through Chatham House's Hoffmann Centre for Sustainable Resource Economy: Material Transitions - Working with Nature for Built Environments.
- 2020 Invited Workshop – The U.K. Royal Academy of Engineering for an International (virtual): Safer Complex Systems Programme (coordinated by Engineering X and founded by the Royal Academy of Engineering and the Lloyd’s Register Foundation).
- 2019 Award Reviewer U.S. National Academy for Science, Engineering, and Medicine.
- 2019 Invited Expert – The National Institute of Standards and Technology, Washington, DC: Large Outdoor Fire Modeling.
- 2019 Invited Summit – The U.S. National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering, London, UK: NAE Grand Challenges for Engineering.
- 2019 Invited Keynote – 2<sup>nd</sup> International Conference on Numerical Modelling in Engineering (NME2019), Beijing, China: Advances in Computational Methods for the Assessment of Structures under Fires and Fire Following Earthquakes.
- 2019 Invited Keynote – 1<sup>st</sup> International Conference on Science and Sustainable Development, Egyptian National Research Center, Cairo, Egypt, Integrated Socio-Technical Frameworks for Sustainable and Resilient Interdependent Schools and Healthcare Systems Following Extreme Events.
- 2018 Invited Keynote – 3<sup>rd</sup> Annual Resilience Colloquium - Challenges of Natural Stresses: Resilience Engineering for Natural and Built Environment, University of New Mexico: Assessment of Community Vulnerability to Wildland Urban Interface Fires.
- 2018 Invited Scoping Session – The National Science Foundation, San Diego, CA: Identify Properties for Research Initiatives Focused on Coastal Regions: Coastline and People (CoPe).
- 2018 Invited Expert – National Institute of Standards and Technology, Washington, DC: Addressing the White House Mandate on Immediate Occupancy Performance Objective under Extreme Loads, Washington, DC.
- 2017 Top Featured Article in Colorado State University News – Source: Beyond Wind Speed: A New Measure for Predicting Hurricane Impacts.
- 2017 Invited Expert – The European Commission, Ispra, Italy: The 2<sup>nd</sup> International Workshop on



- Modeling of Physical, Economic, and Social Systems.
- 2017 Invited Visiting Scholar – Department of Civil Engineering, Tsinghua University, Beijing, China
- 2017 Invited Summit – The U.S. National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering, Washington DC: NAE Grand Challenges for Engineering.
- 2016 Symposium Invitee – The U.S. National Academies of Sciences, Engineering and Medicine, Keck Center, Washington DC: Exploring a New Vision for Center-Based Multidisciplinary Engineering Research.
- 2016 Invited Expert – The National Windstorm Impact Reduction Program (NWIRP), Washington, DC: Strategic Planning.
- 2016 Invited Speaker – The National Institute of Standards and Technology, Washington, DC: 1st International Workshop on Modeling of Physical, Economic, and Social Systems.
- 2014 Invited Expert – The National Science Foundation, Purdue University, Lafayette, Indianapolis: Task Force workshop on Hybrid Simulation, User Guide/Dictionary.
- 2014 Invited Keynote – Egypt Military Technical College, Cairo, Egypt, 10th International Conference on Civil & Architecture Engineering (ICCAE-10): State-of-the-art Fatigue and Fracture Repair Methods of Steel Structures.
- 2013 Invited Expert – Workshop on Multiple Natural Hazards Assessment and Mitigation under the Impact of Climate Change, Hanoi, Vietnam.
- 2012 Invited Panelist – Structures Congress, Chicago, IL: Innovation in Design of Steel Structures: Research Needs for Global Competitiveness.
- 2007 Invited Expert – U.S. Army Corps of Engineers, Infrastructure System Conference, Detroit, MI: Fatigue and Fracture Assessment of Hydraulic Steel Structures.
- 2007 Invited Expert – U.S. Army Corps of Engineers, La Holla, CA: Technical Focus Team Meeting on Fatigue and Fracture Evaluation of Steel Hydraulic Structures.

**MEDIA COVERAGE** (*Full List at the end of the C.V.*)

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- **National Academies of Sciences, Engineering, and Medicine** – [\*COP28 Global Climate Conference Features Several National Academies Representatives\*](#)
  - **SOURCE** – [\*CSU civil and environmental engineers contribute to global progress at UN COP28 climate conference\*](#)
  - **CBS Eyes on the World with John Batchelor** – [\*Maui: #Wildfires; #CA: The threat grows with El Nino and climate change & What is to be done? Hussam Mahmoud, Colorado State University, Nature Magazine\*](#)
  - **Forbes** – [\*It's dawning on humans that human health connects to everything\*](#)
  - **SOURCE** – [\*Moore Foundation's \\$2.7 million grant expands groundbreaking CSU civil engineering wildfire model\*](#)
  - **Research Magazine** – [\*Confronting the climate crisis: CSU meets a global challenge head-on with research, engagement, and students\*](#)
  - **9NEWS** – [\*New model helps predict impact of wildfires on communities\*](#)
  - **The Denver Post** – [\*Western Colorado safest region in country against rising tide of natural disasters\*](#)
  - **EOS** – [\*Seaports could lose \\$67 billion yearly from natural disasters\*](#)
  - **CSU Spur Campus** – [\*Attaching the Crack: Engineering for Community Resiliency\*](#)
  - **9NEWS** – [\*CSU researchers work to predict buildings most at risk of wildfire damage\*](#)
  - **Yale Climate Connections** – [\*How rising sea levels could damage building foundations\*](#)
  - **SOURCE** – [\*CSU faculty, students head to COP27 in Egypt to advocate for aspects of global climate change policy\*](#)
  - **ASCE SOURCE** – [\*Can basalt fiber-reinforced polymer repair underwater steel corrosion?\*](#)
  - **Wildfire Today** – [\*Researchers design model that they say predicts which buildings will survive wildfire\*](#)
  - **SOURCE** – [\*\\$4.5 million CSU civil engineering study to simulate the impact of explosives on structures in virtual reality platform\*](#)
  - **Bridge Design and Engineering (Bd & e)** – [\*The future- when normal becomes extreme\*](#) –
  - **Global Biodefense** – [\*How health care systems might better manage multiple natural disaster, outbreak surges\*](#)
  - **News Medical Life Sciences** – [\*Researchers investigate compound effects of pandemics/natural disasters on health care systems\*](#)
  - **Healthcare Facilities Today** – [\*Hospitals, schools and building resilience in communities\*](#)
  - **Walter Scott Jr. College of Engineering** – [\*Welcome back, rams: acknowledging teaching efforts by different faculty\*](#)
  - **SOURCE** – [\*Research shows custom community approach is best for mitigating wildfire risk\*](#)
  - **MultiBriefs Exclusive** – [\*How well can your hospital recover after COVID-19? This new study can help\*](#)
  - **Walter Scott, Jr. College of Engineering** – [\*CSU civil engineering faculty models community wildfire resilience\*](#)
  - **United Press International** – [\*Climate change could damage thousands of U.S. bridges, engineers say\*](#)
  - **SOURCE** – [\*Arab-American Frontiers Symposium co-chair investigates community resiliency models\*](#)
  - **BBC Radio** – [\*Effect of climate change and deteriorated joints on performance of U.S. bridges\*](#) (from min 13:45 and up to min 17:58)
  - **POPULAR MECHANICS** – [\*Climate change could wreck a quarter of U.S. bridges in 21 Years\*](#)

- **The INDEPENDENT** – [Climate crisis: one in four steel bridges in US ‘could collapse by 2050’ due to extreme temperatures, study says](#)
- **Nature Climate Change** – [Vulnerable bridges](#)
- **New Scientist** – [Climate change may see one in four US steel bridges collapse by 2040](#)
- **Cable News Network (CNN)** – [Even ‘weak’ hurricanes can cause a lot of harm](#)
- **The Smithsonian Magazine** – [How satellites and big data are predicting the behavior of hurricanes and other natural disasters](#)
- **CBS EGYPT – TV-Show: Here is the Capital** – [Interview with Renowned TV Anchor Mrs. Lamis Elhadidy – Community recovery following natural hazards or social disruptions](#)
- **National Academy of Engineering** - [FOE alum Hussam Mahmoud at @ColoradoStateU created a "Resilience" model that can help communities better prepare for unanticipated disasters](#)
- **National Academy of Engineering** – [Batman's Gotham City provides test case for community resilience model](#)
- **SOURCE** – [Batman's Gotham city provides test case for community resilience model](#)
- **THE CONVERSATION** – [Upgrading our infrastructure: targeting repairs for locks, dams and ridges](#)
- **BUSINESS INSIDER** – [Major investments in US infrastructure are long overdue](#)

## PUBLICATIONS

**(TOTAL = 303) 5 NEWS ARTICLES; 7 BOOK CHAPTERS; 138 JOURNAL PAPERS (124 of which are already published or in-press & 14 are under review); 66 CONFERENCE PAPERS; 52 CONFERENCE ABSTRACTS; and 37 TECHNICAL REPORTS.**

### NEWS AND ONLINE ARTICLES

- N1. Pilkington, S. and **Mahmoud**, H. (2019) "Even 'weak' hurricanes can cause a lot of harm (Opinion) - CNN," Cable News Network (CNN); <https://www.CNN.com/2019/07/16/opinions/hurricane-season-barry-strength-pilkington-mahmoud/index.html>
- N2. **Mahmoud**, H. (2018) "Innovative Approaches for Sustainable and Resilient Communities," First Bell: American Society of Engineering Education, <https://www.engr.colostate.edu/innovative-approaches-to-modeling-community-resilience/>
- N3. McConnell, J. and **Mahmoud**, H. (2018) "Life Cycle Analysis of Steel Bridges During Construction and In Service," STRUCTURE magazine, <https://www.structuremag.org/?p=13769>.
- N4. **Mahmoud**, H. and McManus, P. (2018) "Road to Recovery: A look at Resilience in Steel Buildings Subjected to Earthquakes or other Disasters," MODERN STEEL CONSTRUCTION, <https://www.aisc.org/globalassets/modern-steel/archives/2018/04/roadtorecovery.pdf>
- N5. **Mahmoud**, H. (2017) "Upgrading our Infrastructure: Targeting Repairs for Locks, Dams and Bridges," THE CONVERSATION, [https://theconversation.com/upgrading-our-infrastructure-targeting-repairs-for-locks-dams-and-bridges-69748#comment\\_1239134](https://theconversation.com/upgrading-our-infrastructure-targeting-repairs-for-locks-dams-and-bridges-69748#comment_1239134).

### BOOKS AND BOOK CHAPTERS

- B1. **Mahmoud**, H., Riveros, G., and Hassan, E. (2024) "Use of Carbon and Basalt FRP for Underwater Repair of Steel Structures," Chapter 1: In Book: Rehabilitation of Metallic Structural Systems Using Fiber Reinforced Polymer (FRP) Composites, Karbhari., DOI: XXX.
- B2. van de Lindt, J., **Mahmoud**, H., and Ellingwood, B. (2022) "A Risk-Informed Decision Framework to Achieve Resilient and Sustainable Buildings that Meet Community Objectives," Chapter 1: In Book: Resilient and Sustainable Buildings, van de Lindt, J., Sasani, M., Warn, G., and Esteghamati, M., DOI: <http://doi.org.10.1061/9780784485057.ch1>.
- B3. Hassan, E., **Mahmoud**, H. (2023) "Resilience of Steel Office Buildings to Mainshock-Aftershock Events," In: Fonseca de Oliveira Correia, J.A., Choudhury, S., Dutta, S. (eds) Advances in Structural Mechanics and Applications (ASMA 2021), Structural Integrity, Vol. 26, 1-13, Springer, Cham, [https://doi.org/10.1007/978-3-031-05509-6\\_20](https://doi.org/10.1007/978-3-031-05509-6_20).
- B4. **Mahmoud**, H. and Hassan, E. (2022) "Recommendations on Achieving Healthcare Resilience Following Extreme Events," Chapter 1: Edited, Objective Resilience: Technology, Engineering Mechanics Institute, Ettouney, M., 211-233, American Society of Civil Engineers <https://doi.org/10.1061/9780784415900.ch7>.
- B5. Elnashai, A. and **Mahmoud**, H. (2019) "Assessment of Earthquake Performance of Structures by Hybrid Simulation," Oxford Research Encyclopedia (ORE) of Natural Hazard Science, Oxford University Press, Editor in Chief, Susan Cutter, <https://doi.org/10.1093/acrefore/9780199389407.013.20>.
- B6. **Mahmoud**, H. and Chulahwat, A. (2016) "Multi-Hazard Multi-Objective Optimization of Building Systems with Isolated Floors under Seismic and Wind Demands.," Chapter 1: Section 1, Edited Proceedings on the 1st International Conference on Multi-Hazard Approach to Engineering (ICMAE), Gardoni, P. and LaFave, J., Springer, DOI: [https://doi.org/10.1007/978-3-319-29713-2\\_8](https://doi.org/10.1007/978-3-319-29713-2_8).

B7. Nakata, N., Dyke, S., Zhang, J., Mosqueda, G., Shao, X., **Mahmoud**, H., Head, M., Bletzinger, M., Marshall, G., Ou, G., and Song, C. (2014) "Hybrid Simulation Primer and Dictionary," Hybrid Simulation Task Force, [https://mechs.designsafe-ci.org/media/cms\\_page\\_media/965/Primer.pdf](https://mechs.designsafe-ci.org/media/cms_page_media/965/Primer.pdf).

**JOURNAL ARTICLES**

Summary of Journal Articles

<b>Thrust</b>	<b><i>Thrust 1: Systems Analysis for Sustainability and Resilience</i></b>	<b><i>Thrust 2: Single and Multi-Hazards</i></b>	<b><i>Thrust 3: Infrastructure Deterioration and Failure</i></b>	<b><i>Other</i></b>
<b>Focus Area</b>	Earthquakes, Hurricanes, Tornados, Wildland Urban Interface Fires, and Floods	Structures under Fire, Earthquake, and Wind Loadings (single or combined)	Large Fatigue Crack Growth, Ductile Fracture, Maintenance & Repair	NA
<b># published or accepted</b>	57	37	28	2
<b># under review</b>	7	5	1	1
<b>Total = 134</b>	64	42	29	3

**Note:** Total of **138** articles are listed, **124** of which are already published or in press & **14** are under review. Advisees are indicated with a "\*". For media attention, please see the section on Media Coverage.

**Individual Journal Articles – Published or In Press**

**Systems Analysis for Sustainability and Resilience**

J1. **Mahmoud**, H. and Abuzurr, S. (2023) "State of Healthcare System in Gaza During the Israel-Hamas War," *The Lancet*, Vol. 402(10419), 2294, [https://doi.org/10.1016/S0140-6736\(23\)02634-X](https://doi.org/10.1016/S0140-6736(23)02634-X).

J2. **Mahmoud**, H., (2023) "The Causes of Wildfires are Clear. How they Burn Through Communities is Not," *Nature*, Vol. 620(7976), 923, <https://doi.org/10.1038/d41586-023-02687-2>, <https://www.nature.com/articles/d41586-023-02687-2>.

J3. Hassan\*, E., **Mahmoud**, H., AbdelAleem B., Ismail, M., Hassan, A., and El-Dakhakhni, W. (2023) "Seismic Resilience of Concrete Moment Frames with Fibrous Rubberized Beam-Column Joints," *Journal of Earthquake Engineering*, Vol. X(X), XX-XX, <https://doi.org/10.1080/13632469.2023.2297020>.

J4. Chulahwat\*, A. and **Mahmoud**, H. (2024) "The Impact of Wind Characteristics on the Spatial Distribution of Damage to the Built Environment during Wildfire Events: The 2022 Marshall Fire," *ASCE Natural Hazard Review*, Vol. 25(1), 06023003, <https://doi.org/10.1061/NHREFO/NHENG-1888>.

J5. vonHedemann, N., Breidenbach, T., Carney, C., Carr-Childers, L., David-Chavez, D., Havrilla, C., Hill, M., **Mahmoud**, H., Mueller, N., Schultz, C., Stevens-Rumann, C., (2023) "Climate Adaptation Research Priorities and Funding: A Review of U.S. Federal Departments' Climate Action Plans," *Climate Policy*, Vol. 23(10), 1288-1301, <https://doi.org/10.1080/14693062.2023.2242313>.

J6. Pradhan\*, S., Arneson, E., Valdes-Vasquez, R., and **Mahmoud**, H. (2023) "How Construction and Socioeconomic Resource Availability Affected Housing Recovery after Hurricane Sandy," *ASCE Natural Hazard Review* Vol. (X), XX-XX, <http://doi.org/10.1061/NHREFO.NHENG-1703>.

J7. Hassan\*, E., **Mahmoud**, H., and Ellingwood, B. (2023) "The Role of Social Institutions in Community Resilience Following Extreme Natural Hazard Events," *Disaster Prevention and Resilience*, Vol. 2(1),

<https://dx.doi.org/10.20517/dpr.2023.01>.

- J8. Li\*, M., Jia, G., **Mahmoud**, H., Yu, Y-H, and Tom, N. (2023) "Physics-constrained Gaussian Process Model for Prediction of Hydrodynamic Interactions between Wave Energy Converters in an Array," *Journal of Applied Mathematical Modeling*, Vol. 119, 465-485, <https://doi.org/10.1016/j.apm.2023.03.003>.
- J9. **Mahmoud**, H., Kirsch, T., O'Neil, D., and Anderson, S. (2023) "The Resilience of Health Care Systems Following Major Disruptive Events: Current Practice and a Path Forward," *Reliability Engineering and System Safety*, Vol. 235, 109264, <https://doi.org/10.1016/j.res.2023.109264>.
- J10. Shuman, J. et al., **Mahmoud**, H. (2022) "Reimagine Fire Science for the Anthropocene," *Proceedings of the National Academies of Sciences (PNAS) - Nexus*, Vol. 1(3), 1-14, <https://doi.org/10.1093/pnasnexus/pgac115>.
- J11. Martin, M., Diem, S., Karwat, K., Krieger, E., Rittschof, C., Banyon, B., Aghazadeh, M., Asensio, O., Zeilkova, T.J., Garcia-Cazarin, M., Alvelo Maurosa, J., **Mahmoud**, H. (2022) "The Climate is Changing. Engineering Education Needs to Change as Well," *ASCE Journal of Engineering Education*, Vol. 111(4), 740-745, <https://doi.org/10.1002/jee.20485>.
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- J14. Chulahwat\*, A., **Mahmoud**, H., Monedero, S., Vizcaíno, F. J. D., Ramirez, J., Buckley, D., and Forradellas, A. C. (2022) "Integrated Graph Measures Reveal Survival Likelihood for Buildings in Wildfire Events," *Scientific Reports*, Vol. 12, 15954, <https://doi.org/10.1038/s41598-022-19875-1>. (Top 100 most downloaded engineering paper in Sci. reports in 2022).
- J15. Elnashai, A. and **Mahmoud**, H. (2021) "A Vision for Smart and Sustainable Cities," *IET Smart Cities*, Vol. 3(4), 185-188, <https://doi.org/10.1049/smc2.12021>.
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- J18. Hemmati\*, M., **Mahmoud**, H., Ellingwood, B., and Crooks, A. (2021) "Shaping Urbanization to Achieve Sustainable Communities Resilient to Floods," *Environmental Research Letter*, <https://doi.org/10.1088/1748-9326/ac1e3c>.
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- J21. Adhikari\*, P., **Mahmoud**, H., and Ellinwood, B. (2021) "Life-Cycle Cost and Sustainability Analysis of Light-Frame Wood Residential Communities Exposed to Tornados," *Natural Hazards*, Vol. 109, 523-544, <https://doi.org/10.1007/s11069-021-04847-x>.
- J22. Abdelhafez\*, M., Ellingwood, B., and **Mahmoud**, H. (2021) "Vulnerability of Seaports to Hurricanes and Sea Level Rise in a Changing Climate: A Case Study for Mobile, AL," *Coastal Engineering*, <https://doi.org/10.1016/j.coastaleng.2021.103884>.
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- J25. Pilkington\*, S. and **Mahmoud**, H. (2020) "Interpreting the Socio-Technical Interactions within a Wind Damage-Artificial Neural Network Model for Community Resilience," *Royal Society Open Science*, Vol. 7(11), <http://dx.doi.org/10.1098/rsos.200922>.
- J26. **Mahmoud**, H. and Chulahwat\*, A. (2020) "Assessing Wildland-Urban Interface Fire Risk," *Royal Society Open Science*, Vol. 7(8), 201183, <http://dx.doi.org/10.1098/rsos.201183>.
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- J32. Pilkington\*, S., **Mahmoud**, H., van de Lindt, Koliou, M., and Smith, S. (2020) "Hindcasting Loss and Evaluating Implications of Track Location for the 2011 Joplin, MO Tornado," *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems: Part B*, Vol. 6(2), 020902, <https://doi.org/10.1115/1.4046326>.
- J33. Pilkington\*, S., Curtis, A., **Mahmoud**, H., van de Lindt, J., Koliou, M. and Smith, S. (2021) "Preliminary Documented Recovery Patterns and Conclusions from Video Cataloged Data of the 2011 Joplin, Missouri, Tornado," *ASCE Natural Hazard Review*, Vol. 22(1), 05020015, [https://doi.org/10.1061/\(ASCE\)NH.1527-6996.0000425](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000425).
- J34. Schulze S., Fischer, E., Hamideh, S., and **Mahmoud**, H. (2020) "Wildfire Impacts on Schools and Hospitals Following the 2018 California Camp Fire," *ASCE Natural Hazard Review*, 104(1), 901-925, <https://doi.org/10.1007/s11069-020-04197-0>.

- J35. Wang, C., Zhang, H., Ellingwood, B., Guo, Y., **Mahmoud**, H., and Li, Q. (2020) "Assessing Post-Hazard Damage Costs to a Community's Residential Buildings Exposed to Tropical Cyclones," *Structures and Infrastructure Engineering*, Special issue: Risk-, Resilience-, and Sustainability-Informed Assessment and Management of Infrastructure, Vol. 17(4), 443-453, <https://doi.org/10.1080/15732479.2020.1845215>.
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- J42. Hassan\*, E. and **Mahmoud**, H. (2019) "Full Functionality and Recovery Assessment Framework for a Hospital Subjected to a Scenario Earthquake Event," *Engineering Structures*, Vol. 188, 165-177, <https://doi.org/10.1016/j.engstruct.2019.03.008>.
- J43. Nozhati\*, S., Sarkale, Y., Ellingwood, B., Chong, E., and **Mahmoud**, H. (2019) "Near-optimal Planning using Approximate Dynamic Programming to Enhance Post-Hazard Community Resilience Management," *Reliability Engineering & System Safety*, Vol. 181, 116-126, <https://doi.org/10.1016/j.res.2018.09.011>.
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### Single and Multi-Hazards

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- J56. Zhang, F., Liu, X., Xue, J., **Mahmoud**, H., and Zhou, G. (2021) "Experimental Seismic Response of a Damaged Brick Cave Dwelling Repaired using Coating Cement Mortar Coating with Polypropylene Packing Strap Mesh," *ASCE Journal of Structural Engineering*, Vol. 147(12), 04021201, [https://doi.org/10.1061/\(ASCE\)ST.1943-541X.0003173](https://doi.org/10.1061/(ASCE)ST.1943-541X.0003173).
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- Sequential Earthquakes," *Journal of Constructional Steel Research*, vol. 173, 106272, <https://doi.org/10.1016/j.jcsr.2020.106272>.
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### CONFERENCE PROCEEDINGS (PEER-REVIEWED)

- C1. **Mahmoud**, H. and Chulahwat, A., "Integrated Built Environment and Wildland Mitigation Strategies Towards Effective Reduction of Wildfire Risk," Proceedings for the 7th International Fire Behavior and Fuels Conference, Albuquerque, Boise, ID, April 2024.
- C2. Chulahwat, A., and **Mahmoud**, H., "A Graph Model for Assessing Damage to the Built Environment in a Wildfire Event," Proceedings for the 7th International Fire Behavior and Fuels Conference, Boise, ID, April 2024.
- C3. Sullivan, K., **Mahmoud**, H., Pezzola, G., Sherburn, J., and Stephens, C., "Prediction of Blast Wall Pressure Using Artificial Neural Networks," The 6th International Conference on Protective Structures (ICPS6), Auburn, AL, May 2023.
- C4. Hemmati, M., Ellingwood, B., and **Mahmoud**, H., "Life-Cycle Risk-Informed Decisions for Future Community Development in Regions Prone to Riverine Flooding," The 13th International Conference on Structural Safety and Reliability (ICOSSAR 2022), Shanghai, China, June 2022.
- C5. Chulahwat, A. and **Mahmoud**, H., "Risk-Informed Strategies for Mitigating the Impact of Wildland Urban Interface Fires," The 13th International Conference on Structural Safety and Reliability (ICOSSAR 2022), Shanghai, China, June 2022.
- C6. Hassan, E., **Mahmoud**, H., and Ellingwood, B., "The Role of Interdependencies on Resilience of a School System Following Seismic Events," The 13th International Conference on Structural Safety and Reliability (ICOSSAR 2022), Shanghai, China, June 2022.
- C7. Li, M., Jia, G., **Mahmoud**, H., Yu, Y-H, and Tom, N., "Convolution-fed Gaussian Process with Active Learning for Probabilistic Power Prediction of Large-scale Wave Farm," The 13th International Conference on Structural Safety and Reliability (ICOSSAR 2022), Shanghai, China, June 2022.
- C8. **Mahmoud**, H. and Memari, M., "Advanced Methods for Performance-Based Assessment of Steel Buildings Under the Effects of Earthquake and Fire," 17th World Conference on Earthquake Engineering, 17WCEE, Sendai, Japan, September 2021.
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- C12. **Mahmoud**, H. and Chulahwat, A., "Quantifying Community Risk to Wildfires," Proceedings for the 6th International Fire Behavior and Fuels Conference, Albuquerque, New Mexico, April 2019.
- C13. Chulahwat, A. and **Mahmoud**, H., "Performance of Suspended Floor Building System under Seismic and Wind Hazards," 2<sup>nd</sup> International Conference on Seismic Design and Analysis of Structures and Foundations (SeismiCON), London, UK, June 2019.
- C14. Hussein, A., **Mahmoud**, H., and Heyliger, P., "Numerical Evaluation of Simple Blast Wall System to be used in Developing Countries," The 7th International Conference on Structural Engineering, Mechanics and Computation (SEMC 2019), Cape Town, South Africa, September 2019.
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- C30. **Mahmoud**, H., Elnashai, A. S., Spencer, B. F., and Bennier, D. J., "System-level Seismic Evaluation of Partial-strength Semi-Rigid Steel Frames using Hybrid Simulation," the 7th International Conference on Urban Earthquake Engineering & 5th International Conference on Earthquake Engineering, Tokyo, March 2010.
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- C33. Khazem, D., Serzan, K., **Mahmoud**, H., Chen, Y., and Kushmook, R., "Site-Specific Fatigue Loading Utilizing WIM Data," 1st International Conference on Fatigue and Fracture in the Infrastructure: Bridges and Structures of the 21st Century, Philadelphia, August 2006.
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- C38. Yugandhar, S., Nozhati, S., Ellingwood, B., Chong, E., and **Mahmoud**, H., "Solving Markov Decision Processes for Network-level Post-Hazard Recovery via Simulation Optimization and Rollout," 14th IEEE International Conference on Automation Science and Engineering (CASE 2018), Munich, Germany, August 2018, pp. 906-912.
- C39. Nozhati, S., Yugandhar, S., Ellingwood, B., Chong, E., and **Mahmoud**, H. "A Modified Approximate Dynamic Programming Algorithm for Community-level Food Security Following Disasters," 9th International Congress on Environmental Modelling and Software - Modeling for Sustainable Food-



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- C40. van de Lindt, J., Attary, N., **Mahmoud**, H., Pilkington, S., Koliou, M., Cutler, H., Zahran, S., Peacock, W., Rosenheim, N., "Hindcasting Validation of a Resilience Computational Environment Architecture: Five Years of Recovery Following the 2011 Joplin, Missouri Tornado," 6<sup>th</sup> International Symposium on Reliability Engineering and Risk Management, NUS, Singapore, May 2018.
- C41. Hassan, E. and **Mahmoud**, H., "Comparative Loss Assessment of a Steel Hospital Using Multi-Resolution Numerical Models," 11th National Conference on Earthquake Engineering (11NCEE), Los Angeles, CA, June 2018.
- C42. Hassan, E. and **Mahmoud**, H., "Resilience Quantification of a Steel Hospital Subjected to Earthquake Loading," 11<sup>th</sup> National Conference on Earthquake Engineering (11NCEE), Los Angeles, CA, June 2018.
- C43. Nozhati, S., Ellingwood, B., **Mahmoud**, H., and van de Lindt, B., "Identifying and Analyzing Interdependent Critical Infrastructure in Post-Earthquake Urban Reconstruction," 11th National Conference on Earthquake Engineering (11NCEE), Los Angeles, CA, June 2018.
- C44. **Mahmoud**, H. and Memari, M., "Performance-Based Framework of Steel Structures under Cascading Earthquake and Fire Hazards," 3rd Huixian International Forum on Earthquake Engineering for Young Researchers (3HIFEE), the University of Illinois at Urbana Champaign, Urbana, IL, August 2017.
- C45. Hassan, E., and **Mahmoud**, H., "Effect of Modeling Resolution on the Seismic Resilience of a Steel Hospital Building," 3rd Huixian International Forum on Earthquake Engineering for Young Researchers (3HIFEE), the University of Illinois at Urbana Champaign, Urbana, IL, August 2017.
- C46. van de Lindt, J., Ellingwood, B., McAllister, T., Wang, N., **Mahmoud**, H., and Koliou, M., "The Role of Structural Robustness in Risk-Informed Community Resilience Planning," Structural Engineers Association of California (SEAOC) SEAOC Convention, Maui, HI, October 2016.
- C47. **Mahmoud**, H. and Chulahwat, A., "A Probabilistic Cellular Automata Framework for Assessing the Impact of WUI Fires on Communities," Urban Transitions Global Summit: Towards a better urban future in an interconnected age, Shanghai, China, September 2016.
- C48. **Mahmoud**, H. and Chulahwat, A., "Multi-hazard Mitigation of Building Structures using New Floor Isolation Techniques," The 6th European Conference on Structural Control, Sheffield, England, July 2016.
- C49. **Mahmoud**, H. and Zafar, A., "Time-Dependent Reliability Analysis of Reinforced Concrete Bridges including Deterioration Effects," ASCE Geo-Structures Congress, Phoenix, AZ, February 2016.
- C50. Elnashai, A., Kwon, O. Gencturk, B., **Mahmoud**, H., Spencer, B. Al Anwar, H., and Kim, S., "Hybrid Analytical-Experimental Simulation in Earthquake Response Assessment," Sixth International Conference on Structural Engineering, Mechanics and Computation (SEMC), Cape Town, South Africa, September 2016.
- C51. **Mahmoud**, H., Ellingwood, M. and Memari, M., "Challenges and Alternative Approaches for Simulating the Response of Steel Structures Exposed to Fire," Second International Conference on Performance-based and Life-cycle Structural Engineering (PLSE), Brisbane, Australia, December 2015.
- C52. **Mahmoud**, H. and Chulahwat, A., "Floor Slab Isolation for Mitigating the Seismic Response of Building Systems," The Joint 6th International Conference on Advances in Experimental Structural Engineering (6AESE) and 11th International Workshop on Advanced Smart Materials and Smart Structures Technology (11ANCRiSST), the University of Illinois at Urbana-Champaign, Urbana, IL, August 2015.

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- C56. **Mahmoud**, H. and Como, A., "Predicting Tsunami Impact Loading using Coupled Eulerian-Lagrangian Formulation," The 5th Asia Conference on Earthquake Engineering, Taipei, Taiwan, October 2014.
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- C59. Clevenger, C. M., Ozbek, M. E., Fanning, B., and **Mahmoud**, H., "Investigating the Cost Impacts of using BIM to Facilitate Sustainable Infrastructure Construction," The International Conference on Sustainable Infrastructure, Long Beach, CA, November 2014.
- C60. **Mahmoud**, H. and Turbert, C., "Numerical Assessment of Connections with Reduced Beam Sections under Fire-Following an Earthquake Using Continuously Updated Boundary Condition," ASCE Structures Congress, Boston, PA, April 2014.
- C61. Do, T. Q., van de Lindt, J. W., **Mahmoud**, H., "Fatigue Life Model Including Crack Propagation for Wind Turbine Tower Base Connections," ASCE Structures Congress, Pittsburgh, PA, April 2014.
- C62. **Mahmoud**, H. and Riveros, G., "Fatigue Reliability of Stiffened Panels using Finite Element Monte Carlo Simulations," ASCE Structures Congress, Pittsburgh, PA, May 2013.
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## CONFERENCE ABSTRACTS

- A1. Dong, Y., Guo, Y., Nadal-Caraballo, N., Yawn, N., Ellingwood, B., **Mahmoud**, H., Aucoin, L., "Tropical Cyclone Scenarios for Risk-Informed Resilience Assessment of Coastal Communities under a Changing Climate," Mini-Symposium on Civil Infrastructure in A Changing Climate: From Nonstationary Risk Assessment To Developing Adaptation Strategies, Engineering Mechanics Institute Conference, The University of Illinois at Urbana-Champaign, Chicago, IL, May 2024.
- A2. Abdelhafez, M., Ellingwood, B., and **Mahmoud**, H., "Balancing Coastal Resilience Through the

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- A8. **Mahmoud**, H., and Chulahwat, A., "Predicting the Spatial Distribution of Damage to the Built Environment in Wildfire Events, Natural Hazard Center, 2023 Researchers Meeting, Boulder, CO, July 2023."
- A9. **Mahmoud**, H., and Chulahwat, A., "An Integrated Network Approach for Managing Wildfire Risk to Communities," Mini-Symposium on Wildfire Engineering: Research and Practice in Wildland and Wildland-Urban-Interface, Engineering Mechanics Institute Conference, Georgia Institute of Technology, Atlanta, GA, June 2023.
- A10. Hassan, E., and **Mahmoud**, H., "Optimal Strategies for Enhancing Healthcare Resilience Under Mainshock-Aftershock Events," Mini-Symposium on Objective Resilience: Balancing Portfolio of Actions Across Mitigation and Recovery to Enhance Resilience in an Uncertain Environment, Engineering Mechanics Institute Conference, Georgia Institute of Technology, Atlanta, GA, June 2023.
- A11. Abdelhafez, M., **Mahmoud**, H., and Ellinwood, B., "Resilience of Gulf Coast Residential Communities Under a Changing Climate," Mini-Symposium on Safety Assessment of Aging Infrastructure: From Data to Decision, Engineering Mechanics Institute Conference, Georgia Institute of Technology, Atlanta, GA, June 2023.
- A12. **Mahmoud**, H., and Chulahwat, A., "Predicting the Survival likelihood of Buildings in Wildfire Events," Wildfire Resilient Structures (WiRes), San Diego, CA, February 2023.
- A13. Chulahwat, A., and **Mahmoud**, H., "Exploring the Role of Fire Mitigation Policies in Adapting Communities to Wildfire Events," American Geophysical Union, Fall Meeting, Chicago, December 2022.
- A14. Sullivan, K., Pezzola, G., Sherburn, J., Stephens, C., and **Mahmoud**, H., "Efficient Hydrocode Modeling of Air Blast Propagation at Large Scaled Ranges," 92<sup>nd</sup> Shock & Vibration Symposium, Denver, Colorado, September 2022.
- A15. Dong, Y., Guo, Y., Ellingwood, B., and **Mahmoud**, H., "Selection of Hurricane Scenarios for Assessing Resilience of Coastal Communities," 14<sup>th</sup> American Conference on Wind Engineering (2022 ACWE),

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- A16. Hemmati, M., **Mahmoud**, H., Ellingwood, B., and Crooks, A., "Impact of Flooding on Resilience of Urban Communities," American Geophysical Union, Fall Meeting, San Francisco, December 2021.
- A17. Abdelhafez, M., Ellingwood, B., and **Mahmoud**, H., "Vulnerability of Coastal Community to Climate Change," 7th Young Coastal Scientists and Engineers Conference – Americas, South Carolina, October 2021.
- A18. Stanley, M., Rosenheim, N., Meyer, M., McAllister, T., **Mahmoud**, H., Dillard, M., Pena, A., Peacock, W., Loerzel, J., "Social Institution Resilience Theory: Implications for Community Resilience Planning Models," Natural Hazards Workshop, Boulder, Colorado, September 2021.
- A19. **Mahmoud**, H., and Pilkington, S., "Using Artificial Neural Networks to Predict Damage and Resilience from Extreme Wind events," Society and Risk Analysis 2021, Virtual, December 2021.
- A20. **Mahmoud**, H., Kwon, O., Memari, M., and Wang, X., "Small-Scale Hybrid Simulation Framework for Steel Frames Subjected Fire Following Earthquake," Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology, San Diego, CA, September 2021.
- A21. Stanley, M., Rosenheim, N., Meyer, M., McAllister, T., **Mahmoud**, H., Dillard, M., Pena, A., Peacock, W., "Social Institution Resilience Theory for Community Resilience Planning," Association of Collegiate Schools of Planning Annual Conference, Miami, Florida, 2021.
- A22. Hemmati, M., **Mahmoud**, H., Ellingwood, B., and Crooks, A., "Revealing the Complex Role of Human Behavior in Urbanization and Resilience of Communities under Flood Risk," American Geophysical Union, Fall Meeting, San Francisco, December 2020.
- A23. Hassan, E. and **Mahmoud**, H., "Education and Healthcare Networks Resilience as a Social Stability Index," American Geophysical Union, Fall Meeting, San Francisco, December 2020.
- A24. **Mahmoud**, H. and Chulahwat, A., "Redefining Community Resilience: A Generalized Dynamic Formulation," American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A25. Pauline, K., Pilkington, S., and **Mahmoud**, H., "Exploring the Interaction of Infrastructure, Social, and Economic Metrics in Community Resilience to Tornadoes through Historical Data Analysis," American Society of Civil Engineers – Geo-Extreme, Savannah, GA, August 2021.
- A26. **Mahmoud**, H. and Palu, S., "The Compounded Effect of Climate Change and Deterioration on Performance of Steel Bridges across the United States," Infrastructure Resilience Division, American Society of Civil Engineers, Reston, VA, May 2020.
- A27. Pilkington, S., and **Mahmoud**, H., "Opening the Black Box of a Socio-Technical Wind Damage Neural Network Model," Infrastructure Resilience Division, American Society of Civil Engineers, Reston, VA, May 2020.
- A28. Adhikari, P., Abdelhafez, M., Dong, Y., Guo, Y., **Mahmoud**, H., and Ellinwood, B., "Achieving Residential Coastal Communities Resilient to Tropical Cyclones," Mini-Symposium on Safety Assessment of Aging Infrastructure: From Data to Decision, Engineering Mechanics Institute Conference, Columbia University, New York, NY, May 2021.
- A29. **Mahmoud**, H., "Effect of Climate Change on Deterioration of the Superstructure of US Bridges," Mini-Symposium on Safety Assessment of Aging Infrastructure: From Data to Decision, Engineering Mechanics Institute Conference, Columbia University, New York, NY, May 2021.
- A30. **Mahmoud**, H., "Underwater CFRP Fatigue Repair of Steel Panels," Mini-Symposium on Modeling Deterioration of Structures and Infrastructure, Engineering Mechanics Institute Conference, Columbia University, New York, NY, May 2021.

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- A32. Hassan, E. and **Mahmoud**, H., "Socio-Physical Framework for Estimating Resilience of Hospital Networks Following Scenario Earthquake Events," American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A33. Hemmati, M., **Mahmoud**, H., Ellingwood, B., and Crooks, A., "Impact of Urban Growth on Future Flood Risk and Resilience of the Built Environment," American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A34. Chulahwat, A. and **Mahmoud**, H., "Quantifying Wildfire Risk to Archetypal Communities in the United States," American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A35. Pilkington, S., Attary, N., **Mahmoud**, H., "Evaluating the Socio-Technical Interactions Contributing to Wind Damage in an Artificial Neural Network Model," Tornado Hazard Wind Assessment and Reduction Symposium (THWARTS), the University of Illinois at Urbana-Champaign, October 2019.
- A36. **Mahmoud**, H. and Hassan, E., "Seismic Resilience of Fully Integrated Hospital Clusters Subjected to Mainshock-Aftershock Sequences," Mini-Symposium on Multihazards Considerations for Objective Infrastructure Resilience, Engineering Mechanics Institute Conference, California Institute of Technology (Caltech), Pasadena, CA, June 2019.
- A37. **Mahmoud**, H. and Chulahwat, A., "Finite Element Analysis of Resilience: A New Paradigm," Mini Symposium on Risk and Resilience Assessment of Civil Infrastructure Systems, Engineering Mechanics Institute Conference, California Institute of Technology (Caltech), Pasadena, CA, June 2019.
- A38. **Mahmoud**, H. and Chulahwat, A., "Performance-Based Engineering of Steel Frames under Cascading Events of Earthquake and Fire," Mini-Symposium on Earthquake Resilience and Cascading Effects, Engineering Mechanics Institute Conference, California Institute of Technology (Caltech), Pasadena, CA, June 2019.
- A39. **Mahmoud**, H., Chulahwat, A., Fischer, E., Schulze, S., Hamideh, S., Muller, K., Lombard, D. Grilliot, M., and Yeung, S., "Field Observations and Simulations Strategies for Quantifying Community Risk to Wildland Urban Interface Fires," Infrastructure Resilience Division, American Society of Civil Engineers, Reston, VA, May 2019.
- A40. Pilkington, S., Attary, N., **Mahmoud**, H., van de Lindt, J., Koliou, M., Memari, M., Smith, S., Curtis, A., "A Holistic Approach for Hindcasting the Recovery of the 2011 Joplin Tornado," Tornado Hazard Wind Assessment and Reduction Symposium (THWARTS), the University of Illinois at Urbana-Champaign, September 2018.
- A41. **Mahmoud**, H., "The Role of Advanced Simulations in Resilience Assessment of Critical Infrastructure," Mini-Symposium on Computational Modeling in Civil Engineering, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A42. **Mahmoud**, H. and Chulahwat, A., "Community Assessment of Wildland Urban Interface Fire Risk," Mini-Symposium on Forward and Inverse Modeling for Performance and Resilience Assessment of Civil Structures, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A43. **Mahmoud**, H. and Hemmati, M., "Probabilistic Collapse Assessment of Beams under Localized Fires," Mini-Symposium on Structural-Fire Engineering – Past, Present, and Future, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A44. **Mahmoud**, H. and Chulahwat, A., "Optimization of Buildings for Near Damage-Free Performance under Multiple Hazards," Mini-Symposium on Complex Dynamics Modeling and Control of Structures

- under Multi-Hazards, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A45. Nozhati, S., Ellingwood, B., **Mahmoud**, H., Yugundar, and Chong, E., "An Approximate Dynamic Programming Approach to Community Recovery Assessment," Mini-Symposium on Tornadoes and Tornado-Structure Interaction Considering Impacts on Community Resilience, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A46. van de Lindt, J., Attary, N., **Mahmoud**, H., Smith, S., Pilkington, S., Koliou, M., Zahran, S., Cutler, H., Hamideh, S., Sutley, E., Peacock, W., Rosenheim, N., Xiao, Y., Watson, M., "Community Level Damage and Recovery Hindcast: The 2011 Joplin Tornado," Mini-Symposium on Tornadoes and Tornado-Structure Interaction Considering Impacts on Community Resilience, Engineering Mechanics Institute Conference, Massachusetts Institute of Technology, Boston, MA, May 2018.
- A47. Nozhati, S., Ellingwood, B., **Mahmoud**, H., and Chong, E., "Stochastic System Study of Urban Response and Recovery in the aftermath of a disaster," The 3rd Annual Meeting of SIAM Central States Section September, Colorado State University, Fort Collins, CO, October 2017.
- A48. **Mahmoud**, H. and Hassan, E., "Effect of Modeling Resolution on the Seismic Fragilities and Resilience of a Steel Hospital Building," Mini-Symposium on Structural Modeling and Identification for Performance and Resilience Assessment of Civil Structures, Engineering Mechanics Institute Conference, University of California San Diego San Diego, CA, June 2017.
- A49. **Mahmoud**, H. and Chulahwat, A., "Multi-Hazard Combinatorial Optimization of Buildings with Suspended Floor Slabs," Mini-Symposium on Control of Structures for Multiple Hazards, Engineering Mechanics Institute Conference, University of California San Diego, San Diego, CA, June 2017.
- A50. Masoomi, H., van de Lindt, J., Peek, L., Ellingwood, B., **Mahmoud**, H., Wang, N., Cerato, A., and Simonen, K., "Quantifying Socio-Economic Impact of a Tornado by Evaluating Population Dislocation as a Resilience Metric at the Community Level," 13th American Conference on Wind Engineering, Gainesville, FL, May 2017.
- A51. **Mahmoud**, H. and Wen, H., "A Unified Model for Ductile Fracture of Metals under Complex Loading History," Mini-Symposium on Recent Advances in Fracture and Fatigue Mechanics, and their Application to Metallic Civil Structures, Engineering Mechanics Institute Conference, Stanford University, CA, June 2015.

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- R2. **Mahmoud**, H., Riveros, G., Hudak, L., Hassan, E., "Experimental Fatigue Evaluation of Underwater Steel Panels Retrofitted with Fiber Polymers," ERDC/ITL TR-23-1, <https://erdc-library.erdcdren.mil/jspui/bitstream/11681/46647/1/ERDC-ITL%20TR-23-1.pdf>, US Army Corps of Engineers Research and Development Center, March 2023.
- R3. Riveros, G., **Mahmoud**, H., "Underwater Carbon Fiber-Reinforced Polymer (CFRP)-Retrofitted Steel Hydraulic Structures (SHS) Fatigue Cracks," ERDC/CHL CHETN-IX-63, <https://erdc-library.erdcdren.mil/jspui/bitstream/11681/46588/3/ERDC-CHL%20CHETN-IX-63.pdf>, US Army Corps of Engineers Research and Development Center, March 2023.
- R4. Crow, D., Dickinson, K., Rumbach, A., Albright, E., DeVoss, R., Bean, H., Fraser, T., Reid, C., Bolhari, A., Welton-Mitchel, C., Andre, C., Peek, L., Aldrich, D., Morss, R., Whelton, A., Javernick-Will, A.,

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- R7. Fischer, E., **Mahmoud**, H., Hamideh, S., Schulze, S., "Post-Wildfire Damage: The 2018 Camp Fire in Paradise, California," QR 302, <https://hazards.colorado.edu/quick-response-report/post-wildfire-damage>, Natural Hazard Center, Boulder, Colorado, February 2021.
- R8. Riveros, G., **Mahmoud**, H., Lozano, C., "Multiaxial Fatigue Strength of Structural Bolts Under Combined Cyclic Axial and Shear Demands," ERDC TR-19-4, <https://erdc-library.erdcdren.mil/xmlui/handle/11681/33270>, US Army Corps of Engineers Research and Development Center, June 2019.
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- R33. **Mahmoud**, H., and Connor, R. J., "Field Monitoring Prototype Retrofits of Floorbeam Connections on the I-95 Girard Point Bridge," ATLSS Report # 05-01, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/56>, Lehigh University, January 2005.
- R34. Connor, R. J., and **Mahmoud**, H., "Failure Investigation of Two Cantilevered Sign Structures in the City of Hazleton," ATLSS Report # 04-24, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/55>, Lehigh University, November 2004.
- R35. Fisher, J. W., Connor, R. J., Kaufmann, E. J., and **Mahmoud**, H., "Expert Report on the Forensic Failure Analysis of the Steel Open Grid Deck of Route 1 & 9 T Passaic River Bridge," prepared for the Division of Law-State of New Jersey, ATLSS Report, August 2004.
- R36. Dexter, R. J. and **Mahmoud**, H., "Predicting Stable Fatigue Crack Propagation in Stiffened Panels," report for the Ship Structure Committee, Report # SSC 435, NTIS#: PB2004-105932, <http://www.shipstructure.org/pdf/435.pdf>, July 2004.
- R37. Connor, R. J., and **Mahmoud**, H., "Guide for Evaluating and Retrofitting Bridges for Constraint-induced Fracture," report submitted to Federal Highway Administration, May 2004.

## PRESENTATIONS

**(TOTAL = 173) 133 INVITED** (2 Memorial Lecture; 1 TEDx; 3 Distinguished; 10 Keynotes; 2 Plenaries; 39 Panels; 72 Presentations; 1 Listening session; 3 Posters), and **40 CONFERENCE PRESENTATIONS.**

### INVITED PRESENTATIONS

1. Panel – Managing the Plant: Safeguarding the Future - CSU Perspectives on the COP 28 Global Climate Negotiations (Feb 2024)  
School of Global Environmental Sustainability (SOGES)  
Colorado State University  
Fort Collins, CO.
2. Panel – The Role of Academies in Climate Policy Advice (Dec 2023)  
United Nations Climate Change Conference  
28<sup>th</sup> Conference of the Parties of the UNFCCC (COP28)  
Dubai, United Arab Emirates.
3. Panel – How government investments are transforming the landscape of climate resilient infrastructure (Dec 2023)  
United Nations Climate Change Conference  
28<sup>th</sup> Conference of the Parties of the UNFCCC (COP28)  
Dubai, United Arab Emirates.
4. Presentation – Higher Order Topology-Based Approach for Management of Water Infrastructure (Dec 2023)  
The 6th chemical Industrial Institute Conference (CIRIC-6) Under the theme of  
“Chemistry: Research Perspectives and Industrial Progress” Egyptian National Research Center, (NRC)  
Giza, Egypt.
5. Presentation – A Network Approach for Predicting Damage to the Built Environment During Wildfire Events (Dec 2023)  
Urban Resilience CoP  
Thornton Tomasetti (Virtual)  
New York, NY.
6. Presentation – System of Systems Approaches for Resilience Assessment of Communities (Nov 2023)  
Department of Civil and Environmental Engineering  
Rice University  
Houston, TX.
7. Panel – Wildfire: CSU & Department of Homeland Security (DHS) “How to Write a Connected Community Strategy” (Oct 2023)  
Walter Scott Jr. College of Engineering  
Colorado State University  
Fort Collins, CO.
8. *Keynote – Integrated Systems Approaches for Enhancing Urban Resilience (Nov 2023)*  
Center for Engineered and Engineered Urban Planning  
Xi’an University of Architecture and Technology  
Xi’an, China.
9. Presentation – Repair of Corroded Steel Structures with Fiber-Reinforced Polymers (Oct 2023)  
American Iron and Steel Institute (Virtual)  
Washington, DC.
10. Panel – Visualization of Data (Sep 2023)  
CEE Graduate Writing Panel

Colorado State University  
Fort Collins, CO.

11. Panel – National Academies’ Climate Crossroads Summit (July 2023)  
Exploring Intersections of Climate and Societal Challenges  
The National Academies for Sciences, Engineering, and Medicine  
Washington, DC.
12. Panel – New Voices of the National Academies Webinar: Climate Change, Threats to Human Health, and Health System Resilience (June 2023)  
New Voices of the National Academies One Health Webinar Series: Exploring Linkages Among Environmental, Human and Plant Wellbeing  
The National Academies for Sciences, Engineering, and Medicine (Virtual)  
Washington, DC.
13. *TEDx* – Saving Communities from Wildfires (June 2023)  
TEDxMileHigh, Denver  
The Ellie Caulkins Opera House  
Denver, CO.
14. Panel – The Importance of Basic Science for Africa's Development (June 2023)  
UNESCO’s African Continental Conference on Basic Science for Transformation  
The International Year of Basic Sciences for Sustainable Development (IYBSSD)  
Kigali, Rwanda.
15. Panel – New Voices Impact Show Case - Representing U.S. Young Scientists Abroad: Global Young Academy and the U.S. Frontiers (May 2023)  
New Voices of the National Academies Semi-Annual Meeting  
The National Academies for Sciences, Engineering, and Medicine  
Washington, DC.
16. Presentation – Damage, Losses, and Resilience – State of the Art Methods under the SoPHIE Research Group (April 2023)  
Larimer County  
Fort Collins, CO.
17. Panel – Making Infrastructure and Communities Resilient to Climate Change (April 2023)  
Climate Leadership Summit  
Colorado State University & Poudre School District  
Colorado State University  
Fort Collins, CO.
18. *Keynote* – Current and Future Trends in STEM Education (Feb 2023)  
Walter Scott Jr. College of Engineering  
Colorado State University  
Fort Collins, CO.
19. Panel – Managing the Plant: Safeguarding the Future - CSU Perspectives on the COP 27 Global Climate Negotiations (Feb 2023)  
School of Global Environmental Sustainability (SOGES)  
Colorado State University  
Fort Collins, CO.
20. Presentation – Unraveling the Complexity of Wildland Urban Interface Fires (Feb 2023)  
Earth Lab's - Environmental Data Science Seminar Series  
University of Colorado Boulder

Boulder, CO.

21. Panel – System-of-Systems Approach for Assessing the Impact of Extreme Events on Health Care Networks (Jan 2023)  
New Voices of the National Academies Workshop: Approaches to Justice and Equity Focused Energy  
New Voices of the National Academies One Health Webinar Series: Exploring Linkages Among Environmental, Human and Plant Wellbeing  
The National Academies for Sciences, Engineering, and Medicine (Virtual)  
Washington, DC.
22. Panel – Predicting Survivability of Buildings and Communities in Wildfire Events (Jan 2023)  
American Metrological Society Workshop: Leveraging Commercial Industry in Engineering Resilient Communities for a Weather-Ready Nation  
Denver, CO.
23. Presentation – A New Model for Predicting the Spatial Distribution of Damage to the Built Environment in Wildfire Events (Jan 2023)  
The Institute for Catastrophic Loss Reduction (Virtual)  
Toronto, Canada.
24. Panel – Inclusive Excellence (Representing NASEM New Voices) (Nov 2022)  
Worldwide Meeting of the Global Young Academies  
Tucson Arizona.
25. *Distinguished Lecture* – Impact of Sea Level Rise and Hurricane Events on Resilience of Industrial Communities in an Era of Climate Change (Nov 2022)  
Center for Engineered and Engineered Urban Planning  
Xi’an University of Architecture and Technology (Virtual)  
Xi’an, China.
26. Panel – Climate Transitions – Terrestrial Systems (Nov 2022)  
Climate Adaptation Partnership  
Colorado State University  
Fort Collins, CO
27. Presentation – Underwater Fatigue Repair of Steel Panels using CFRP and Basalt Fibers (Nov 2022)  
American Iron and Steel Institute (Virtual)  
Washington, DC.
28. Presentation – Improving the Strength of Corroded Members Using Basalt Fibers (Nov 2022)  
American Iron and Steel Institute (Virtual)  
Washington, DC.
29. Panel – Fire Risk Increase, a Challenge for Earth System and Societies (Nov 2022)  
United Nations Climate Change Conference  
27th Conference of the Parties of the UNFCCC (COP 27)  
Sharm El-Sheikh, Egypt.
30. *Distinguished Lecture* – Integrated Socio-Physical Analytics for Impact Assessment of Disasters on Communities (Oct 2022)  
Resilient City Research Center  
Zhejiang University (Virtual)  
Zhejiang, China.
31. Poster –Performance of Healthcare Networks Subjected to Natural Disasters and Pandemics (Oct 2022)  
1st US-Africa Frontiers of Science, Engineering and Medicine Symposium  
U.S. National Academy of Sciences & Masdar Institute of Science and Technology

World Agroforestry Centre  
United Nations  
Nairobi, Kenya.

32. Presentation – A Tool for Evaluating Mitigation Policies and Strategies to Minimize Potential Wildfire Economic Losses (Oct 2022)  
U.S. Forest Service  
Rocky Mountain Research Station  
Fort Collins, CO.
33. Presentation – Predicting Survivability Likelihood of the Buildings in Wildfire Events (Oct 2022)  
Santa Clara County FireSafe Council (Virtual)  
Santa Clara, CA.
34. Presentation – An Integrated Network Graph Model for Predicting Survivability of the Built Environment in Wildfire Events (Sep 2022)  
International Emergency Mechanisms and Disaster Risk Reduction  
Central School of the Fire Service (Virtual)  
Warsaw, Poland.
35. Presentation – Resilience of Healthcare Systems under the Compounding Impact of Pandemics and Climate-Intensified Wildfires (Sep 2022)  
4th Kenji Ishihara Colloquium Series on Earthquake Engineering  
Earthquake Engineering Research Institute - San Diego Regional Chapter (Virtual)  
San Diego, CA.
36. Panel – Capturing Socio-Physical Interaction Towards Reducing the Impact of Extreme Events (May 2022)  
National Academies Workshop: Compounding and Cascading Events  
Mitigating Impacts: Developing Solutions and Avoiding Unintended Consequences  
The National Academies for Sciences, Engineering, and Medicine (Virtual)  
Washington, DC.
37. Presentation – Predicting Ultra-Low Cycle Fatigue in Shear Links (May 2022)  
3rd International Conference on Seismic Design and Analysis of Structures and Foundations (SeismiCON 2022)  
Universities of Glasgow and Strathclyde (Virtual)  
Glasgow, UK.
38. *Keynote* – Resilient Assessment of Healthcare Systems under Wildfires and Pandemics (August 2022)  
Global Meet on Infrastructure and Construction (GMINFRA)  
Paris, France.
39. Presentation – Optimizing Healthcare System Resilience in the Face of COVID-19 (August 2022)  
2022 ESMED General Assembly  
European Society of Medicine (Virtual)  
Geneva, Switzerland.
40. Presentation – The Role of Interdependencies on Resilience of a School System Following Seismic Events (June 2022)  
ICOSSAR 2021-2022  
Tongji University (Virtual)  
Shanghai, China.
41. Presentation – Life-Cycle Risk-Informed Decisions for Future Community Development in Regions Prone to Riverine Flooding (June 2022)

- ICOSSAR 2021-2022  
Tongji University (Virtual)  
Shanghai, China.
42. Presentation – Predicting Survivability of Structures due to the Marshall Fire (April 2022)  
CONVERGE Virtual Forum – 2021 Boulder County Fires, Session 4  
Natural Hazard Center  
Boulder, CO.
  43. Presentation – Advanced Experimental and Computational Methods for Structural Assessment and Management of Deteriorated Infrastructure (February 2022)  
University of Minnesota  
Minneapolis, MN.
  44. Listening Session – Transportation/Infrastructure: Providing Input to the USGCRP on Research Needs Towards Sustainable and Resilient Infrastructure and Communities (December 2021)  
National Academies Committee to Advise the U.S. Global Change Research Program (USGCRP)  
The National Academies for Sciences, Engineering, and Medicine (Virtual)  
[USGCRP Pilot Listening Session Transportation Infrastructure | National Academies](#)  
Washington, DC.
  45. *Memorial Lecture* – Advances in Simulating the Response of Steel Structures under Fire and Fire Following Earthquakes (November 2021)  
Robert Dexter Memorial Lecture  
University of Minnesota  
Minneapolis, MN.
  46. Presentation – Sustainable and Resilient Infrastructure Research at CSU (November 2021)  
Guest Lecture (CE 8400)  
University of Minnesota  
Minneapolis, MN.
  47. Presentation – A Perspective on Dr. Mahmoud’s Research: From Material Modeling to Community Resilience (November 2021)  
Guest Lecture (CON 502)  
Colorado State University  
Fort Collins, CO.
  48. *Keynote* – Resilience of Complex Healthcare Networks Subjected to Wildfire and Pandemics (October 2021)  
5<sup>th</sup> Annual Resilience Colloquium: Innovations for Guided Transformations  
University of New Mexico (Virtual)  
Albuquerque, NM.
  49. *Keynote* – Integrated Systems-Level Approaches for Resilience Assessment of Civil Infrastructure Subjected to Extreme Events (October 2021)  
International Conference on Advances in Structural Mechanics and Applications (ASMA-2021),  
National Institute of Technology (Virtual)  
Silchar, India.
  50. Presentation – Advanced Methods for Performance-Based Assessment of Steel Buildings Under the Effects of Earthquake and Fire (September 2021)  
17<sup>th</sup> World Conference on Earthquake Engineering (17WCEE) (Virtual)  
Sendai, Japan.
  51. Presentation – Impact of Sequential Earthquakes on Functionality of Hospitals (September 2021)

- 17<sup>th</sup> World Conference on Earthquake Engineering (17WCEE) (Virtual)  
Sendai, Japan.
52. Presentation – Using Artificial Neural Networks to Predict Damage and Resilience from Extreme Wind events (December 2021)  
Society and Risk Analysis 2021 (Virtual).
53. *Keynote* – Managing Resources for Healthcare Systems in an Era of COVID-19 (October 2021)  
2<sup>nd</sup> International Conference on Science and Sustainable Development  
Egyptian National Research Center, (NRC) (Virtual)  
Giza, Egypt.
54. Presentation – Risk-Informed and Human-Centered Approaches for Impact Assessment of Disasters on Communities (April 2021)  
Civil and Environmental Engineering Departmental Seminar (Virtual)  
University of Michigan  
Ann Arbor, MI.
55. Presentation – Framework for Assessing the Compound Impact of Pandemics and Natural Disasters on Healthcare Systems (April 2021)  
Civil and Environmental Engineering External Advisory Board Meeting (Virtual)  
Fort Collins, CO.
56. Presentation – A Mixed Physics-Based and Data-Driven Model for Seismic Resilience Assessment of Hospital Networks (April 2021)  
Engineering Research Institute (EERI) (Virtual)  
University of Nevada  
Reno, NV.
57. Presentation – A New Paradigm for Assessing Wildfire Risk to Communities (March 2021)  
American Society of Civil Engineers (Virtual)  
Denver, CO.
58. Presentation – Advanced Physical and Data Analytics Methods for Resilience Assessment of Civil Infrastructure (January 2021)  
Department of Civil Engineering  
Indian Institute of Technology Hyderabad  
Hyderabad, India.
59. Presentation – Health Lifelines in COVID-19 – Increasing Resilience (July 2020)  
Future Views- Health, Business, Smart Cities  
World Federation of Scientists International Seminars on Planetary Emergencies  
Permanent Monitoring Panel - Mitigation of Catastrophic Risk (Virtual)  
World Federation of Scientists.
60. Presentation – Advanced Methods for Inspection and Management of Deteriorated Infrastructure (July 2020)  
BIM Arabia Magazine (Virtual).
61. Panel – Community Resilience (May 2020)  
Planning a Workshop on Engineering for Resilience Against Catastrophic Risks  
Permanent Monitoring Panel of the World Federation of Scientists  
World Federation of Scientists (Virtual).
62. Presentation – Risk-Informed Assessment of the Impact of Climate-Driven Events on the Built Environment (April 2020)  
Department of Civil and Environmental Engineering

- The University of California Los Angeles (Virtual)  
Los Angeles, CA.
63. Panel – Data Analytics for Infrastructure Resilience Modeling: The Compounded Effect of Climate Change and Deterioration of Performance of Bridges across the United States (May 2020)  
Infrastructure Resilience Division (IRD) Annual Research Forum  
American Society of Civil Engineers (Virtual).  
Reston, VA.
  64. Presentation – System of Systems Approaches for Assessment of Damage and Recovery of the Built Environment and Communities Following Extreme Events (April 2020)  
Department of Civil and Environmental Engineering  
The University of Illinois at Urbana Champaign (Virtual).  
Urbana, IL.
  65. Panel – The Notion of Resilience: From Infrastructure Damage to Societal Impact (January 2020)  
College of Engineering  
Blida 1 University  
Blida, Algeria.
  66. *Distinguished Lecture* – Vulnerability of Communities to Extreme Events: System of Systems Approaches (October 2019)  
Distinguished Lecture Series  
The College of Engineering  
New Mexico State University  
Las Cruces, NM.
  67. Presentation – Joint Removal Implications - Thermal Analysis and Life-Cycle Cost (September 2019)  
Bridge Communication Day – Colorado Department of Transportation  
Denver, CO.
  68. *Keynote* – Integrated Socio-Technical Frameworks for Sustainable and Resilient Interdependent Schools and Healthcare Systems Following Extreme Events (September 2019)  
1<sup>st</sup> International Conference on Science and Sustainable Development  
Egyptian National Research Center, (NRC)  
Giza, Egypt.
  69. *Keynote* – Advances in Computational Methods for the Assessment of Structures under Fires and Fire Following Earthquakes (August 2019)  
2nd International Conference on Numerical Modelling in Engineering (NME2019)  
Beijing, China.
  70. Presentation – Assessment and Management Approaches Towards Sustainable and Resilient Infrastructure and Communities (August 2019)  
Department of Civil and Environmental Engineering  
Zhejiang University  
Shanghai, China.
  71. Plenary – Isolated Floors for Near Damage-Free Performance of Buildings under Multiple Hazards (July 2019)  
Mini-Symposium on Vibration Control of Structures under Multiple Hazards  
Engineering Mechanics Institute Conference  
INSA Einstein  
Lyon, France.
  72. Presentation – Underwater Fatigue Repair of Steel Structures: Experimental Results, Numerical



- Assessments, and Field Applications (July 2019)  
American Iron and Steel Institute (AISI) and The American Association of State Highway (AASHTO) and Transportation Officials  
Steel Bridge Task Force Meeting  
Philadelphia, PA.
73. Plenary – Optimized Performance of Suspended Floor Building System under Seismic and Wind Hazards (June 2019)  
2<sup>nd</sup> International Conference on Seismic Design and Analysis of Structures and Foundations  
London, UK.
74. Presentation – Performance-Based Engineering of Steel Frames under Cascading Events of Earthquake and Fire (June 2019)  
Mini-Symposium on Earthquake Resilience and Cascading Effects  
Engineering Mechanics Institute Conference  
California Institute of Technology  
Pasadena, CA.
75. Presentation – Seismic Resilience of Fully Integrated Hospital Clusters Subjected to Mainshock-Aftershock Sequences (June 2019)  
Mini-Symposium on Multi-hazards considerations for Objective Infrastructure Resilience  
Engineering Mechanics Institute Conference  
California Institute of Technology  
Pasadena, CA.
76. Presentation – Finite Element Analysis of Resilience: A New Paradigm (June 2019)  
Mini-Symposium on Risk and Resilience Assessment of Civil Infrastructure Systems  
Engineering Mechanics Institute Conference  
California Institute of Technology  
Pasadena, CA.
77. Presentation – A New Framework for the Assessment of Wildfire Risk to Large Urbanized Communities (May 2019)  
International Seminar on Recent Developments to Mitigate the Impacts of Natural Hazard  
Korea Advanced Disaster Prevention Research Center  
Keimyung University  
Daegu, South Korea.
78. Panel – Field Observations and Simulations Strategies for Quantifying Community Risk to Wildland Urban (May 2019)  
Infrastructure Resilience Division (IRD) Annual Research Forum  
American Society of Civil Engineers  
Reston, VA.
79. Presentation – Community Resilience Assessment: Current Approaches and New Directions (March 2019)  
Department of Civil and Environmental Engineering  
Kuwait University  
Shwaikh, Kuwait.
80. Presentation – Condition of Bridges in the United States: Innovative solutions and Future Challenges (March 2019)  
Public Authority for Roads and Transportations  
Salmiya, Kuwait.

81. Presentation – The Role of Advanced Experimental and Numerical Simulations in the Management of Deteriorated Infrastructure (March 2019)  
Department of Civil and Environmental Engineering  
University of Southern California  
Los Angeles, CA.
82. Panel – The Nature of Structures: Biomimicry in Structural Design and Analysis (April 2019)  
Structures Congress  
Orlando, FL.
83. *Keynote* – Assessment of Community Vulnerability to Wildland Urban Interface Fire. (August 2018)  
3rd Annual Resilience Colloquium: Challenges of Natural Stresses: Resilience Engineering for Natural and Built Environment  
University of New Mexico  
Albuquerque, NM.
84. Presentation – Framework for Hospital Recovery Assessment Following Earthquakes (August 2018)  
Mini-Symposium on Civil Infrastructure Resilience  
US-Korea Conference on Science, Technology, and Entrepreneurship: Leading Discoveries in the Era of the 4th Industrial Revolution  
St. John’s University  
Queens, NY.
85. Presentation – Probabilistic Collapse Assessment of Beams under Localized Fires (June 2018)  
Mini-Symposium on Structural-Fire Engineering – Past, Present, and Future  
Engineering Mechanics Institute Conference  
Massachusetts Institute of Technology  
Boston, MA.
86. Presentation – Optimization of Buildings for Near Damage-Free Performance under Multiple Hazards (June 2018)  
Mini-Symposium on Complex Dynamics Modeling and Control of Structures under Multi-Hazards  
Engineering Mechanics Institute Conference  
Massachusetts Institute of Technology  
Boston, MA.
87. Panel – Performance-Based Engineering: State-of-the-Art, State-of-Practice, and Future Trends (April 2018)  
Structures Congress  
Fort Worth, TX.
88. Presentation – Advances in Simulating Ultra-Low Cycle Fatigue Failure  
National Institute of Standards and Technology (NIST)  
Gaithersburg, MD.
89. Panel – Community Resilience Assessment using Discrete Finite Elements (Dec 2017)  
2nd International Workshop on Modeling of Physical, Economic, and Social Systems for Resilience Assessment  
The Joint Research Centre (JRC) of the European Commission  
Ispra, Italy.
90. Panel – Effect of Seismic Fragilities on Resilience Quantification of a Steel Hospital (Dec 2017)  
2nd International Workshop on Modeling of Physical, Economic, and Social Systems for Resilience Assessment  
The Joint Research Centre (JRC) of the European Commission

Ispira, Italy.

91. Panel – A New Finite Element Tool for Quantifying Community Resilience (Sep 2017)  
Resilience Week 2017  
University of Delaware  
Wilmington, DE.
92. Panel – An Asynchronous Graph for Assessing Communities Risk to Wildfires (Sep 2017)  
Resilience Week 2017  
University of Delaware  
Wilmington, DE.
93. Panel – A Framework for Estimating Interdependent Functionality Reduction of a Steel Hospital Following a Seismic Event (June 2017)  
Resilience Week 2017  
University of Delaware  
Wilmington, DE.
94. Presentation – Effect of Modeling Resolution on the Seismic Fragilities and Resilience of a Steel Hospital Building (June 2017)  
Mini-Symposium on Structural Modeling and Identification for Performance and Resilience  
Assessment of Civil Structures  
Engineering Mechanics Institute Conference  
University of California San Diego  
San Diego, CA.
95. Presentation – Multi-Hazard Combinatorial Optimization of Buildings with Suspended Floor Slabs (June 2017)  
Mini-Symposium on Control of Structures for Multiple Hazards  
Engineering Mechanics Institute Conference  
University of California San Diego  
San Diego, CA.
96. Panel – Progressive Collapse Analysis of Composite Steel Frames under Elevated Temperature (July 2017)  
Eighth International Conference on Composite Construction in Steel and Concrete  
Jackson Hole, WY.
97. Panel – Community Vulnerability Assessment to Wildfires (June 2017)  
The 2nd Tsinghua-NIST Resilience Center Workshop  
Tsinghua University  
Beijing, China
98. Poster – Quantifying Community Risk to Wildfire (June 2017)  
5th China-American NAE Frontiers of Engineering Symposium  
U.S. National Academy of Engineering & Chinese Academy of Engineering  
Shanghai, China.
99. Presentation – Assessment of Wildfire Risks to a Community (April 2017)  
Center for Risk-Based Community Resilience Planning  
Fort Collins, CO.
100. Presentation – A New Hurricane Impact Level Ranking System: A Multivariable Approach to Forecasting Loss Using Artificial Neural Networks for Communicating Risk to the Public (March 2017)  
National Center for Atmospheric Science  
Boulder, CO.

101. Presentation – Simulating Block Shear Fracture in Bolted Connections (January 2017)  
TRB AFF20(1): Methods for Analyzing Steel Bridges Subcommittee  
Transportation Research Board 96th Annual Meeting  
Washington, DC.
102. Panel – Increased Inspection Intervals of Two-Girder Steel Bridges using Probabilistic Fracture Mechanics (January 2017)  
TRB AFF20: Service Life Engineering for Durable Steel Bridges  
Transportation Research Board 96th Annual Meeting  
Washington, DC.
103. Presentation – Hazard Characterization and Structural Response Evaluation for the Assessment of Community Resilience (November 2016)  
Department of Civil and Environmental Engineering  
Pennsylvania State University  
University Park, PA.
104. Poster – Using Artificial Neural Networks to Forecast Hurricane Impacts Resulting from Multiple Hazards (November 2016)  
4th Arab American Frontiers of Science, Engineering and Medicine Symposium  
U.S. National Academy of Sciences & Masdar Institute of Science and Technology  
Masdar Institute  
Abu Dhabi, U.A.E.
105. Panel – A Probabilistic Cellular Automata Framework for Assessing the Impact of WUI Fires on Communities (September 2016)  
Urban Transitions Global Summit: Towards a Better Urban Future in an Interconnected Age  
Shanghai, China.
106. Panel – The 1st Tsinghua-NIST Resilience Center Workshop: Framework for Community Vulnerability to Wildfires (May 2016)  
Tsinghua University  
Beijing, China.
107. Panel – Predicting Block Shear Fracture and Strength in Bolted Connections (May 2016)  
Seventh International Workshop on Connections in Steel Structures  
Northeastern University Boston, MA.
108. Presentation – Advanced Numerical and Experimental Methods for Assessing the Response of Steel Structures under Fire Hazard (April 2016)  
Civil and Environmental Engineering External Advisory Board Meeting  
Fort Collins, CO.
109. Presentation – Challenges and Alternative Approaches for Simulating the Response of Steel Structures Exposed to Fire (December 2015)  
Second International Conference on Performance-based and Life-cycle Structural Engineering (PLSE)  
Brisbane, Australia.
110. Panel – Thesis/Capstone Project vs Non-Thesis Options for Master’s Students and Dissertation Topics for Ph.D. Students (November 2015)  
Norma Anderson and the Bill Anderson Foundation
111. Presentation – A New Model for Predicting Ductile Fracture in Metal Alloys (October 2015)  
Department of Civil and Environmental Engineering  
University of Waterloo  
Waterloo, CA.

112. Presentation – Multi-Hazard Assessment of Steel Frames under Fire and Seismic Demands: Current Challenges and Recent Developments (October 2015)  
Department of Civil Engineering University of Toronto  
Toronto, CA.
113. Presentation – Fatigue and Fracture Assessment and Repair of Civil Infrastructure (October 2015)  
American Society of Civil Engineering (ASCE) Northern Colorado Branch  
Fort Collins, CO.
114. Presentation – A Unified Model for Ductile Fracture of Metals under Complex Loading History (June 2015)  
Mini-Symposium on Recent Advances in Fracture and Fatigue Mechanics, and their Application to Metallic Civil Structures  
Engineering Mechanics Institute Conference  
Stanford University  
Stanford, CA.
115. Presentation – A Probabilistic Framework for the Evaluation of Preterm Birth (March 2015)  
Spring Semester Faculty Lecture  
School of Biomedical Engineering Colorado State University  
Fort Collins, CO.
116. *Memorial* – A Probabilistic Approach for Fitness-for-Purpose Assessment of Welded Details (Aug 2014)  
The Robert Dexter Memorial Lecture Award  
American Iron and Steel Institute (AISI) and The American Association of State Highway (AASHTO) and Transportation  
Denver, CO.
117. Panel – Mechanics of Fatigue and Fracture with ABAQUS Finite Element Applications (June 2014) (Delivered 6 presentations in 3 full-day workshop)  
U.S. Army Corps of Engineers  
U.S. Army Engineer Research and Development Center  
Vicksburg, MS.
118. Presentation – Probabilistic Framework for Fatigue and Fracture Assessment of Welded Details (May 2014)  
Faculty of Engineering  
Cairo University  
Cairo, Egypt.
119. *Keynote* – State-of-the art Fatigue and Fracture Repair Methods of Steel Structures, 10th International Conference on Civil and Architecture Engineering (ICCAE-10), (May 2014)  
Egypt Military Technical College  
El-Korba, Egypt.
120. Presentation – The Effect of Tsunami and Debris Impact on Wood Walls, (Jan 2014)  
Department of Civil and Environmental Engineering  
The University of Illinois at Urbana Champaign Annual EKS meeting  
Champaign, IL.
121. Presentation – Fatigue and Fracture Assessment and Repair of Steel Bridges, (Dec 2013) (Delivered five presentations in a full-day workshop)  
General Authority for Roads, Bridges and Land Transport  
Cairo, Egypt.

122. Presentation – Research and Teaching in Structural Hazards Mitigation (April 2013)  
Spring Semester Faculty Lecture  
Structural Engineering and Structural Mechanics, Department of Civil and Environmental Engineering  
Colorado State University  
Fort Collins, CO.
123. Presentation – Recent Development in Teaching and Research at CSU in Structural Hazards Mitigation (April 2013)  
Department of Civil and Environmental Engineering Advisory Board  
Structural Engineering and Structural Mechanics, Department of Civil and Environmental Engineering  
Colorado State University  
Fort Collins, CO.
124. Panel – Performance of Steel Moment Frames with Reduced Beam Section under Combined Hazards of Seismic and Fire (December 2012)  
US-Vietnam Workshop on Multiple Hazards Assessment and Mitigation under the Impact of Climate Change  
Hanoi Architectural University  
Hanoi, Vietnam.
125. Presentation – Seismic Evaluation of Semi-Rigid Steel Frames Using Hybrid Simulation (April 2012)  
Department of Civil, Environmental, and Architectural Engineering, Structural Engineering and Structural Mechanics  
University of Colorado Boulder  
Boulder, CO.
126. Presentation – Sustainable Steel Frames with Semi-Rigid Connections (October 2011)  
Structural Engineering and Structural Mechanics, Department of Civil and Environmental Engineering  
Colorado State University  
Fort Collins, CO.
127. Presentation – Advanced System-level Hybrid Simulation Approach for the Seismic Evaluation of Partial-Strength Semi-Rigid Steel Frames (May 2011)  
Faculty of Engineering  
Cairo University  
Cairo, Egypt.
128. Presentation – Identified Weaknesses in Eurocode 3: Design of Steel Structures - Part 1-8: Design of Joints (November 2008) (on behalf of Prof. Elnashai)  
EUROCODE Technical Committee, ECCS TC-13  
Timisoara, Romania.
129. Presentation – Seismic Performance of Steel Frames with Semi-Rigid Connections: Hybrid Simulation and Mixed Mechanical-Neural Network Models (May 2008) (on behalf of Prof. Elnashai)  
EUROCODE Technical Committee, ECCS TC-13  
Naples, Italy.
130. Panel – Fatigue and Fracture Evaluation of Steel Hydraulic Structures: Invited by the Army Corps of Engineers for a Technical Focus Team Meeting (November 2007)  
La Holla, CA.
131. Panel – Fatigue and Fracture Assessment of Hydraulic Steel Structures (June 2007)  
Infrastructure System Conference  
Detroit, MI.
132. Presentation – Fracture Potential of Highly Constraint Details in Steel Plate Girders (November 2004)

FERS seminar series at Lehigh University  
Bethlehem, PA.

133. Presentation – Fatigue, Fracture and Dynamic Evaluation of Bridges (August 2004)  
Minnesota Department of Transportation, Bridge Office  
Oakdale, MN.

### CONFERENCE PRESENTATIONS

1. Predicting the Survival likelihood of Buildings in Wildfire Events (Feb 2023)  
Wildfire Resilient Structures (WiReS)  
University of California Davis  
Davis, CA.
2. Risk-Informed Strategies for Mitigating the Impact of Wildland Urban Interface Fires (June 2022)  
The 13th International Conference on Structural Safety & Reliability (ICOSSAR) (Virtual)  
Shanghai, China.
3. Coupling Tropical Cyclones and Sea Level Rise to Achieve Resilient Coastal Communities in an Era of Climate Change (April 2022)  
Structures Congress  
Atlanta, GA.
4. Assessment of Demand on Steel Bridges subjected to Future Thermal Loadings in the Presence of Clogged Expansion Joints (April 2022)  
Structures Congress  
Atlanta, GA.
5. Small-Scale Hybrid Simulation Framework for Steel Frames Subjected Fire Following Earthquake (September 2021)  
Mechanistic Machine Learning and Digital Twins for Computational Science, Engineering & Technology  
University of California San Diego  
San Diego, CA.
6. A Framework for Performance-Based Fire Following Earthquake Engineering (May 2019)  
13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP)  
Seoul, South Korea.
7. A New Hazard-Agnostic Finite Element Model for Community Resilience Assessment (May 2019)  
13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP)  
Seoul, South Korea.
8. Framework for Recovery Assessment of Hospital Cluster Following a Scenario Earthquake Event (May 2019)  
13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP)  
Seoul, South Korea.
9. Optimized Inspection Intervals for Bridges using Life-Cycle Cost (April 2019)  
Structures Congress  
Orlando, FL.
10. Innovations in Structural Engineering Education – Teaching Structural Fire Engineering: System-Level Stability of Steel Frames under Fire (April 2019)  
Structures Congress  
Orlando, FL.

11. Underwater Large-Scale Experimental Fatigue Assessment of CFRP-Retrofitted Steel Panels (April 2019)  
Structures Congress  
Orlando, FL.
12. Comparative Loss Assessment of a Steel Hospital Using Multi-Resolution Numerical Models (June 2018)  
11th National Conference on Earthquake Engineering (11NCEE)  
Los Angeles, CA.
13. Resilience Quantification of a Steel Hospital Subjected to Earthquake Loading (June 2018)  
11th National Conference on Earthquake Engineering (11NCEE)  
Los Angeles, CA.
14. Experimental Assessment of Cracked Steel Beams Under Elevated Temperature (April 2018)  
Structures Congress  
Fort Worth, TX.
15. Effect of Modeling Resolution on the Seismic Resilience of a Steel Hospital Building (August 2017)  
3rd Huixian International Forum on Earthquake Engineering for Young Researchers (3HIFEE) the University of Illinois at Urbana-Champaign  
Urbana, IL.
16. Multi-hazard Mitigation of Building Structures using New Floor Isolation Techniques (July 2016)  
6th European Conference on Structural Control (EACS) European Conference  
University of Sheffield  
Sheffield, UK.
17. Suspended and Self-Centered Floor Slabs for Earthquake Resistance (February 2016)  
ASCE GeoStructures Congress  
Phoenix, AZ.
18. Design of Externally Bonded CFRP for Enhancing the Fatigue Performance of RC Bridges (February 2016)  
ASCE GeoStructures Congress  
Phoenix, AZ.
19. Distortion-Induced Fatigue Crack Growth (February 2016)  
ASCE GeoStructures Congress  
Phoenix, AZ.
20. Floor Slab Isolation for Mitigating the Seismic Response of Building Systems (August 2015)  
The Joint 6th International Conference on Advances in Experimental Structural Engineering (6AESE) and 11th International Workshop on Advanced Smart Materials and Smart Structures Technology (11ANCRiSST)  
The University of Illinois at Urbana-Champaign  
Urbana, IL.
21. Ultra-Low Cycle Fatigue Demand on Coped Beam Connections under Vertical Excitations (July 2015)  
The 8th International Conference on Behavior of Steel Structures in Seismic Areas (STESSA)  
Shanghai, China.
22. The Effect of Earthquake History on the Localized Behavior of Moment Connections under Fire (July 2015)  
The 8th International Conference on Behavior of Steel Structures in Seismic Areas (STESSA)  
Shanghai, China.



23. Prediction of Block Shear Fracture in Bolted Connections (July 2015)  
The 8th International Conference on Advances in Steel Structures  
Lisbon, Portugal.
24. Simulation of Growth and Instability of Large Cracks under Reverse Loading (July 2015)  
The IJSSD Symposium on Progress in Structural Stability and Dynamics  
Lisbon, Portugal.
25. Alternative Modeling Approaches for Assessing the Effect of an Earthquake Followed by a Fire on the Response Steel Frames (April 2015)  
ASCE Structures Congress  
Portland, OR.
26. A Probabilistic Design Approach for Structures Subjected to the Combined Hazards of Wind and Seismic Using Life Cycle Cost (April 2015)  
ASCE Structures Congress  
Portland, OR.
27. Predicting Tsunami Impact Loading using Coupled Eulerian-Lagrangian Formulation (Oct. 2014)  
The 5th Asia Conference on Earthquake Engineering  
Taipei, Taiwan.
28. Innovative Building System with Suspended Floor Slabs for Seismic Application (Oct. 2014)  
The 5th Asia Conference on Earthquake Engineering  
Taipei, Taiwan.
29. Growth and Instability of Long Cracks in Non-redundant and Redundant Structures (May 2014)  
The 10th International Conference on Civil and Architecture Engineering  
Cairo, Egypt.
30. Fatigue Reliability of Stiffened Panels using Finite Element Monte Carlo Simulations (May 2013)  
ASCE Structures Congress  
Pittsburgh, PA.
31. Hybrid Simulation of Partial-Strength Semi-Rigid Steel Frames (May 2013)  
ASCE Structures Congress  
Pittsburgh, PA.
32. 3D FEM Model for Tsunami Debris Impact Loading on Structural Walls (December 2012)  
1st International Conference on Performance-based and Life-cycle Structural Engineering  
Hong Kong, China.
33. Advanced Hybrid Simulation Application for the Seismic Assessment of Semi-Rigid Partial-Strength Steel Frames (July 2012)  
NEES-Quake Summit  
Boston, MA.
34. Hybrid Simulation for the Assessment of Semi-Rigid Partial-Strength Steel Frames in Seismic Regions (May 2012)  
International Conference on Earthquake Engineering: Research Challenges in the 21st Century  
Harbin, China.
35. A Detailed 2D Finite Element Model for the Seismic Assessment of Steel Frames with Top-and-Seat Angle with Double Web-Angle Connections (May 2011)  
3rd International Conference on Computational Methods in Structural Dynamics and Earthquake Engineering  
Corfu, Greece.

36. System-Level Seismic Evaluation of Partial-Strength Semi-Rigid Steel Frames using Hybrid Simulation (March 2010)  
7th International Conference on Urban Earthquake Engineering and 5th International Conference on Earthquake Engineering  
Tokyo, Japan.
37. A Framework for Hybrid Simulation of Semi-Rigid Steel Frames (August 2009)  
STESSA 2009: Behavior of Steel Structures in Seismic Areas  
Philadelphia, PA.
38. Evaluation of Stresses at Connection Plate Gap Details on a Cross Girder Using Finite Element Analysis and Field Measurements (August 2006)  
1st International Conference on Fatigue and Fracture in the Infrastructure: Bridges and Structures of the 21st Century  
Philadelphia, PA.
39. Field Testing and Fatigue Evaluation of the I-39 Northbound Bridge over the Wisconsin River (June 2006)  
23rd Annual International Bridge Conference  
Pittsburgh, PA.
40. Field Testing and Fatigue and Fracture Evaluation of the I-79 Neville Island Bridge (June 2005)  
22nd Annual International Bridge Conference  
Pittsburgh, PA.

## **ADVISED STUDENTS, STUDENTS COMMITTEES, AND VISITING SCHOLARS**

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***(TOTAL = 46)* 4 VISITING SCHOLAR; 8 PH.D. STUDENTS, 34 M.S. STUDENTS**

### **CURRENT POSTDOCTORAL AND VISITING SCHOLARS**

1. Dr. Akshat Chulahwat, Colorado State University.
2. Dr. Emad Hassan, Colorado State University.
3. Prof. Xiguang Liu, Xi'an University of Architecture and Technology.

### **FORMER VISITING SCHOLARS**

1. Prof. Lin Chen, Guangzhou University, Guangzhou, China.
2. Dr. Mehrdad Memari, Colorado State University.
3. Zhenshiyi Tian, Tsinghua University.
4. Dr. Huajie Wen, Colorado State University.
5. Prof. Qiuping Wang, Northeast Agriculture University, Harbin, China.

### **CURRENT PH.D. STUDENTS**

1. Ismail Amara, Chair – "*Capturing the Impact of Local Wind Field on Wildfire Damage to Communities using Data Analytical and Numerical Models,*" Colorado State University.
2. Fatemah Alazemi, Chair – "*To Be Determined,*" Colorado State University
3. Mohamed Abdelhafez, Chair – "*Vulnerability of a Coastal Industrial Community to Sea Level Rise and Climate Change,*" Colorado State University.
4. Raneem AL-Hosainat, Chair – "*To Be Determined,*" Colorado State University
5. Ingy Ibrahim, Chair – "*To Be Determined,*" Colorado State University
6. Christine Lozano, Chair – "*Integrating Hybrid Simulation with Additive Manufacturing for Assessment of Military Structures under Hazardous Events,*" Colorado State University.
7. Michael Naranjo, Chair – "*To Be Determined,*" Colorado State University
8. Srijesh Pradhan, Chair – "*The Role of Supply Chain in Rebuilding Communities Following Wildfires,*" Colorado State University.
9. Kellan Sullivan, Chair – "*Socio-Technical Strategies for Mitigating Blast Risk in Open Urban Settings,*" Colorado State University.

### **FORMER PH.D. STUDENTS**

1. Akshat Chulahwat, Chair – "*Quantifying Community Risk to Wildland Urban Interface Fires,*" Colorado State University, Fall 2019.
2. Assal Hussein, Chair – "*Performance Assessment of Simple Blast Wall Systems,*" Colorado State University, Spring 2019.
3. Emad Hassan, Chair – "*Resilience of Healthcare and Education Networks and their Interaction Following Major Earthquakes,*" Colorado State University, Spring 2021.
4. Mona Hemmati, Chair – "*Impact of Urban Growth on Flood Risk,*" Colorado State University, Summer 2021.
5. Mehrdad Memari, Chair – "*Performance of Steel Structures Subjected to Fire Following Earthquake,*"

Colorado State University, Summer 2016.

6. Saeed Nozhati, Co-Chair – "*Optimal Stochastic Scheduling of Restoration of Infrastructure Systems from Hazards: An Approximate Dynamic Programming Approach*," Colorado State University, Summer 2019.
7. Stephanie Pilkington, Chair – "*Integration of Graphical and Physics-Based Analysis with Machine Learning Methods for Modeling Community Impact and Recovery of the Built Environment from Wind Hazards*," Colorado State University, Spring 2019.
8. Huajie Wen, Chair – "*Predicting Ductile Fracture in Steel Connections*," Colorado State University, Summer 2016.

### **CURRENT M.S. STUDENTS**

1. Jaya Sharma, Chair – "*To be Determined*," Colorado State University, Colorado State University.

### **FORMER M.S. GRADUATE STUDENTS**

1. Mohamed Abdelhafez (Plan A), Chair – "*Vulnerability of a Coastal Industrial Community to Sea Level Rise, Hurricane, and Climate Change*," Colorado State University, Summer 2020.
2. Sushant Admuthé (Plan A), Chair – "*Effect of Sequential Main Shock Aftershock hazards on the Seismic Performance of Semi-Rigid Steel Frames*," Colorado State University, Summer 2018.
3. Pramodit Adhikari (Plan A), Co-Chair – "*Life Cycle Cost and Carbon-Footprint Analysis for Buildings and Communities Subjected to Tornadoes*," Colorado State University, Summer 2020.
4. Bashir Ahmadi, (Plan A), Chair – "*Experimental Assessment of Cracked Steel Beams under Mechanical Loading and Elevated Temperature*," Colorado State University, Fall 2016.
5. Ismail Amaraa (Plan A), Co-chair – "*Non-linear Analysis of Steel Buildings with Vertical Optimization of Damper Placement*," Cairo University.
6. Risa Benvenga, (Plan A), Chair, "*Probabilistic Assessment of the Effect of Main Shock-Aftershock Sequences on the Performance of Moment of Connections*," Colorado State University, Fall 2018.
7. Atul Chavan (Plan C), Chair – Colorado State University, Fall 2019.
8. Guo Cheng, (Plan A), Chair – "*A Framework for Life-Cycle Optimization of Buildings Under Seismic and Wind Hazards*," Colorado State University, Spring 2014.
9. Akshat Chulahwat (Plan A), Chair – "*Structural Systems with Suspended and Self-Centered Floor Slabs for Earthquake Resistance*," Colorado State University, Spring 2013.
10. Chaitanya Dwadasi (M.E., Plan C), Chair, Colorado State University, Spring 2016.
11. Travis Engle, (Plan A), Chair – "*A Floor Slab Damper and Isolation Hybrid System Optimized for Seismic Vibration Control*," Colorado State University, Spring 2014.
12. Matthew Hardman (M.E., Plan C), Chair, Colorado State University, Spring 2013.
13. Aura Lee Harper Smith, (Plan A), Chair – "*Life Cycle Cost Analysis for Joint Elimination and Retrofits and Thermal Loading on Colorado Bridges*," Colorado State University, Spring 2017.
14. Lauren Hudak, (Plan A), Chair – "*Experimental Fatigue Evaluation of Underwater Steel Panels Retrofitted with Fiber Reinforced Polymers*," Colorado State University, Spring 2019.
15. Lena Hartung, (Plan A), Chair – "*Fatigue Reliability and Post-Fracture Residual Capacity of a Two-Girder Steel Bridge*," Colorado State University, Fall 2016.

16. Mazin Irfaee, (Plan A), Chair – "*Effect of Mixed-Mode Loading on Fatigue and Fracture Assessment of Steel Twin Box-Girder Bridge,*" Colorado State University, Fall 2019.
17. Susan Palu, (Plan A), Chair – "*Assessment of Potential Impacts of Climate Change on the Integrity and Maintenance Costs of Simply Supported Steel Girder Bridges in the United States,*" Colorado State University, Summer 2019.
18. Jeet Sonwani, (Plan A), Co-Chair – "*Seismic Collapse Risk Assessment and Probabilistic Sensitivity Analysis of Braced Frames Under Near-Fault Earthquakes,*" Colorado State University, Fall 2019.
19. Tim Maloney, (Plan A), Chair – "*Quantification of Performance, Damage, and Risk to Light Wood Frame Buildings Subjected to Tornadoes and Expansive Soils,*" Colorado State University, Summer 2017.
20. Mahmoud Mostafa (Plan A), Co-chair – "*Reliability-Based Design Optimization of Steel Trusses,*" Cairo University, Spring 2023.
21. Paula Miller, (Plan A), Chair – "*Numerical Simulation of Out-of-Plane Distortion Fatigue Crack Growth in Bridge Girders,*" Colorado State University, Spring 2014.
22. Vatsal Paghadar (Plan B), Chair – "*Comparison of Existing High-Cycle Fatigue Assessment Models,*" Colorado State University, Summer 2017.
23. Stephanie Pilkington, (Plan A), Chair – "*A New Hurricane Impact Level Ranking System Using Artificial Neural Networks,*" Colorado State University, Spring 2015.
24. Jill Porretta (Plan B), Chair – "*Comparative Collapse Analysis of Post-Earthquake Steel Frames Subjected to Elevated Temperatures*" Colorado State University, Summer 2021.
25. Chao Qin, (Plan A), Chair – "*Collapse Simulations of Steel Buildings Under Fire,*" Colorado State University, Spring 2016.
26. Karly Rager, (Plan A), Chair – "*Effect of Eliminating Deck Joints on the Response of Steel Bridges under Service Temperatures,*" Colorado State University, Spring 2016.
27. Santiago Lopez, (Plan A), Chair – "*Multi-Axial Fatigue Strength of Structural Bolts in Slip-Critical Connections Under Combined Cyclic and Shear Demands,*" Colorado State University, Summer 2018.
28. Erick Ritter (M.E., Plan C), Chair, Colorado State University, Spring 2017.
29. Vanessa Smith (Plan A), Chair – "*Evaluation of Wind Turbine Towers under the Simultaneous Application of Seismic, Operation, and Wind Loads,*" Colorado State University, Fall 2013.
30. Tyler Sobieck, (Plan A), Co-chair – "*Fatigue Assessment of Retrofitted RC Bridge Girders under Elevated Service Temperature,*" Colorado State University, Fall 2014.
31. Alireza Towhidi, (Plan B), Chair – "*State of Current Quantifiable Measures of Sustainability and Resiliency for Civil Infrastructure,*" Colorado State University, Fall 2016.
32. Collin Turbert (Plan A), Chair, "*Effect of Fire and Fire Following an Earthquake on Reduced Beam Section Moment Connections,*" Colorado State University, Fall 2013.
33. Anuj Valsangkar (Plan A) – "*Fatigue Crack Propagation in Underwater Carbon Fiber Reinforced Polymer (CFRP)-Retrofitted Steel Panels,*" Colorado State University, Fall 2015.
34. Omar Khaled (Plan A), Co-chair – "*Use of Model Calibration Technique to Drive Accurate Fragility Curves,*" Cairo University, Spring 2022.
35. Scott Wardwell, (Plan A), Chair – "*The Effect of Single, Shaped Surface Flaws on Ductility in Cast Aluminum Dog Bone Specimens,*" Colorado State University, Summer 2017.

36. Thomas Wilson (Plan A), Co-Chair – "*Seismic Performance of Skewed and Curved RC Bridges*," Colorado State University, Fall 2013.

#### **GRADUATE STUDENTS' COMMITTEES**

1. Ojo Abraham (Ph.D.), Colorado State University.
2. Omar Amini (Ph.D.), Colorado State University, *graduated*.
3. Pouria Bahmani (Ph.D.), Colorado State University, *graduated*.
4. Felicia Bianca (Plan A), Colorado State University.
5. Piper Blackburn (M.S., Plan B), Colorado State University, *graduated*.
6. Hunter Brumblay (Ph.D.), Colorado State University.
7. Luke Chia-Gee Chen (Ph.D.), Colorado State University.
8. Todd Clapp (M.S., Plan A), Colorado State University, *graduated*.
9. Poojitha Deshraj, (M.S., Plan B), Colorado State University, *graduated*.
10. Alexandra Dukeman, (M.S., Plan B), Colorado State University, *graduated*.
11. Trung Do (Ph.D.), Colorado State University, *graduated*.
12. Michael Fox (Ph.D.), Colorado State University.
13. Jace Furley (Ph.D.), Colorado State University, *graduated*.
14. Elaina Jennings (Ph.D.), Colorado State University, *graduated*.
15. Anish Jadhav (M.S., Plan A), Colorado State University, *graduated*.
16. Robert Johnson (Ph.D.), Colorado State University, *graduated*.
17. Blythe Johnston (Ph.D.), Colorado State University.
18. Suraj Khanal (Ph.D.), Colorado State University.
19. Negar Khanmiri (Ph.D.), Colorado State University, *graduated*.
20. Liz Lawler (Ph.D.), Colorado State University.
21. Wei Liang (Ph.D.), Colorado State University.
22. Hassan Massomi (Ph.D.), Colorado State University, *graduated*.
23. Amanda McCann (M.S.), Colorado State University, *graduated*.
24. Leila Naderi (Ph.D.), Colorado State University.
25. Omar Nofal (Ph.D.), Colorado State University, *graduated*.
26. Rung Panasawatwong (Ph.D.), Colorado State University.
27. Brandon Perry (Ph.D.), Colorado State University.
28. Srijesh Pradhan (M.S.), Colorado State University, *graduated*.
29. Abdalmaged Salem (M.S., Plan A), Colorado State University, *graduated*.
30. Kwancheol Shin (Ph.D.), Colorado State University, *graduated*.
31. Stefanie Schulze (M.S, Plan A), Oregon State University, *graduated*.

32. Shangbo Tong (M.S, Plan A), Colorado State University, *graduated*.
33. Shangbo Tong (Ph.D.), Colorado State University.
34. Lisa Wang (Ph.D.), Colorado State University.
35. Zhenqiang Wang (Ph.D.), Colorado State University.
36. Yangyang Wu (Ph.D.), Colorado State University.
37. Yufen Zhou (Ph.D.), Colorado State University, *graduated*.

#### **UNDERGRADUATE RESEARCH ASSISTANT AND HONOR THESIS**

1. Bashir Ahmadi (research assistant)
2. Brianna Arthur (research assistant)
3. Khaled Alsumait (research assistant)
4. Sergio Arias (research assistant)
5. Devin Blanch (honor thesis)
6. Brady Durham (honor thesis)
7. Kristi Gemperline (honor thesis)
8. Sofia Hiller (research assistant)
9. Kendall Hollins (research assistant)
10. Mohamed Kamal (research assistant)
11. Eryn Lum (honor thesis)
12. Mitch Maloof (honor thesis)
13. Kavi Pool (honor thesis)
14. Monica Prycel (research assistant)
15. Erick Ritter (honor thesis)
16. Kellan Sullivan (research assistant)

**TEACHING – GRADUATE COURSES**

Course Prefix	Course title	Year	Sem	Sem. No.	Sem Score	Total No.	Total Score <sup>1</sup>
CIVE 767	Structural Dynamics & Earthquake Engineering	2011	Fall	13	4.69	<b>13</b>	<b>4.69</b>
CIVE 664	Mechanics of Fatigue and Fracture	2013	Spring	14	3.54	<b>47 (42)</b>	<b>4.32</b>
CIVE 664		2014	Fall	16	4.55		
CIVE 664		2015	Fall	12	4.82		
CIVE 664		2017	Fall	5	4.60		
CIVE 664		2019	Spring	4	NA <sup>2</sup>		
CIVE 561	Advanced Steel Behavior and Design	2014	Spring	28	3.80	<b>146 (83)</b>	<b>4.69</b>
CIVE 561		2015	Spring	20	4.79		
CIVE 561		2016	Spring	24	4.20		
CIVE 561		2017	Spring	11	4.55		
CIVE 561		2018	Spring	19	NA <sup>2</sup>		
CIVE 561		2020	Spring	22	NA <sup>2</sup>		
CIVE 561		2022	Spring	11	NA <sup>2</sup>		
CIVE 561	2023	Spring	11	NA <sup>2</sup>			
CIVE 580A7	Fire Dynamics and Engineering	2016	Fall	9	4.44	<b>9</b>	<b>4.44</b>
CIVE 562	Fundamentals of Vibrations	2019	Spring	12	NA <sup>2</sup>	<b>48</b>	<b>NA</b>
CIVE 562		2020	Spring	11	NA <sup>2</sup>		
CIVE 562		2021	Spring	9	NA <sup>2</sup>		
CIVE 562		2022	Spring	3	NA <sup>2</sup>		
CIVE 562		2023	Spring	13	NA <sup>2</sup>		
CIVE 580A7	Fire Dynamics and Engineering	2016	Fall	9	4.44	<b>9</b>	<b>4.44</b>

<sup>1</sup> Based on response to question #23 of standard student course survey: "How do you rate this instructor?" where 5 = excellent, 4 = above average, 3 = average, 2 = below average, 1 = poor.

<sup>2</sup> Quantitative student evaluations were discontinued by the university effective the fall semester of 2018.

<sup>0</sup> Number of students for which total score is calculated.

**TEACHING – GRADUATE COURSES (cont’ed)**

**Graduate Courses Developed**

- CIVE 580A7 Fire Dynamics and Engineering (Fall 2016).
- CIVE 664 Mechanics of Fatigue and Fracture (Spring 2013).
- CIVE 561 Advanced Steel Behavior and Design (Spring 2014 – Previously CIVE 669).

**TEACHING – UNDERGRADUATE COURSES**

Course Prefix	Course title	Year	Sem	Sem. No.	Sem Score	Total No.	Total Score <sup>1</sup>
CIVE 466	Design and Behavior of Steel Structures	2012	Spring	36	3.48	<b>716 (433)</b>	<b>4.53</b>
CIVE 466		2012	Fall	51	4.71		
CIVE 466		2013	Fall	69	4.87		



CIVE 466		2014	Fall	83	4.75		
CIVE 466		2015	Fall	68	4.53		
CIVE 466		2016	Fall	81	4.42		
CIVE 466		2017	Fall	45	4.54		
CIVE 466		2018	Fall	51	NA <sup>2</sup>		
CIVE 466		2019	Fall	56	NA <sup>2</sup>		
CIVE 466		2020	Fall	54	NA <sup>2</sup>		
CIVE 466		2021	Spring	49	NA <sup>2</sup>		
CIVE 466		2021	Fall	53	NA <sup>2</sup>		
CIVE 466		2022	Fall	22	NA <sup>2</sup>		
CIVE 102	Intro to Civil & Env. Engr.	2013	Fall	146	3.98	<b>146</b>	<b>3.98</b>

<sup>1</sup>Based on response to question #23 of standard student course survey: "How do you rate this instructor?" where 5 = excellent, 4 = above average, 3 = average, 2 = below average, 1 = poor.

<sup>2</sup>Quantitative student evaluations were discontinued by the university effective the fall semester of 2018.

<sup>0</sup>Number of students for which total score is calculated.

## ADDITIONAL TEACHING EXPERIENCE

1. CEE 572 Earthquake Engineering: Graduate Research Assistant (Spring 2010 and 2011) Department of Civil and Environmental Engineering  
The University of Illinois at Urbana-Champaign  
Urbana, IL
2. CEE 5412 Applied Structural Mechanics: Graduate Research Assistant (Spring 2002) Department of Civil Engineering  
University of Minnesota  
Minneapolis, MN
3. Short course on Mechanics of Fatigue and Fracture with ABAQUS Finite Element Applications (June 2014) U.S. Army Corps of Engineers  
U.S. Army Engineer Research and Development Center  
Vicksburg, MS

## PATENTS

1. "Hurricane Impact Level Model and Ranking System," *filed with the Technology Transfer Office, Colorado State University, 2017.*
2. "Earthquake Resistant Building Design Incorporating Isolated Floor Slab System," *filed with the Technology Transfer Office, Colorado State University, 2014.*
3. "Suspended and Self-Centered Floor Slab for Earthquake Resistance," *filed with the Technology Transfer Office, Colorado State University, 2013.*

## PROFESSIONAL SERVICES AND MEMBERSHIPS

### MEMBERSHIPS

- Fellow of the Structural Engineering Institute (SEI).
- Member of the American Society of Civil Engineers (ASCE).
- Member of the American Institute of Steel Construction (AISC).
- Member of the International Association for Bridge Maintenance and Safety (IABMAS).
- Member of the Structural Engineering Association of Colorado (SEAC).

**PROPOSAL AND PANEL REVIEW**

- National Science Foundation, CMMI.
- National Science Foundation, GRFP.
- Qatar National Research Fund and the Qatar Foundation.
- Kuwait Foundation for the Advancement of Science.
- Materials and Structures Testing Facility for Coupled Mechanical and Environment Conditions. (MSTF-CMEC)" Laboratory at University of Science and Technology Beijing.

**NATIONAL BOARDS AND COMMITTEES**

- International Officer of the NASEM New Voices, 2024 – present.
- Chair of the ASCE Technical Committee on Fatigue and Fracture, 2023 – present.
- Member of the EMI on Objective Resilience, 2022 – present.
- Board member of the American Metrological Society (AMS), 2022 – present.
- Chair of the ASCE Technical Committee on Multi-Hazard Mitigation, 2021 – present.
- Member of AASHTO TG 13 Technical Committee on Steel Bridges, 2021 – present.
- Member of AASHTO TG 14 Technical Committee on Field Repairs and Retrofits, 2021 – present.
- Member of the Steel Bridge Task Force of the American Iron & Steel Institute (AISI), 2017 – present.
- Past Chair of the ASCE Technical Committee on Steel Bridges, 2016 – 2019.
- Past Chair of the ASCE Technical Committee on Fatigue and Fracture, 2014 – 2019.
- Member and secretary of the ASCE Technical Committee on Multi-Hazard Mitigation, 2014 – 2021.
- Member of the ASCE Technical Committee on Fire Protection, 2014 – 2020.
- Member of the ASCE Technical Committee on Performance-Based Design, 2014 – 2020.
- Member of the ASCE Technical Committee on Bio-Inspired Structures, 2016 – present.
- Guest Member of AISC TC8 Technical Committee on Fire Design, 2014 – present.
- Member of AASHTO TG 16 Technical Committee on Orthotropic Deck Panels, 2014 – present.
- Member of the Transportation Research Board (TRB) Committee on Fabrication and Inspection of Metal Structures (AFH70), 2013 – 2016 & 2021 - 2024.
- Past member of ASCE Technical Committee on Experimental Methods in Earthquake Engineering (Subcommittee of Seismic Effects Committee), 2012 – 2014.
- Past member of the Research Council on Structural Connections (RCSC) committee on research (Committee A.2 – Research), 2005 – 2018.
- Past member of the Transportation Research Board (TRB) Committee on General Structures AFF10 (A2C01), 2006 – 2009.
- Past member of the ASCE Technical Committee on Methods of Monitoring and Evaluating Structural Performance, 2006 – 2012.
- Past member of the ASCE Technical Committee on Fatigue and Fracture, 2004 – 2010.
- Past member of the ASCE Technical Committee on Steel Bridges, 2006 – 2012 and 2014 – 2016.

**STATE COMMITTEES**

- Member of Colorado Earthquake Hazard Mitigation Council (CEHMC), 2012 – present.

**UNIVERSITY COMMITTEES AND MEMBERSHIPS**

- Departmental Tenure Committee – Chair, Fall 2020 – Fall 2023.
- Walter Scott Jr. College of Engineering Faculty Award Committee, 2022 (Ad-Hoc).
- Graduate Instruction Committee (GIC) - Chair, Fall 2022 – Fall 2023.
- University Curriculum Committee (UCC) – College Representative, Fall 2021 – Fall 2022.
- College Curriculum Committee (CCC) - Chair, Fall 2021 – Present.
- Faculty Council CEE Representative – Summer 2021 – Present.

- Walter Scott Jr. Undergraduate Scholarship Committee – Member, Spring 2021 – Present.
- College Future of Engineering Education Committee – Member, Fall 2020 – Present.
- Departmental Tenure Committee – Member, Fall 2020 – Fall 2023.
- Diversity and Inclusion Committee (DIC) - Member, Fall 2020 – Present.
- College Curriculum Committee (CCC) - Member, Fall 2020 – Fall 2021.
- Award Committee (AwC) - Chair, Department of Civil and Env. Engr., Fall 2019 – Fall 2020.
- Graduate Instruction Committee (GIC) - Member, Fall 2018 – Fall 2023.
- Graduate Admission Committee (GAC) - Chair, Fall 2016 – Fall 2017.
- The Graduate School Alliance for Graduate Education and the Professoriate (AGEP), Faculty Member, Colorado State University, Fall 2013 – present.
- Award Committee (AwC) - Member, Department of Civil and Env. Engr., Spring 2016 – Fall 2019.
- Walter Scott Jr. College of Engineering Faculty Award Committee, 2015 (Ad-Hoc).
- Department Head Search Committee - Member, Department of Civil and Env. Engr., Fall 2013.
- Qualifying Exam Committee - Member, Department of Civil and Env. Engr., Spring 2012.
- Graduate Admission Committee (GAC) - Member, Department of Civil and Env. Engr., Fall 2012 – Fall 2016.
- Development of a Joint CIVE/CM Ph.D. Program at CSU - Member, Spring 2012.
- Newmark Structural Engr. Laboratory – Member of Working Committee, 2006 – 2008.

#### **INTERNATIONAL COMMITTEES**

- World Health Organization (WHO) Working Group for the Development of a Guidance on Risk and Vulnerability Assessment in Communities.
- Eurocode Committee on Seismic of Steel Structures - ECCS TC13, Timisoara, Romania, 28 November 2008 (*Attended the meeting on behalf of Prof. Elnashai*).
- Eurocode Committee on Seismic of Steel Structures - ECCS TC13, Naples, Italy 16 May 2008 (*Attended the meeting on behalf of Prof. Elnashai*).

#### **JOURNAL REVIEW AND EDITORIAL BOARD**

- Guest Editor: *ASCE-ASME Journal for Risk and Uncertainty in Engineering Systems: Part A – Risk and Reliability Analysis of Resilient Civil Structures with Vibration Control Devices*, 2024.
- Guest Editor: *Scientific Reports – Digitalization in the School and the Workplace*, 2023.
- Guest Editor: *Metals – Advances in Structural Steel Research*, 2021.
- Editorial Board for *PLOS ONE* by Public Library of Science (PLOS), 2022 – present.
- Editorial Board for *Scientific Reports* by Nature, 2022 – present.
- Editorial Board for *Structural Safety* by Elsevier, 2022 – present.
- Editorial Board for the *Journal of Earthquake Engineering* by Taylor & Francis, 2022 – present.
- Editorial Board for *Sustainable and Resilient Infrastructure* published by Elsevier, 2017 – present.
- Editorial Board for *Frontiers in Built Environment* published by Frontiers Med., 2017 – present.
- Reviewer for *Scientific Reports*, 2020 – present.
- Reviewer for *Palgrave Communication*, 2018 – present.
- Reviewer for *Advances in Biomechanics & Applications: An International Journal*, 2014 – present.
- Reviewer for *Journal of Applied Mathematics*, 2013– present.
- Reviewer for *Journal of Engineering Structures*, 2013– present.
- Reviewer for *Journal of Earthquake Engineering and Structural Dynamics*, 2012– present.
- Reviewer for *ASCE Journal of Structural Engineering*, 2011– present.
- Reviewer for the *International Journal of Fatigue*, 2004 – present.
- Reviewer for *ASCE Journal of Bridge Engineering*, 2008 – present.
- Reviewer for the *Journal of Earthquake Engineering*, 2007 – present.

### CONFERENCE AND WORKSHOPS ORGANIZING AND CHAIRING COMMITTEES

- **Conference Co-Chair** – 2024 International Conference of Young Scientists hosted by the Global Young Academy and New Voices of the National Academy of Sciences, Engineering, and Medicine, Washington, DC, 2024.
- **Conference Chair** – 3rd International Conference on Applied Mechanics and Engineering Structures (AMES 2024), Zhuhai, China, 2024.
- Member of the International Scientific Committee – The International Symposium on Lifeline and Infrastructure Earthquake Engineering, 2024.
- Technical Advisory Committee – 5th International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), London, U.K., 2024.
- Session Co-Chair – Understanding and Managing the Wildfire Problem, Engineering Mechanics Institute (EMI), Chicago, IL, 2024.
- Plenary Session Moderator – Measure What Matters—Social Vulnerability, Equity, and Planning for Resilience, Natural Hazards Workshop, Boulder, CO, 2023.
- **Workshop Chair** – Sustainable Architecture and Green Cities: A Global National Focus, Colorado State University & Poudre School District Climate Leadership Summit, Fort Collins, CO, 2023.
- Session Co-Chair – Wildfire Engineering: Research and Practice in Wildland and Wildland-Urban-Interface, Engineering Mechanics Institute (EMI), Atlanta, GA, 2023.
- Technical Advisory Committee – Advanced Topics in Mechanics of Materials, Structures, and Construction (AToMech1), Prince Mohammad Bin Fahd University (PMU), 2023.
- Technical Advisory Committee – 4<sup>th</sup> International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), London, U.K., 2023.
- **Workshop Chair** – Benefits, Applications, and Opportunities of Natural Infrastructure, The Resilient America Program, The National Academies of Sciences, Engineering, and Medicine, Athens, GA, 2022.
- Session Co-Chair and moderator – Science Advice by Young Academies on Critical Issues: Why Does It Matter, Triennial Conference of the InterAcademy Partnership (IAP) and the Worldwide Meeting of the Young Academies, Biosphere 2, Oracle, AZ, 2022.
- Session Co-Chair – Business Meeting, Worldwide Meeting of the Young Academies, Biosphere 2, the University of Arizona, Oracle, AZ, 2022.
- Member of the Organizing Committee – The 2022 Triennial Inter Academies Partnership (U.S. National Academies of Sciences, Engineering, and Medicine, Royal Society of Canada, The Academy of Science of South Africa) and the Global Young Academy conference, Biosphere 2, Arizona, 2022.
- Member of the Organizing Committee – The Semi-Annual Meeting of the U.S. National Academies New Voices in Science, Engineering, and Medicine, Washington, DC, 2022.
- Technical Advisory Committee – 3<sup>rd</sup> International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), Brighton, U.K., 2022.
- **Workshop Chair** – Critical Healthcare Infrastructure and Operation Modeling Workshop, National Center for Disaster Medicine and Public Health, Washington, DC, 2021.
- Session Co-Chair – Advances in Performance-Based Earthquake Engineering, 17<sup>th</sup> World Conference on Earthquake Engineering (17WCEE), Sendai, Japan, 2021.
- Technical Advisory Committee – International Conference on Advances in Structural Mechanics and Applications (ASMA-2021), National Institute of Technology Silchar, 2021.
- Member of the Organizing Committee – International Conference on Civil, Structural and Environmental Engineering, Lyon, France, 2021.
- Member of the Scientific Committee – First International Conference on Energy, Thermofluids and Materials Engineering, ICETME 2021, Virtual, 2021.
- Session Co-Chair – Science to Action: Increasing Communities’ Resilience to Climate Change and

- Long-Time Horizon Hazards Impacts on the Built Environment and Social Infrastructure, American Geophysical Union (AGU) 2020 Fall Meeting, 2020.
- Member of the Organizing Committee – Workshop on Engineering for Resilience Against Catastrophic Risks, Erice, Sicily, Italy, Permanent Monitoring Panel of the World Federation of Scientists (WFS), 2020.
  - Member of the Scientific Committee – International Sustainable Structures Conference (ISSC), Giza, Greater Cairo, Egypt, 2020.
  - **Conference Co-Chair** – *U.S. National Academies Arab-American Frontiers of Engineering, Science and Medicine Symposium*, Cairo, Egypt, 2019.
  - Session Co-Chair – 2<sup>nd</sup> International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), London, 2019.
  - Session Co-Chair – Assessment and Repair of Deteriorated Steel Infrastructure, 2019 ASCE Structures Congress, Orlando, FL, 2019.
  - Session Co-Chair – Next Generation Buildings & Infrastructure, the U.S. National Academies of Sciences, Engineering, and Medicine (NASEM), Arab-American Frontiers Symposium, Kuwait, 2018.
  - Member of the Organizing Committee - Steel Structure 2018.
  - Session Chair – Critical Infrastructure: Hospitals and Schools, 11<sup>th</sup> National Conference on Earthquake Engineering, Los Angeles, CA, 2018.
  - Session Co-Chair – Impact of Fire on Bridges with Recent Case Studies, 2018 ASCE Structures Congress, Fort Worth, TX, 2018.
  - Session Co-Chair – Performance-Based Engineering: State-of-the-Art, State-of-Practice, and Future Trends, 2018 ASCE Structures Congress, Fort Worth, TX, 2018.
  - Session Chair – Fatigue and Fracture Assessment of Bridge Resilience and Development of Retrofit Methods, 2017 ASCE Structures Congress, Denver, CO, 2017.
  - Session Chair – Modeling of Systems and Dependencies, 1<sup>st</sup> International Workshop on Modeling of Physical, Economic, and Social Systems, Washington, DC, 2016.
  - Session Chair – Alternative Approaches to Multi-Hazard Analysis & Design of Structures, 2016 ASCE GeoStructures Congress, Phoenix, AZ, 2016.
  - Session Co-Chair – New Engineering Education Paradigms: Implementing Experiential Learning into the Engineering Curriculum, The U.S. National Academy of Engineering (NAE) Frontiers of Engineering (FOE) Symposium, Irvine, CA, 2015.
  - Session Co-Chair – Modeling/Numerical Simulation in Predicting and Interpreting Experimental Results, Joint 6AESE/11ANCRiSST Conference: 6<sup>th</sup> International Conference on Advances in Experimental Structural Engineering and the 11<sup>th</sup> International Workshop on Advanced Smart Materials and Smart Structures Technology, the University of Illinois at Urbana-Champaign, Urbana, IL, 2015.
  - Session Co-Chair – Codification, Design, and Practice for Seismic, Wind and Exceptional Loads, STESSA Conference: Behavior of Steel Structures in Seismic Areas, Shanghai, China, 2015.
  - Session Co-Chair – Innovative Design of New Structures, 5<sup>th</sup> Asia Conference on Earthquake Engineering (5<sup>th</sup> ACEE), Taipei, Taiwan, 2014.
  - Organizer and Chair – Short course on Mechanics of Fatigue and Fracture with ABAQUS Finite Element Applications, U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center, Vicksburg, MS, June 2014.
  - Session Chair – Multi-hazard Design of Structures Considering Earthquake and Fire, 2014 ASCE Structures Congress, Boston, Massachusetts, 2014.
  - Session Chair – Application of Experimental Techniques for System-level Seismic Evaluation of Structures, 2013 ASCE Structures Congress, Pittsburgh, Pennsylvania.
  - **Workshop Chair** – Fatigue and Fracture Assessment and Repair of Steel Bridges, General Authority for Roads, Bridges and Land Transport, Cairo, Egypt, 2013.

- Session Chair – Behavior of Steel Structures in Seismic Areas, STESSA 2009 Conference, Philadelphia, PA, 2009.
- Session Chair – NDE of Concrete Girders, 2007 ASCE Structures Congress, Long Beach, CA, 2007.
- Session Chair – 1st International Conference on Fatigue and Fracture in the Infrastructure, Philadelphia, PA, 2006
- Provided support for organizing the 2009 Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER), 2009.

#### WORKSHOPS AND SYMPOSIA INVITATIONS

- Invited by the U.S. National Academy of Science to attend the First U.S.-Africa National Academies of Sciences, Engineering and Medicine's Symposium, Nairobi, Kenya, October 2022 (*Travel award provided*).
- Invited by the National Science Foundation to the Wildfire and the Biosphere Innovation Lab, May 2021 (virtual).
- Invited by His Excellency Dr. Khaled Abdel Ghaffar, the Minister of Higher Education and Scientific Research, and His Excellency Ambassador Yasser Reda, Ambassador of Egypt to the US for a workshop to discuss the available opportunities of collaboration, August 2020 (virtual).
- Invited by the Royal Institute of International Affairs through Chatham House's Hoffmann Centre for Sustainable Resource Economy to two workshops on "Material Transitions: Working with Nature for Built Environments, December 2021 (virtual).
- Invited to a workshop on DesignSafe and SimCenter workshop on Artificial Intelligence in Natural Hazards Engineering, the University of Texas at Austin, Austin, TX, February 2020 (*Travel award provided*).
- Invited to a workshop on "NHERI@UC San Diego User Training Workshop," University of California San Diego, La Jolla, CA, December 2019 (*Travel award provided*).
- Invited by the US National Academy of Engineering to attend the US National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering Summit on NAE Grand Challenges for Engineering Invitee, London, September 2019.
- Invited by the National Institute of Standards and Technology to the Large Outdoor Fire Modeling Workshop, Washington, DC, March 2019 (*Travel award provided*).
- Invited by the National Science Foundation to the Coastline and People (CoPe) Scoping session to identify new research initiative focused on coastal regions, San Diego, CA, September 2018 (*Travel award provided*).
- Invited to the University of New Mexico 3<sup>rd</sup> Annual Resilience Colloquium - Challenges of Natural Stresses: Resilience Engineering for Natural and Built Environments– Panelist on Impacts of Wildfires and Climate Change on Downstream Systems, August 2018 (*Travel award provided*).
- Invited to the 43<sup>th</sup> Annual Natural Hazard Workshop – Panelist on Equitable and Resilient Design: Past and Present Infrastructure Challenges, July 2018 (*Travel award provided*).
- Invited by the National Academy of Science's 2018 Arab-American National Academies of Sciences, Engineering and Medicine's Symposium, Kuwait, November 2018 (*Travel award provided*).
- Invited to a NIST workshop on Immediate Occupancy Performance Objective, Washington, DC, January 2018 (*Travel award provided*).
- Invited expert by the European Commission to the 2<sup>nd</sup> International Workshop on Modeling of Physical, Economic, and Social Systems, Ispra, Italy, December 2017 (*Travel award provided*).
- Invited to the Eighth International Conference on Composite Construction in Steel and Concrete Jackson Hole, WY, August 2017.
- Invited by the U.S. National Academy of Engineering to attend the 2017 China-America Frontiers of Engineering Symposium, Shanghai, China, June 2017 (*Travel award provided*).

- Invited to the 2<sup>nd</sup> Colorado State University-Tsinghua University Workshop on Community Resilience, Beijing, China, June 2017 (*Travel award provided*).
- Invited to a mini-symposium on Control of Structures for Multiple Hazards, Engineering Mechanics Institute Conference, University of California San Diego, San Diego, CA, June 2017.
- Invited to a mini-symposium on Structural Modeling and Identification for Performance and Resilience Assessment of Civil Structures, Engineering Mechanics Institute Conference, University of California San Diego, San Diego, CA, June 2017.
- Invited by the US National Academy of Engineering to attend the US National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering Summit on NAE Grand Challenges for Engineering Invitee, Washington, DC, July 2017.
- Invited by the U.S. National Academy of Science to attend the Arab-American National Academies of Sciences, Engineering and Medicine's Symposium, Abu Dhabi, U.A.E, November 2016 (*Travel award provided*).
- Invited to the National Windstorm Impact Reduction Program (NWIRP) Strategic Planning Stakeholders Workshop, Washington, DC, June 2016 (*Travel award provided*).
- Invited to the 1<sup>st</sup> International Workshop on Modeling of Physical, Economic, and Social Systems, Washington, DC, October 2016 (*Travel award provided*).
- Invited to the 1<sup>st</sup> Colorado State University-Tsinghua University workshop on Community Resiliency, Beijing, China, May 2016.
- Invited to attend the Eighth International Workshop on Connections in Steel Structures, Boston, May 2016 (*Travel award provided*).
- Invited to a workshop on "University of Florida NHERI User Workshop," University of Florida, Gainesville, FL, August 2016 (*Travel award provided*).
- Invited to the National Academies of Sciences, Engineering and Medicine's Symposium on Exploring a New Vision for Center-Based Multidisciplinary Engineering Research, Keck Center, Washington DC, April 2016.
- Invited to a mini-symposium on Recent Advances in Fracture and Fatigue Mechanics, and their Application to Metallic Civil Structures, Engineering Mechanics Institute Conference, Stanford University, Stanford, CA, June 2015.
- Invited to a Task Force workshop on Hybrid Simulation, User Guide/Dictionary Workshop at Purdue University, Lafayette, Indianapolis, Jan 2014 (*Travel award provided*).
- Invited to a workshop on "Multiple Natural Hazards Assessment and Mitigation under the Impact of Climate Change, Hanoi, Vietnam, January 2013 (*Travel award provided*).
- Invited to a workshop on "Innovation in Design of Steel Structures: Research Needs for Global Competitiveness," Structures Congress, Chicago, IL, March 2012 (*Travel award provided*).
- Invited to a workshop on "American Society of Civil Engineering - Excellence in Civil Engineering Education, West Point, NY, July 2012 (*Travel award provided*).
- Invited to a workshop on "Advances in Real-Time Hybrid Simulation (RTHS)," October 10-11, 2011, Lehigh University- NEES Facility.
- Invited to a workshop on Fatigue and Fracture Assessment of Hydraulic Steel Structures, Infrastructure System Conference, Detroit, MI, June 2007 (*Travel award provided*).
- Invited to a Technical Focus Team Meeting on Fatigue and Fracture Evaluation of Steel Hydraulic Structures, La Holla, CA, November 2007 (*Travel award provided*).

#### **INITIATED NATIONAL AND INTERNATIONAL COLLABORATIONS**

- Established International Memorandum of Understanding between Colorado State University (CSU) and Fujita Corporation, Tokyo, Japan, 2020.
- Visiting Scholar at Tsinghua University to collaborate on various research projects and advising students, 2017.

- Established International Memorandum of Understanding between Colorado State University (CSU) and the University of Engineering & Technology (UET), Peshawar, Pakistan, 2014.

### **EDUCATIONAL AND OUTREACH ACTIVITIES**

- Providing Input for a Climate Resilience guide for the Smithsonian Institute as part of the Science for Global Goals Community Research Guides, 2023.
- Muslims Against Hunger - The Residents at Catholic Charities, Fort Collins, 2023
- Judge for Demo Day, CSU, 2021, 2022.
- WSCOE Walk on the Oval Graduation, CSU, 2021.
- 8<sup>th</sup> Walter Scott Jr. Commencement Ceremonial Walk, 2021.
- Judge for the Graduate Student Showcase (Colorado State University), 2013-2021.
- Judge for Engineering Mechanics Institute (EMI) Objective Resilience Students Competition, 2020.
- Mentor for the COVID-19 "Jamming the Curve" Competition, U.S. National Academy of Sciences, 2020.
- Mentor for the "COVID-19 Call for Action Team" Competition, U.S. National Academy of Engineering, 2020.
- Poster judge during the US National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering Summit on NAE Grand Challenges for Engineering Invitee (Washington, DC), 2017.
- Facilitator in the sustainability brainstorming session during the US National Academy of Engineering, the UK Royal Academy of Engineering, and the Chinese Academy of Engineering Summit on NAE Grand Challenges for Engineering Invitee (Washington, DC), 2017.
- Judge for the Multicultural Undergraduate Research Art and Leadership Symposium, CSU, 2019.
- Shake table demo to various schools in Colorado, 2012 – current.
- Steel Bridge advisor, 2012 – current.
- ASCE academic advisor, 2012 – 2018.
- Honor Thesis advisor for various undergraduate students, 2012 – current.
- Shake table tests as part of the undergraduate course CIVE 103, Engineering Graphics and Computing, 2012 – 2014.
- Earthquake Demo and Seminar for 6<sup>th</sup> and 8<sup>th</sup>-grade students from Windsor Elementary School (Colorado State University), Fall 2011.
- Laboratory tours, Civil and Env. Eng. Department (the University of Illinois at Urbana-Champaign), 2006 – 2010.
- Judge at the Lehigh Valley Science and Engineering Research Fair, 2005.
- Structural Analysis Tutor (University of Minnesota), 2001.
- Steel and Concrete Tutor (University of Minnesota), 2001.
- Statics and Dynamics Tutor (University of Minnesota), 2000.
- Al-Amal Junior High School Math Tutor (Fridley, MN), 2000.
- Secretary and Treasurer for Chi-Epsilon Honor Society (University of Minnesota), 2000.
- Outreach programs with Chi-Epsilon (University of Minnesota), 2000.

### **PRIVATE CONSULTANCY**

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- *Subject Expert on Natural Hazard Mitigation Needs Assessment, Washington, DC (Jan 2023)*  
Contracted by **FEMA** through the *National Institute of Building Science (NIBS)* to review the overall methodology for the assessment of natural hazard mitigation needs that covers natural hazards, mitigation of vulnerabilities in at-risk buildings and infrastructures, built environment, and at-risk populations.
- *Subject Expert on Resilience of interdependent Infrastructure, Washington, DC (October 2022)*



Contracted by the **World Bank** to conduct analysis on damage and resilience of interdependent infrastructure following disruptive events.

- **Subject Expert on Healthcare Operation and System Modeling, Bethesda, MD (October 2019)**  
Contracted by the **National Center for Disaster Medicine** to conduct an integrative review to describe the current state-of-the-art in critical healthcare infrastructure and operational modeling.
- **Assessment of Seismic Performance of Cold-formed Steel Panels, Denver, CO (June 2016, Jan 2017, Feb 2019)**  
Contracted by the **National Center for Disaster Medicine** to conduct integrative review to describe the current state-of-the-art in critical healthcare infrastructure and operational modeling.
- **Fatigue Assessment of Magnum Foundations: Phase I, Phase II, and Phase, III, Fort Collins, CO (June 2012, October 2013, and March 2015)**  
Contracted by the **Magnum Geo-Solutions** to conduct fatigue assessment of Magnum Foundation Units.
- **Fatigue Repair of Steel Hydraulic Structures (SHS) using Carbon Fiber Reinforced Polymers (CFRP): Feasibility Study, Fort Collins, CO (June 2012)**  
Contracted by the **U.S. Army Corps of Engineers** to conduct a visibility study on the use of CFRPs for the repair of deteriorated steel hydraulic structures.
- **Lock and Dam Bulkheads along the Mississippi River, Minneapolis, MN (November 2008)**  
Contracted by Ayres Associates to act as an independent reviewer of technical reports related to inspection, analysis, and repair of lock and dam bulkheads along the Mississippi River.
- **Fitness-for-purpose Assessment of Hydraulic Steel, Structures Vicksburg, MS (November 2007)**  
Contracted by the **U.S. Army Corps of Engineers** to develop a guideline for the fitness-for-purpose evaluation of hydraulic steel structures.
- **Steel Open Grid Deck, Part II, Rt. 1&9T Passaic River, NJ (September 2006)**  
Contracted by **the Division of Law-State of New Jersey through John W. Fisher and Associates** to develop an expert report on the design review of the fatigue failures of the bridge's steel open grid deck.
- **Inspection and Management of Bridges with Fracture Critical, Details Washington, DC (March 2004)**  
Contracted by the **National Cooperative Highway Research Program (NCHR) through Robert J. Dexter and Associates** to participate in developing a synthesis report on the inspection and management of bridges with fracture critical details.
- **Steel Open Grid, Part I, Rt. 1&9T Passaic River, NJ (November 2003)**  
Contracted by the **Division of Law-State of New Jersey through John W. Fisher and Associates** to develop an expert report on the fatigue failures of the bridge's steel open grid deck.

## **MEDIA COVERAGE**

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- **National Academies of Sciences, Engineering, and Medicine** – [COP28 Global Climate Conference Features Several National Academies Representatives](#)
  - **SOURCE** – [CSU civil and environmental engineers contribute to global progress at UN COP28](#)

*climate conference*

- **CBS Eyes on the World with John Batchelor** – *Maui: #Wildfires: #CA: The threat grows with El Nino and climate change & What is to be done? Hussam Mahmoud, Colorado State University, Nature Magazine*
- **The Collegian** – *Modeling tools at CSU help determine wildfire prevention methods*
- **11NEWS** – *New Colorado State University model can predict paths of wildfires, helps prevent destructive fires*
- **KUNC (NPR for Northern Colorado)** – *Model charts map of a wildfire’s likely path in a community*
- **Forbes** – *It’s dawning on humans that human health connects to everything*
- **SOURCE** – *Moore Foundation’s \$2.7 million grant expands groundbreaking CSU civil engineering wildfire model*
- **Research Magazine** – *Confronting the climate crisis: CSU meets a global challenge head-on with research, engagement, and students*
- **CSU Magazine** – *Which building will survive a wildfire?*
- **9NEWS** – *New model helps predict impact of wildfires on communities*
- **The Denver Post** – *Western Colorado safest region in country against rising tide of natural disasters*
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- **U.S. National Academy of Engineering** - [Frontiers of Engineering Alumni Spotlight](#)
- **BBC Radio** – [Effect of climate change and deteriorated joints on performance of U.S. bridges](#) (from min 13:45 and up to min 17:58)
- **POPULAR MECHANICS** – [Climate change could wreck a quarter of U.S. bridges in 21 Years](#)
- **The INDEPENDENT** – [Climate crisis: one in four steel bridges in US ‘could collapse by 2050’ due to extreme temperatures, study says](#)
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2040

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- **National Academy of Engineering** – [FOE alum Hussam Mahmoud at @ColoradoStateU created a "Resilience" model that can help communities better prepare for unanticipated disasters](#)
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