

HUSSAM N. MAHMOUD, Ph.D.

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
<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 and was the former Academic Advisor for the ASCE Student Chapter. Before arriving at CSU, Dr. Mahmoud was the manager of the NEES Earthquake 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 ~\$8.87M in external research funding (\$6.45M as PI, 0.7M as Co-PI, \$1.7M as Senior Personnel) out of a total of ~\$48.55M in externally funded research. Dr. Mahmoud publishes the results of his research in broad impacts journals such as *Nature Climate Change, Nature Communications, Nature-Scientific Reports, Nature-Palgrave Communications, Royal Society Open Science, AGU Earth's Future, and PLOS ONE*. In addition, Dr. Mahmoud publishes in the most highly regarded journals of his field, such as *Computer-Aided Civil and Infrastructure Engineering, ASCE Journal of Structural Engineering, ASCE Journal of Engineering Mechanics, Structural Safety, Reliability Engineering, and System Safety, among others*.

Dr. Mahmoud's current research program is structured under the theme of *Sustainable and Resilient Infrastructure and Communities* with a focus 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 repair and management of deteriorated infrastructure. The **first** research thrust pertains to *spatial and temporal quantification of the resilience of communities 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 with a focus on social institutions and critical facilities.

The **second** research thrust is focused on the assessment and development of resilient and sustainable structural systems subjected to natural and man-made hazards including single and multiple hazards. This is accomplished through devising new structural systems as well as establishing new performance-based design and life-cycle analysis frameworks for systems subjected to *fire, blasts, earthquakes, and/or wind loading*. Various tools are utilized in Dr. Mahmoud's research for the assessment of structures under extreme demands including small and large-scale testing as well as 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 failure, deterioration, and management* under high and low-cycle fatigue. He has conducted various studies on the assessment and management of hydraulic steel structures and has also performed numerous in-service evaluations of major bridges across the U.S. with the work including proposed proto-type retrofits that have successfully been implemented on many bridges around the county.

Dr. Mahmoud presents his work frequently at both national and international conferences as well as through invited seminars and workshops and has given various invited *Plenary, Keynote, and*

Distinguished talks. His work has received various media coverage through citations and interviews including *Nature Climate Change*, *The U.N. Office for Disaster Risk Reduction*, *The U.S. National Academy of Engineering*, *The Smithsonian Magazine*, *CNN*, *BBC London*; *Popular Mechanics Magazine*, *The INDEPENDENT*, *New Scientist*, *Al-Ahram Newspaper (ranked 1st in Egypt)*, *CBS Denver*, *CBS Egypt – TV show Here is the Capital (Hona El-Asyma) with Lamis Elhadidy*, *Business Insider*, among others.

Dr. Mahmoud serves on the editorial board of various journals including *Nature Scientific Reports* 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 and the past elected chair of the ASCE Committees on Fatigue and Fracture and the ASCE committee on Steel Bridges and currently serves on many committees including the ASCE on Performance-Based Design and Fire Protection. He is also a member of the Steel Bridge Task Force of AISI. Dr. Mahmoud has been invited to various workshops and symposia by the *U.S. National Academies*, *Royal Academy of Engineering*, *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 of *the National Center for Disaster Medicine and Public Health*, and *the U.S. National Academies* where he represented the U.S. as a **co-chair** of the *National Academies Arab-American Frontiers* Symposium held in Cairo, Egypt.

Dr. Mahmoud has experience teaching undergraduate and graduate structural engineering courses and has developed new graduate courses with a direct focus on his Ph.D. 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

Dr. Mahmoud is the director of the Structural Laboratory at the Engineering Research Center at Colorado State University. He has substantially advanced the capabilities of the laboratory 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 for developing physics-based models to predict 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 the assessment of the functionality of schools and hospitals system 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 industrial coastal communities to climate change. Other 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 where 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 both axial tension and shear cycles or a combination of such. In doing so, a wider range of stress triaxialities is investigated under realistic loading conditions. Moreover, experimental tests are used for the assessment of structural components and systems under the abovementioned extreme events.

In the field of **infrastructure deterioration**, Dr. Mahmoud is currently conducting research to evaluate alternative underwater fatigue retrofit methodologies for deteriorated steel structures. In addition, new various studies are ongoing for assessing the multi-axial fatigue behavior of various structural components and systems utilized in harsh environmental conditions. The results of the ongoing tests and numerical analysis are being utilized 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 cost of the inspection, maintenance, and repair.

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 and 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. In addition to graduate and undergraduate educational activities, Professor Mahmoud has hosted various international professors as visiting scholars. *He has graduated 33 Masters students and 8 Ph.D. students and is currently hosting 1 visiting scholar and advising 5 graduate students including 4 Ph.D. (2 are women) and 1M.S. (woman) student.*

EDUCATION

Ph.D.	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
M.S.	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 <i>Magna Cum Laude</i> University of Minnesota, Minneapolis, MN	Feb 2001

RESEARCH INTEREST

- Community resilience quantification and assessment.
- Hazard assessment, structural response, and mitigation.
- Structural performance under extreme multiple 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

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

RECOGNITIONS, AWARDS, AND SCHOLARSHIPS

- 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) <https://www.nationalacademies.org/our-work/new-voices-in-sciences-engineering-and-medicine>.
- 2021 George T. Abell Outstanding Mid-Career Faculty Award, Walter Scott Jr. College of Engineering, Colorado State University (<https://www.engr.colostate.edu/ce/hussam-mahmoud-receives-wscoe-george-t-abell-outstanding-mid-career-faculty-award/>).
- 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.
- 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 Invited by the Royal Institute of International Affairs through the Chatham House's Hoffmann Centre for Sustainable Resource Economy to two workshops on “Material Transitions: Working with Nature for Built Environments”.
- 2020 Invited by the U.K. Royal Academy of Engineering for an International Workshop to discuss Safer Complex Systems Programme (coordinated by Engineering X and founded by the Royal Academy of Engineering and the Lloyd’s Register Foundation).
- 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 1st Newspaper in Egypt.
- 2019 U.S. 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 (*one of 20 invited out of more than 3000 Frontiers of Engineering Alumnus*).
- 2019 Fellow, U.S. National Academy of Science’s 2019 Arab-American National Academies of Sciences, Engineering and Medicine’s Symposium, Library of Alexandria, Alexandria, 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, U.S. National Academy of Science’s 2018 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 Invited Visiting Scholar, Department of Civil Engineering, Tsinghua University, Beijing, China
- 2017 Fellow, U.S. National Academy of Engineering's 2017 China-America Frontiers of Engineering Symposium, Shanghai, China.
- 2017 U.S. 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 D.C.
- 2017 Terry Peshia Early Career Faculty Award, American Institute of Steel Construction.
- 2017 Top Featured Article in Colorado State University News – Source: Beyond Wind Speed: A New Measure for Predicting Hurricane Impacts.
- 2016 Fellow, U.S. National Academy of Science's 2016 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.
- 2016 U.S. National Academies of Sciences, Engineering and Medicine's Symposium Invitee on Exploring a New Vision for Center-Based Multidisciplinary Engineering Research, Keck Center, Washington D.C.
- 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 and the American Association of State Highway 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 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.
- 2010 NEES Media Award – Beam-Column Connection Test.
- 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

- 2021 Robert J. Dexter Memorial Lecture, Warren Lecture Series, Department of Civil, Environmental, and Geo-Engineering, University of Minnesota.
- 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 Organizing Committee Member for 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.
- 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*: Resilience of Complex Healthcare Networks Subjected to Wildfire and Pandemics, 5th Annual Resilience Colloquium – Innovations for Guided Transformations, University of New Mexico.
- 2021 Invited to the National Science Foundation's Wildfire and the Biosphere Innovation Lab.
- 2021 *Invited Keynote*: Managing Resources for Healthcare Systems in an Era of COVID-19, Egyptian National Research Center, Cairo, Egypt.
- 2021 *Invited Keynote*: Integrated Systems-Level Approaches for Resilience Assessment of Civil Infrastructure Subjected to Extreme Events, an International Conference on Advances in Structural Mechanics and Applications (ASMA-2021), National Institute of Technology, Silchar, India.
- 2019 Award Reviewer for the U.S. National Academy for Science, Engineering, and Medicine.
- 2019 Invited Expert (*Travel award provided*) by the National Institute of Standards and Technology to a workshop on Large Outdoor Fire Modeling, Washington D.C.
- 2019 *Invited Keynote*: Advances in Computational Methods for the Assessment of Structures under Fires and Fire Following Earthquakes, 2nd International Conference on Numerical Modelling in Engineering (NME2019), Beijing, China.
- 2019 *Invited Keynote*: Integrated Socio-Technical Frameworks for Sustainable and Resilient Interdependent Schools and Healthcare Systems Following Extreme Events, Egyptian National Research Center, Cairo, Egypt.
- 2018 *Invited Keynote*: Assessment of Community Vulnerability to Wildland Urban Interface Fires, 3rd Annual Resilience Colloquium - Challenges of Natural Stresses: Resilience Engineering for Natural and Built Environment, University of New Mexico.
- 2018 Invited Expert (*Travel award provided*) by the National Institute of Standards and Technology to a workshop to address the White House Mandate on Immediate Occupancy Performance Objective under Extreme Loads, Washington D.C.
- 2018 Coastline and People (CoPe) Scoping session (*Travel award provided*) by the National Science Foundation to identify properties for research initiative focused on coastal regions, San Diego, CA.
- 2018 Invited Expert (*Travel award provided*) by the National Institute of Standards and Technology to

- a workshop to address the White House Mandate on Immediate Occupancy Performance Objective under Extreme Loads, Washington D.C.
- 2017 Invited Expert (*Travel award provided*) by the European Commission to the 2nd International Workshop on Modeling of Physical, Economic, and Social Systems, Ispra, Italy.
- 2016 Invited Expert (*Travel award provided*) to the National Windstorm Impact Reduction Program (NWIRP) Strategic Planning Stakeholders workshop, Washington D.C.
- 2016 Invited (*Travel award provided*) to the 1st International Workshop on Modeling of Physical, Economic, and Social Systems, Washington D.C.
- 2014 Invited Expert (*Travel award provided*) to a Task Force workshop on Hybrid Simulation, User Guide/Dictionary workshop at Purdue University, Lafayette, Indianapolis.
- 2014 *Invited Keynote*: State-of-the-art Fatigue and Fracture Repair Methods of Steel Structures, 10th International Conference on Civil & Architecture Engineering (ICCAE-10), Egypt Military Technical College.
- 2013 Invited Expert (*Travel award provided*) to a workshop on “Multiple Natural Hazards Assessment and Mitigation under the Impact of Climate Change, Hanoi, Vietnam.
- 2012 Invited (*Travel award provided*) to a workshop on Innovation in Design of Steel Structures: Research Needs for Global Competitiveness, Structures Congress, Chicago, IL.
- 2007 Invited Expert (*Travel award provided*) to a workshop on Fatigue and Fracture Assessment of Hydraulic Steel Structures, Infrastructure System Conference, Detroit, MI.
- 2007 Invited Expert (*Travel award provided*) to a Technical Focus Team Meeting on Fatigue and Fracture Evaluation of Steel Hydraulic Structures, La Holla, CA.

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

- **SOURCE** – \$4.5 million CSU civil engineering study to simulate the impact of explosives on structures in virtual reality platform – <https://engr.source.colostate.edu/4-5-million-csu-civil-engineering-study-to-simulate-impact-of-explosives-on-structures-in-virtual-reality-platform/>
- **CBS 13** – El Dorado County Residents Receive Letters Warning About Smoke And Ash Damage From Wildfire – <https://sacramento.cbslocal.com/2021/09/15/el-dorado-county-smoke-ash-wildfire/>
- **Healthcare Finance News** – Strategies Emerge for Better Managing Healthcare Systems During Pandemics – <https://www.healthcarefinancenews.com/news/strategies-emerge-better-managing-healthcare-systems-during-pandemics/>
- **Bridge Design and Engineering (Bd & e)** – The Future- When Normal Becomes Extreme – <https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=7bf746c8-2032-48dc-8fb0-8cb4510c2e86>
- **Global Biodefense** – How Health Care Systems Might Better Manage Multiple Natural Disaster, Outbreak Surges – <https://globalbiodefense.com/2021/03/19/how-health-care-systems-might-better-manage-multiple-natural-disaster-outbreak-surges/>
- **SOURCE** – CSU civil engineers find link between hospitals and schools key to community resilience, develop tool for measuring social services stability – <https://engr.source.colostate.edu/csu-civil-engineers-find-link-between-hospitals-and-schools-key-to-community-resilience-develop-tool-for-measuring-social-services-stability/>
- **SOURCE** – Arab-American Frontiers Symposium Co-Chair Investigates Community Resiliency Models - <https://engr.source.colostate.edu/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) - <https://www.bbc.co.uk/sounds/play/w172wpkgvz8f7>
- **The INDEPENDENT** - Climate Crisis: One in Four Steel Bridges in US 'Could Collapse by 2050' Due to Extreme Temperatures, Study Says - <https://www.independent.co.uk/environment/climate-change-us-bridges-collapse-steel-crisis-study-weather-a9169256.html>
- **Nature Climate Change – Research Highlights** - Vulnerable bridges - <https://www.nature.com/articles/s41558-019-0652-0>
- **Cable News Network (CNN)** - Even 'Weak' Hurricanes Can Cause a Lot of Harm <https://www.CNN.com/2019/07/16/opinions/hurricane-season-barry-strength-pilkington-mahmoud/index.html>
- **The Smithsonian Magazine (The Smithsonian Institution in Washington, D.C)** - How Satellites and Big Data Are Predicting the Behavior of Hurricanes and Other Natural Disasters <https://www.smithsonianmag.com/innovation/how-satellites-and-big-data-are-predicting-behavior-hurricanes-and-other-natural-disasters-180970893/#ss51zXQLACYAzere.99>
- **Civic Meter** - Could Epidemiological Models Help Predict Vulnerability of Communities to Wildfires? - <https://civimeter.com/civic-analytics/could-epidemiological-models-help-predict-vulnerability-of-communities-to-wildfires/>
- **SOURCE** – New Model Quantifies Communities' Vulnerability to the Spread of Fire - <https://engr.source.colostate.edu/new-model-quantifies-communities-vulnerability-to-the-spread-of-fire/>
- **BUSINESS INSIDER** - Major Investments in US infrastructure are Long Overdue. <http://www.businessinsider.com/major-investments-in-us-infrastructure-are-long-overdue-2017-3>

PUBLICATIONS

(TOTAL = 251) 5 NEWS ARTICLES; 4 BOOK CHAPTERS; 110 JOURNAL PAPERS (103 of which are already published or in press & 8 are under review); 62 CONFERENCE PAPERS; 37 CONFERENCE ABSTRACTS; and 32 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.

BOOKS AND BOOK CHAPTERS

- B1. **Mahmoud**, H. and Hassan, E. (2021) “Recommendations on Achieving Healthcare Resilience Following Extreme Events”, Engineering Mechanics Institute, American Society of Civil Engineers, In Press.
- B2. 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>.
- B3. **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, Paolo and LaFave, J., Springer, DOI: https://doi.org/10.1007/978-3-319-29713-2_8.
- B4. 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.

JOURNAL ARTICLES

Summary of Journal Articles

Thrust	<i>Thrust 1: Systems Analysis for Sustainability and Resilience</i>	<i>Thrust 2: Single and Multi-Hazards</i>	<i>Thrust 3: Infrastructure Deterioration and Fracture</i>	<i>Other</i>
Focus Area	Earthquakes, Hurricanes, Tornados, Wildland Urban Interface Fires, and Floods	Steel Structures under Fire, Earthquake, and Wind Loadings (single or combined)	Steel Structures, Large Fatigue Crack Growth, Ductile Fracture, Maintenance & Repair	NA
# published or accepted	40	36	25	2
# under review	4	0	2	2
Total = 111	44	36	27	4

Note: Total of **111** articles are listed, **103** of which are already published or in press & **8** are under review. For media attention, please see the section on Media Coverage. Advisees are indicated with a “*”.

Individual Journal Articles – Published or In Press***Systems Analysis for Sustainability and Resilience***

- J1. 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>.
- J2. Pilkington*, S. and **Mahmoud**, H. (2021) “Applicability of Artificial Neural Networks to Integrate Socio-Technical Drivers of Buildings Recovery Following Extreme Wind Events,” *Royal Society Open Science*, Vol. 8, 211014, <https://doi.org/10.1098/rsos.211014>.
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- J104. Dong, Y., Guo, Y., Ellinwood, B., and **Mahmoud**, H., (2022) “De-aggregation of Wind Speeds for Hurricane Scenarios Used in Risk-Informed Resilience Assessment of Coastal Communities,” *ASCE Journal of Structural Engineering*.

- J105.Hassan*, E., Riveros, H., **Mahmoud**, H., and Lopez*, S. (2021) “Multi-Axial Fatigue Strength of Structural Bolts,” *Engineering Failure Analysis*, Submitted for Review.
- J106.Blackburn, P.*, Hemmati, M.*, Ellingwood, B., and **Mahmoud**, H. (2021) “A Quantitative Basis for Nonstructural Adaptation Strategies to Mitigate Riverine Flood Risk to Communities,” *ASCE Natural Hazard Review*, Submitted for Review.
- J107.Hassan*, E. and **Mahmoud**, H. (2021) “Behavior of Double Composite Steel Bridges,” *ASCE Journal of Bridge Engineering*, Submitted for Review.
- J108.**Mahmoud**, H., Wang, N., Lin, P., and Ellingwood, H. (2021) “Building Performance Assessment in Support of Community Resilience Modeling,” *Engineering Structures*, Submitted for Review.
- J109.McCann*, A., McGilvray*, K., Troyer*, K., Hussein*, A., **Mahmoud**, H., and Heyliger, P. (2021) “Effects of C-1 and TNT explosive pressure on cadaveric ovine auditory tissue,” *PLOS ONE*, Submitted for Review.
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- J111.Li*, M., Jia, G., **Mahmoud**, H., Yu, Y-H, and Tom, N. (2021) “Physics-constrained Gaussian Process Model for Prediction of Hydrodynamic Interactions between Wave Energy Converters in an Array,” *Journal of Computational Physics*, Submitted for Review.

CONFERENCE PROCEEDINGS (PEER-REVIEWED)

- C1. 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.
- C2. 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.
- C3. 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.
- C4. 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.
- C5. Hassan, E., **Mahmoud**, H. “Resilience of Steel Office Buildings to Mainshock-Aftershock Events,” *Advances in Structural Mechanics and Applications (ASMA 2021)*, National Institute of Technology-Silchar, Silchar, March 2021.
- C6. **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.
- C7. **Mahmoud**, H. and Hassan, E. “Impact of Sequential Earthquakes on Functionality of Hospitals,” 17th World Conference on Earthquake Engineering, 17WCEE, Sendai, Japan, September 2021.
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- C12. 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.
- C13. **Mahmoud**, H., Hassan, E. “Framework for Recovery Assessment of Hospital Cluster Following a Scenario Earthquake Event,” 13th International Conference on Applications of Statistics and Probability in Civil Engineering (ICASP 13), Seoul, South Korea, May 2019.
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- C23. Wen, H. and **Mahmoud**, H. “Numerical Simulation of Hollow Sections Failure in Gusset Plate Welded Connections,” ASCE Structures Congress, Boston, PA, April 2015.

- C24. **Mahmoud**, H., “Growth and Instability of Long Cracks in Non-redundant and Redundant Structures,” 10th International Conference on Civil and Architecture Engineering (ICCAE-10), Cairo, Egypt, May 2014.
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- C34. 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; doi: 10.1109/COASE.2018.8560473.
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- C36. 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”, 6th International Symposium on Reliability Engineering and Risk Management, NUS, Singapore, May 2018.

- C37. 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.
- C38. Hassan, E. and **Mahmoud**, H. “Resilience Quantification of a Steel Hospital Subjected to Earthquake Loading”, 11th National Conference on Earthquake Engineering (11NCEE), Los Angeles, CA, June 2018.
- C39. 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.
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- C42. 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.
- C43. **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.
- C44. **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.
- C45. **Mahmoud**, H. and Zafar, A. “Time-Dependent Reliability Analysis of Reinforced Concrete Bridges including Deterioration Effects”, ASCE Geo-Structures Congress, Phoenix, AZ, February 2016.
- C46. 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.
- C47. **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.
- C48. **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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STESSA 2015, Shanghai, China, July 2015.

- C51. **Mahmoud**, H. and Memari, M. “The Effect of Earthquake History on the Localized Behavior of Moment Connections under Fire”, 8th International Conference on Behavior of Steel Structures in Seismic Areas (STESSA), Shanghai, China, July 2015.
- C52. **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.
- C53. **Mahmoud**, H. and Chulahwat, A., “A Building System with Suspended Floor Slabs for Seismic Application”, the 5th Asia Conference on Earthquake Engineering, Taipei, Taiwan, October 2014.
- C54. Riveros, G., **Mahmoud**, H., Como, A., “Innovative Fatigue Repair Method for Hydraulic Steel Structures”, 33rd PIANC World Congress, San Francisco, June 2014.
- C55. 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.
- C56. **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.
- C57. 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.
- C58. **Mahmoud**, H. and Riveros, G., “Fatigue Reliability of Stiffened Panels using Finite Element Monte Carlo Simulations”, ASCE Structures Congress, Pittsburgh, PA, May 2013.
- C59. **Mahmoud**, H. and Elnashai, A., “Hybrid Simulation of Semi-Rigid Partial-Strength Steel Frames”, ASCE Structures Congress, Pittsburgh, PA, May 2013.
- C60. Memari, M., Turbert, C., and **Mahmoud**, H., “Effects of Fire Following Earthquakes on Steel Frames with Reduced Beam Sections”, ASCE Structures Congress, Pittsburgh, PA, May 2013.
- C61. Como, A. and **Mahmoud**, H., “3D FEM Model for Tsunami Debris Impact Loading on Structural Walls”, First International Conference on Performance-based and Life-cycle Structural Engineering, Tsimshatsui, Hong Kong, China, December 2012.
- C62. **Mahmoud**, H. and Elnashai, A. S., “Hybrid Simulation for the Assessment of Semi-Rigid Partial-Strength Steel Frames in Seismic Regions”, International Conference on Earthquake Engineering Research Challenges in the 21st Century, Harbin, China, May 2012.

CONFERENCE ABSTRACTS

- A1. Dong, Y., Guo, Y., Ellingwood, B., and **Mahmoud**, H., “Selection of Hurricane Scenarios for Assessing Resilience of Coastal Communities,” 14th American Conference on Wind Engineering (2022 ACWE), National Wind Institute – Texas Tech University, May 2022.
- A2. 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.
- A3. 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.
- A4. 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.
- A5. **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.
- A6. **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.
- A7. 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.
- A8. 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.
- A9. Hassan, E. and **Mahmoud**, H. “Education and Healthcare Networks Resilience as a Social Stability Index”, American Geophysical Union, Fall Meeting, San Francisco, December 2020.
- A10. **Mahmoud**, H. and Chulahwat, A. “Redefining Community Resilience: A Generalized Dynamic Formulation”, American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A11. 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.
- A12. **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.
- A13. Pilkington, S., and **Mahmoud**, “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.
- A14. 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.
- A15. **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.
- A16. **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.
- A17. **Mahmoud**, H. and Chulahwat, A. “Redefining Community Resilience: A Generalized Dynamic Formulation”, American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A18. 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.
- A19. Hemmati, M., **Mahmoud**, H., Ellingwood, B., and Crooks, AT. “Impact of Urban Growth on Future Flood Risk and Resilience of the Built Environment”, American Geophysical Union, Fall Meeting, San Francisco, December 2019.

- A20. Chulahwat, A. and **Mahmoud**, H. “Quantifying Wildfire Risk to Archetypal Communities in the United States”, American Geophysical Union, Fall Meeting, San Francisco, December 2019.
- A21. 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.
- A22. **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.
- A23. **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.
- A24. **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.
- A25. **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.
- A26. 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.
- A27. **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.
- A28. **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.
- A29. **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.
- A30. **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.
- A31. 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.
- A32. 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.
- A33. 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.
- A34. **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.
- A35. **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.
- A36. 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.
- A37. **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.

TECHNICAL REPORTS

- R1. **Mahmoud**, H. and Hassan, E., “Evaluation of a New Double-Composite Simply-Supported Steel Bridge System”, Report number MPC-21-250, <https://www.ugpti.org/resources/reports/details.php?id=944&program=mpc> Mountain-Plains Consortium, July 2021.
- R2. 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.
- R3. 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.erd.c.dren.mil/xmlui/handle/11681/33270>, US Army Corps of Engineers Research and Development Center, Jun 2019.
- R4. Riveros, G., **Mahmoud**, H., Lozano, C., Valsangkar, A., and Ahmadi, B. “Underwater Fatigue Repair of Steel Panels Using Carbon Fiber Reinforced Polymers”, ERDC TR-19-1, <https://apps.dtic.mil/docs/citations/AD1073615>, US Army Corps of Engineers Research and Development Center, May 2019.
- R5. **Mahmoud**, H. and Hassan, E., “Seismic Performance of Highway Embankments”, Report number MPC 19-382, <https://www.ugpti.org/resources/reports/details.php?id=945&program=mpc>, Mountain-Plains Consortium, April 2019.
- R6. **Mahmoud**, H., Irfaee, M., and Hassan, E., “Seismic Behavior of Steel Bridges with Fatigue-Prone Details”, Report number MPC-18-368, <https://www.ugpti.org/resources/reports/details.php?id=944&program=mpc>, Mountain-Plains Consortium, Sep 2018.

- R7. **Mahmoud**, H., Atadero, R., Rager, K., Harper Smith, AL., “Joint Removal Implications – Thermal Analysis and Life-Cycle Cost”, Report number 2018-12, <https://www.codot.gov/programs/research/pdfs/2018-Research-Reports/2018-12/view>, Colorado Department of Transportation, April 2018.
- R8. **Mahmoud**, H., Atadero, R., Rager, K., Harper-Smith, A. L., and Memari, M., “Effect of Service Temperature on Joint Removal in Steel Bridges”, Report number MPC-18-366, <https://www.ugpti.org/resources/reports/details.php?id=948&program=mpc>, Mountain-Plains Consortium, August 2018.
- R9. **Mahmoud**, H., Memari, H., and Atadero, R., “Experimental Fatigue Assessment of CFRP-Retrofitted Reinforced Concrete Beams Subjected to Service Temperatures”, Report number MPC-18-362, <https://www.ugpti.org/resources/reports/details.php?id=949&program=mpc>, Mountain-Plains Consortium, August 2018.
- R10. **Mahmoud**, H., and Wen, H., “A Modified Approach for Predicting Fracture of Steel Components Under Combined Large Inelastic Axial and Shear Strain Cycles”, Report number MPC 18-345, <https://www.ugpti.org/resources/reports/details.php?id=902&program=mpc>, Mountain-Plains Consortium, April 2018.
- R11. Chen, S., **Mahmoud**, H., Wilson, T., Johnson, R., Hou, G., “Investigation of Seismic Performance and Design of Typical Curved and Skewed Bridges in Colorado”, Report number 2018-8, <https://www.codot.gov/programs/research/pdfs/2018-Research-Reports/2018-08/view>, Colorado Department of Transportation, January 2018.
- R12. Perko, H. A., Melinda, K. J., and **Mahmoud**, H., “Fatigue Analysis of T-Beam Flange to Main Beam Flange Connection for Pumping Units with Various Foundation Support Conditions”, summary report prepared to HESS Corporation, March 2017.
- R13. **Mahmoud**, H., Lopez, S., and Riveros, G., “Causes of Pretension Loss in High-Strength Bolts”, ERDC TR-15-17, <https://usace.contentdm.oclc.org/digital/collection/p266001coll1/id/3842/>, US Army Corps of Engineers Research and Development Center, June 2016.
- R14. Sobieck, T., Atadero, R., and **Mahmoud**, H., “Predicting Fatigue Service Life Extension of RC Bridges with Externally Bonded CFRP Repairs”, Report number MPC 15-292, <https://www.ugpti.org/resources/reports/details.php?id=827&program=mpc>, Mountain-Plains Consortium, December 2015.
- R15. **Mahmoud**, H., “A Probabilistic Approach for Assessing Fatigue Life of Miter Gates using Lagrangian-Eulerian Formulations”, report submitted to the Department of Defense, User Productivity Enhancement, Technology Transfer, and Training (PETTT) Program, High-Performance Computing Modernization Program (HPCMP), August 2015.
- R16. Clevenger, C. M., Ozbek, M. E., **Mahmoud**, H., and Fanning, B., “Impacts and Benefits of Implementing Building Information Modeling on Bridge Infrastructure Projects”, Report number MPC 14-272, <https://www.ugpti.org/resources/reports/details.php?id=778&program=mpc>, Mountain-Plains Consortium, October 2014.
- R17. **Mahmoud**, H., Como, A., and Riveros, G., “Fatigue Assessment of Underwater CFRP-Repaired Steel Panels using Finite Element Analysis”, ERDC TR-14-15, <https://erdc-library.erdcdren.mil/xmlui/handle/11681/10828>, US Army Corps of Engineers Research and Development Center, May 2014.
- R18. **Mahmoud**, H. and Riveros, G., “Fatigue Repair of Steel Hydraulic Structures (SHS) using Carbon Fiber Reinforced Polymers (CFRP): Feasibility Study”, ERDC TR-13-15, <https://erdc-library.erdcdren.mil/xmlui/handle/11681/10929>, prepared by Hussam Mahmoud and Associates for the US Army Corps of Engineers Research and Development Center, February 2013.

- R19. Dexter, R. J., **Mahmoud**, H., Padula, J. A., Riveros, G. A., “Fitness for Purpose Evaluation of Hydraulic Steel Structures”, ERDC TR-07-15, <https://erdc-library.erdcdren.mil/xmlui/handle/11681/8510>, prepared by Robert J. Dexter and Associates for the US Army Corps of Engineers Research and Development Center, November 2007.
- R20. **Mahmoud**, H., Hodgson, I. C., Bowman, C. A., “Instrumentation, Field Testing, and Fatigue Evaluation of the Throgs Neck Bridge Over the East River in New York City”, ATLSS Report # 06-17, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/83>, Lehigh University, September 2006.
- R21. Fisher, J. W., Connor, R. J., Hodgson, I. C., and **Mahmoud**, H., “Expert Report on The Design Review of the Fatigue Failures of the Steel Open Grid Deck on the Rt. 1&9T Passaic River Bridge”, Prepared for the Division of Law-State of New Jersey by John W. Fisher and Associates, September 2006.
- R22. **Mahmoud**, H., Meagher, S., and Yen, B. T., “Results of Field Measurements of the Pearl Harbor Memorial Bridge on I-476 over the Schuylkill River”, ATLSS Interim Report # 06-07, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/76>, Lehigh University, March 2006.
- R23. Hodgson, I. C., Connor, R. J., **Mahmoud**, H., and Bowman, C. A., “Approaches to the Fort Duquesne Bridge: Retrofit of Fatigue and Fracture Details: Field Testing and Fatigue Evaluation”, ATLSS Report # 06-06, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/75>, Lehigh University, February 2006.
- R24. Connor, R. J., Dexter, R. J., and **Mahmoud**, H., “Inspection and Management of Bridges with Fracture-Critical Details”, NCHRP Synthesis 354, <http://www.trb.org/Main/Blurbs/156681.aspx>, National Cooperative Research Highway Program, Transportation Research Board, Washington, DC, 2005, <https://doi.org/10.17226/13887>.
- R25. **Mahmoud**, H., Connor, R. J., and Bowman, C. A., “Results of the Fatigue Evaluation and Field Monitoring of the I-39 Northbound Bridge over the Wisconsin River”, ATLSS Report # 05-04, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/59>, Lehigh University, March 2005.
- R26. **Mahmoud**, H. and Connor, R. J., “Field Study of the SR 1045 Hares Hill Road Bridge over French Creek in Chester County, PA.”, ATLSS Report # 05-21, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/70>, Lehigh University, October 2005.
- R27. Connor, R. J., Hodgson, I. C., **Mahmoud**, H., and Bowman, C. A., “Field Testing and Fatigue Evaluation of the I-79 Neville Island Bridge over the Ohio River”, ATLSS Report # 05-02, <https://preserve.lehigh.edu/engr-civil-environmental-atlss-reports/57>, Lehigh University, February 2005.
- R28. **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.
- R29. 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.
- R30. 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.
- R31. 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.

R32. 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 = 128) 93 INVITED (1 Distinguished; 1 Memorial Lecture; 7 Keynotes; 2 Plenaries; 56 Seminars; 22 workshops; 1 listening session, 1 webinar; 2 Poster), and **38 CONFERENCE SEMINARS.**

INVITED PRESENTATIONS

1. Seminar – Optimizing Healthcare System Resilience in the Face of COVID-19 (August 2022)
2022 ESMED General Assembly (Virtual)
European Society of Medicine
2. Seminar – The Role of Interdependencies on Resilience of a School System Following Seismic Events (June 2022)
ICOSSAR 2022
Shanghai, China
3. Seminar – Life-Cycle Risk-Informed Decisions for Future Community Development in Regions Prone to Riverine Flooding (June 2022)
ICOSSAR 2022
Shanghai, China
4. 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)
Washington D.C.
5. *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
6. Seminar – Sustainable and Resilient Infrastructure Research at CSU (November 2021)
Guest Lecture (CE 8400)
University of Minnesota
Minneapolis, MN
7. Seminar – 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
8. *Keynote* – Resilience of Complex Healthcare Networks Subjected to Wildfire and Pandemics (October 2021)
5th Annual Resilience Colloquium: Innovations for Guided Transformations
University of New Mexico (Virtual)
Albuquerque, NM
9. *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.
10. Seminar – Advanced Methods for Performance-Based Assessment of Steel Buildings Under the Effects of Earthquake and Fire (September 2021)

- 17th World Conference on Earthquake Engineering (17WCEE)
Sendai, Japan
11. Seminar – Impact of Sequential Earthquakes on Functionality of Hospitals (September 2021)
17th World Conference on Earthquake Engineering (17WCEE)
Sendai, Japan
 12. Seminar – Using Artificial Neural Networks to Predict Damage and Resilience from Extreme Wind events (December 2021)
Society and Risk Analysis 2021 (Virtual)
 13. *Keynote* – Managing Resources for Healthcare Systems in an Era of COVID-19 (October 2021)
2nd International Conference on Science and Sustainable Development
Egyptian National Research Center, (NRC) (Virtual)
Giza, Egypt
 14. Seminar – Risk-Informed and Human-Centered Approaches for Impact Assessment of Disasters on Communities (April 2021)
Civil and Environmental Engineering Departmental Seminar
University of Michigan, Ann Arbor
Virtual
 15. Seminar – Framework for Assessing the Compound Impact of Pandemics and Natural Disasters on Healthcare Systems (April 2021)
Civil and Environmental Engineering External Advisory Board Meeting
Fort Collins, CO
Virtual
 16. Seminar – A Mixed Physics-Based and Data-Driven Model for Seismic Resilience: Assessment of Hospital Networks (April 2021)
Engineering Research Institute (EERI)
University of Nevada, Reno
Virtual
 17. Seminar – A New Paradigm for Assessing Wildfire Risk to Communities (March 2021)
American Society of Civil Engineers
Denver, Colorado
 18. Seminar – 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
 19. Seminar – 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
World Federation of Scientists
Virtual
 20. Seminar – Advanced Methods for Inspection and Management of Deteriorated Infrastructure (July 2020)
BIM Arabia Magazine
Virtual
 21. Workshop – 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
22. Seminar – 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
Los Angeles, CA
 23. Workshop – 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
Reston, VA
 24. Seminar – 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
Urbana, IL
 25. Workshop – The Notion of Resilience: From Infrastructure Damage to Societal Impact (January 2020)
College of Engineering
Blida 1 University
Blida, Algeria
 26. *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
 27. Seminar - Joint Removal Implications - Thermal Analysis and Life-Cycle Cost (September 2019)
Bridge Communication Day – Colorado Department of Transportation
Denver, CO
 28. *Keynote* – Integrated Socio-Technical Frameworks for Sustainable and Resilient Interdependent Schools and Healthcare Systems Following Extreme Events (September 2019)
1st International Conference on Science and Sustainable Development
Egyptian National Research Center, (NRC)
Giza, Egypt
 29. *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
 30. Seminar – Assessment and Management Approaches Towards Sustainable and Resilient Infrastructure and Communities (August 2019)
Department of Civil and Environmental Engineering
Zhejiang University
Shanghai, China

31. 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
32. Seminar – Underwater Fatigue Repair of Steel Structures: Experimental Results, Numerical Assessments, and Field Applications (July 2019)
AISI and AASHTO Steel Bridge Task Force Meeting
Philadelphia, PA
33. Plenary – Optimized Performance of Suspended Floor Building System under Seismic and Wind Hazards (June 2019)
2nd International Conference on Seismic Design and Analysis of Structures and Foundations
London, UK
34. Seminar – 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
35. Seminar – 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
36. Seminar – 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
37. Seminar – 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
38. Workshop – 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
39. Seminar – Community Resilience Assessment: Current Approaches and New Directions (March 2019)
Department of Civil and Environmental Engineering
Kuwait University
Shwaikh, Kuwait

40. Seminar – Condition of Bridges in the United States: Innovative solutions and Future Challenges (March 2019)
Public Authority for Roads and Transportations
Salmiya, Kuwait
41. Seminar – 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
42. Workshop – The Nature of Structures: Biomimicry in Structural Design and Analysis (April 2019)
Structures Congress
Orlando, FL
43. *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, New Mexico
44. Seminar – 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
45. Seminar – 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
46. Seminar – 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
47. Workshop – Performance-Based Engineering: State-of-the-Art, State-of-Practice, and Future Trends (April 2018)
Structures Congress
Fort Worth, TX
48. Seminar – Advances in Simulating Ultra-Low Cycle Fatigue Failure
National Institute of Standards and Technology (NIST)
Gaithersburg, MD.
49. Workshop – 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

50. Workshop – 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
Ispra, Italy
51. Workshop – A New Finite Element Tool for Quantifying Community Resilience (Sep 2017)
Resilience Week 2017
University of Delaware
Wilmington, DE
52. Workshop – An Asynchronous Graph for Assessing Communities Risk to Wildfires (Sep 2017)
Resilience Week 2017
University of Delaware
Wilmington, DE
53. Workshop – 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
54. Seminar – 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
55. Seminar – 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
56. Workshop – 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
57. Workshop – Community Vulnerability Assessment to Wildfires (June 2017)
The 2nd Tsinghua-NIST Resilience Center Workshop
Tsinghua University
Beijing, China
58. 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
59. Seminar – Assessment of Wildfire Risks to a Community (April 2017)
Center for Risk-Based Community Resilience Planning

Fort Collins, CO

60. Seminar – 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
61. Seminar – 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
62. Workshop – 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
63. Seminar – 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
64. 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.
65. Workshop – 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
66. Workshop – The 1st Tsinghua-NIST Resilience Center Workshop: Framework for Community Vulnerability to Wildfires (May 2016)
Tsinghua University
Beijing, China.
67. Workshop – Predicting Block Shear Fracture and Strength in Bolted Connections (May 2016)
Seventh International Workshop on Connections in Steel Structures
Northeastern University Boston, MA.
68. Seminar – 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
69. Seminar – 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
70. Webinar – 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

71. Seminar – A New Model for Predicting Ductile Fracture in Metal Alloys (October 2015)
Department of Civil and Environmental Engineering
University of Waterloo
Waterloo, Canada
72. Seminar – 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, Canada
73. Seminar – Fatigue and Fracture Assessment and Repair of Civil Infrastructure (October 2015)
American Society of Civil Engineering (ASCE) Northern Colorado Branch
Fort Collins, CO
74. Seminar – 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
75. Seminar – 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
76. Seminar – A Probabilistic Approach for Fitness-for-Purpose Assessment of Welded Details (Aug 2014)
The Robert Dexter Memorial Lecture Award
AISI and AASHTO Steel Bridge Task Force Meeting
Denver, CO
77. Workshop – 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
78. Seminar – Probabilistic Framework for Fatigue and Fracture Assessment of Welded Details (May 2014)
Faculty of Engineering
Cairo University Cairo, Egypt
79. *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
80. Seminar – 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
81. Workshop – 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

82. Seminar – 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
83. Seminar – 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
84. Workshop – 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
85. Seminar – 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
86. Seminar – 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
87. Seminar – 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
88. Seminar – 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
89. Seminar – 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
90. Workshop – 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
91. Workshop – Fatigue and Fracture Assessment of Hydraulic Steel Structures (June 2007)
Infrastructure System Conference
Detroit, MI

92. Seminar – Fracture Potential of Highly Constraint Details in Steel Plate Girders (November 2004)
FERS seminar series at Lehigh University
Bethlehem, PA
93. Seminar – Fatigue, Fracture and Dynamic Evaluation of Bridges (August 2004)
Minnesota Department of Transportation, Bridge Office
Oakdale, MN

CONFERENCE PRESENTATIONS

1. Risk-Informed Strategies for Mitigating the Impact of Wildland Urban Interface Fires (June 2022)
The 13th International Conference on Structural Safety & Reliability (ICOSSAR)
Shanghai, China
2. Coupling Tropical Cyclones and Sea Level Rise to Achieve Resilient Coastal Communities in an Era of Climate Change (April 2022)
Structures Congress
Atlanta, GA
3. Assessment of Demand on Steel Bridges subjected to Future Thermal Loadings in the Presence of Clogged Expansion Joints (April 2022)
Structures Congress
Atlanta, GA
4. 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
5. 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
6. 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
7. 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
8. Optimized Inspection Intervals for Bridges using Life-Cycle Cost (April 2019)
Structures Congress
Orlando, FL
9. Innovations in Structural Engineering Education – Teaching Structural Fire Engineering: System-Level Stability of Steel Frames under Fire (April 2019)
Structures Congress
Orlando, FL
10. Underwater Large-Scale Experimental Fatigue Assessment of CFRP-Retrofitted Steel Panels (April

- 2019)
Structures Congress
Orlando, FL
11. Comparative Loss Assessment of a Steel Hospital Using Multi-Resolution Numerical Models (June 2018)
11th National Conference on Earthquake Engineering (11NCEE)
Los Angeles, CA
 12. Resilience Quantification of a Steel Hospital Subjected to Earthquake Loading (June 2018)
11th National Conference on Earthquake Engineering (11NCEE)
Los Angeles, CA
 13. Experimental Assessment of Cracked Steel Beams Under Elevated Temperature (April 2018)
Structures Congress
Fort Worth, TX
 14. 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
 15. 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
 16. Suspended and Self-Centered Floor Slabs for Earthquake Resistance (February 2016)
ASCE GeoStructures Congress
Phoenix, AZ
 17. Design of Externally Bonded CFRP for Enhancing the Fatigue Performance of RC Bridges (February 2016)
ASCE GeoStructures Congress
Phoenix, AZ
 18. Distortion-Induced Fatigue Crack Growth (February 2016)
ASCE GeoStructures Congress
Phoenix, AZ
 19. 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
 20. 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
 21. 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
 22. Prediction of Block Shear Fracture in Bolted Connections (July 2015)

- The 8th International Conference on Advances in Steel Structures
Lisbon, Portugal
23. 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
 24. 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
 25. 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
 26. Predicting Tsunami Impact Loading using Coupled Eulerian-Lagrangian Formulation (Oct. 2014)
The 5th Asia Conference on Earthquake Engineering
Taipei, Taiwan
 27. Innovative Building System with Suspended Floor Slabs for Seismic Application (Oct. 2014)
The 5th Asia Conference on Earthquake Engineering
Taipei, Taiwan
 28. 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
 29. Fatigue Reliability of Stiffened Panels using Finite Element Monte Carlo Simulations (May 2013)
ASCE Structures Congress
Pittsburgh, PA
 30. Hybrid Simulation of Partial-Strength Semi-Rigid Steel Frames (May 2013)
ASCE Structures Congress
Pittsburgh, PA
 31. 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
 32. Advanced Hybrid Simulation Application for the Seismic Assessment of Semi-Rigid Partial-Strength Steel Frames (July 2012)
NEES-Quake Summit
Boston, MA
 33. 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
 34. 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
 35. 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

36. A Framework for Hybrid Simulation of Semi-Rigid Steel Frames (August 2009)
STESSA 2009: Behavior of Steel Structures in Seismic Areas
Philadelphia, PA
37. 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
38. Field Testing and Fatigue Evaluation of the I-39 Northbound Bridge over the Wisconsin River (June 2006)
23rd Annual International Bridge Conference
Pittsburgh, PA
39. 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

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

CURRENT VISITING SCHOLARS

1. Xiguang Liu, Xi'an University of Architecture and Technology

FORMER VISITING SCHOLARS

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

CURRENT PH.D. STUDENTS

1. Mohamed Abdelhafez, Chair – *“Vulnerability of a Coastal Industrial Community to Sea Level Rise and Climate Change”*, Colorado State University.
2. Christine Lozano, Chair – *“Integrating Hybrid Simulation with Additive Manufacturing for Assessment of Military Structures under Hazardous Events”*, Colorado State University (admitted and starting Fall 2021).
3. Srijesh Pradhan, Chair – *“The Role of Supply Chain in Rebuilding Communities Following Wildfires”*, Colorado State University.
4. Kellan Sullivan, Chair – *“Socio-Technical Strategies for Mitigating Blast Risk in Open Urban Settings”*, Colorado State University.
5. Mohammad Teymouri - Chair – *“To be Determined”*, Colorado State University.

FORMER PH.D. STUDENTS

1. Akshat Chulahwat, Chair – *“Quantifying Community Risk to Wildland Urban Interface Fires”*, CSU, Fall 2019.
2. Assal Hussein, Chair – *“Performance Assessment of Simple Blast Wall Systems”*, CSU, 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”*, CSU, Summer 2016.
6. Saeed Nozhati, Co-Chair – *“Optimal Stochastic Scheduling of Restoration of Infrastructure Systems from Hazards: An Approximate Dynamic Programming Approach”*, CSU, 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”*, CSU, Spring 2019.
8. Huajie Wen, Chair – *“Predicting Ductile Fracture in Steel Connections”*, CSU, Summer 2016.

CURRENT M.S. STUDENTS

1. Felicia Bianca (Plan A), Chair – “*Repairability of Severely Corroded Steel Sections using Fiber Composites*”, CSU.
2. Ismail Amaraa (Plan A), Co-chair – “*Non-linear Analysis of Steel Buildings with Vertical Optimization of Damper Placement*”, Cairo University.
3. Mahmoud Mostafa (Plan A), Co-chair – “*Reliability-Based Design Optimization of Steel Trusses*”, Cairo 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*”, CSU, Summer 2020.
2. Sushant Admuthe (Plan A), Chair – “*Effect of Sequential Main Shock Aftershock hazards on the Seismic Performance of Semi-Rigid Steel Frames*”, CSU, Summer 2018.
3. Pramodit Adhikari (Plan A), Co-Chair – “*Life Cycle Cost and Carbon-Footprint Analysis for Buildings and Communities Subjected to Tornadoes*”, CSU, Summer 2020.
4. Bashir Ahmadi, (Plan A), Chair – “*Experimental Assessment of Cracked Steel Beams under Mechanical Loading and Elevated Temperature*”, CSU, Fall 2016.
5. Risa Benvenga, (Plan A), Chair, “*Probabilistic Assessment of the Effect of Main Shock-Aftershock Sequences on the Performance of Moment of Connections*”, CSU, Fall 2018.
6. Atul Chavan (Plan C), Chair – CSU, Fall 2019.
7. Guo Cheng, (Plan A), Chair – “*A Framework for Life-Cycle Optimization of Buildings Under Seismic and Wind Hazards*”, CSU, Spring 2014.
8. Akshat Chulahwat (Plan A), Chair – “*Structural Systems with Suspended and Self-Centered Floor Slabs for Earthquake Resistance*”, CSU, Spring 2013.
9. Chaitanya Dwadasi (M.E., Plan C), Chair, CSU, Spring 2016.
10. Travis Engle, (Plan A), Chair – “*A Floor Slab Damper and Isolation Hybrid System Optimized for Seismic Vibration Control*”, CSU, Spring 2014.
11. Matthew Hardman (M.E., Plan C), Chair, CSU, Spring 2013.
12. Aura Lee Harper Smith, (Plan A), Chair – “*Life Cycle Cost Analysis for Joint Elimination and Retrofits and Thermal Loading on Colorado Bridges*”, CSU, Spring 2017.
13. Lauren Hudak, (Plan A), Chair – “*Experimental Fatigue Evaluation of Underwater Steel Panels Retrofitted with Fiber Reinforced Polymers*”, CSU, Spring 2019.
14. Lena Hartung, (Plan A), Chair – “*Fatigue Reliability and Post-Fracture Residual Capacity of a Two-Girder Steel Bridge*”, CSU, Fall 2016.
15. Mazin Irfae, (Plan A), Chair – “*Effect of Mixed-Mode Loading on Fatigue and Fracture Assessment of Steel Twin Box-Girder Bridge*”, CSU, Fall 2019.
16. 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*”, CSU, Summer 2019.
17. Jeet Sonwani, (Plan A), Co-Chair – “*Seismic Collapse Risk Assessment and Probabilistic Sensitivity Analysis of Braced Frames Under Near-Fault Earthquakes*”, CSU, Fall 2019.
18. Tim Maloney, (Plan A), Chair – “*Quantification of Performance, Damage, and Risk to Light Wood*

Frame Buildings Subjected to Tornadoes and Expansive Soils, CSU, Summer 2017.

19. Paula Miller, (Plan A), Chair – “*Numerical Simulation of Out-of-Plane Distortion Fatigue Crack Growth in Bridge Girders*”, CSU, Spring 2014.
20. Vatsal Paghadar (Plan B), Chair – “*Comparison of Existing of Current High-Cycle Fatigue Assessment Models*”, CSU, Summer 2017.
21. Stephanie Pilkington, (Plan A), Chair – “*A New Hurricane Impact Level Ranking System Using Artificial Neural Networks*”, CSU, Spring 2015.
22. Jill Porretta (Plan B), Chair – “*Comparative Collapse Analysis of Post-Earthquake Steel Frames Subjected to Elevated Temperatures*”, CSU, Summer 2021.
23. Chao Qin, (Plan A), Chair – “*Collapse Simulations of Steel Buildings Under Fire*”, CSU, Spring 2016.
24. Karly Rager, (Plan A), Chair – “*Effect of Eliminating Deck Joints on the Response of Steel Bridges under Service Temperatures*”, CSU, Spring 2016.
25. Santiago Lopez, (Plan A), Chair – “*Multi-Axial Fatigue Strength of Structural Bolts in Slip-Critical Connections Under Combined Cyclic and Shear Demands*”, CSU, Summer 2018.
26. Erick Ritter (M.E., Plan C), Chair, CSU, Spring 2017.
27. Vanessa Smith (Plan A), Chair – “*Evaluation of Wind Turbine Towers under the Simultaneous Application of Seismic, Operation, and Wind Loads*”, CSU, Fall 2013.
28. Tyler Sobieck, (Plan A), Co-chair – “*Fatigue Assessment of Retrofitted RC Bridge Girders under Elevated Service Temperature*”, CSU, Fall 2014.
29. Alireza Towhidi, (Plan B), Chair – “*State of Current Quantifiable Measures of Sustainability and Resiliency for Civil Infrastructure*”, CSU, Fall 2016.
30. Collin Turbert (Plan A), Chair, “*Effect of Fire and Fire Following an Earthquake on Reduced Beam Section Moment Connections*”, CSU, Fall 2013.
31. Anuj Valsangkar (Plan A) – “*Fatigue Crack Propagation in Underwater Carbon Fiber Reinforced Polymer (CFRP)-Retrofitted Steel Panels*”, CSU, Fall 2015.
32. Omar Khaled (Plan A), Co-chair – “*Use of Model Calibration Technique to Drive Accurate Fragility Curves*”, Cairo University, Spring 2022.
33. Scott Wardwell, (Plan A), Chair – “*The Effect of Single, Shaped Surface Flaws on Ductility in Cast Aluminum Dog Bone Specimens*”, CSU, Summer 2017.
34. Thomas Wilson (Plan A), Co-Chair – “*Seismic Performance of Skewed and Curved RC Bridges*”, CSU, Fall 2013.

GRADUATE STUDENTS COMMITTEES

1. Omar Amini (Ph.D.), Colorado State University, *graduated*
2. Pouria Bahmani (Ph.D.), Colorado State University, *graduated*
3. Luke Chia-Gee Chen (Ph.D.), Colorado State University
4. Todd Clapp (M.S., Plan A), Colorado State University, *graduated*
5. Poojitha Deshraj, (M.S., Plan B), Colorado State University, *graduated*
6. Alexandra Dukeman, (M.S., Plan B), Colorado State University, *graduated*

7. Trung Do (Ph.D.), Colorado State University, *graduated*
8. Michael Fox (Ph.D.), Colorado State University
9. Jace Furley (Ph.D.), Colorado State University
10. Elaina Jennings (Ph.D.), Colorado State University, *graduated*
11. Anish Jadhav (M.S., Plan A), Colorado State University, *graduated*
12. Robert Johnson (Ph.D.), Colorado State University, *graduated*
13. Blythe Johnston (Ph.D.), Colorado State University
14. Negar Khanmiri (Ph.D.), Colorado State University, *graduated*
15. Wei Liang (Ph.D.), Colorado State University
16. Hassan Massomi (Ph.D.), Colorado State University, *graduated*
17. Amanda McCann (M.S.), Colorado State University, *graduated*
18. Omar Nofal (Ph.D.), Colorado State University, *graduated*
19. Rung Panasawatwong (Ph.D.), Colorado State University
20. Brandon Perry (Ph.D.), Colorado State University
21. Srijesh Pradhan (M.S.), Colorado State University, *graduated*
22. Abdalmageed Salem (M.S., Plan A), Colorado State University, *graduated*
23. Kwancheol Shin (Ph.D.), Colorado State University, *graduated*
24. Stefanie Schulze (M.S, Plan A), Oregon State University, *graduated*
25. Shangbo Tong (M.S, Plan A), Colorado State University, *graduated*
26. Shangbo Tong (Ph.D.), Colorado State University
27. Lisa Wang (Ph.D.), Colorado State University
28. Zhenqiang Wang (Ph.D.), Colorado State University
29. Yangyang Wu (Ph.D.), Colorado State University
30. Yufen Zhou (Ph.D.), Colorado State University, *graduated*

UNDERGRADUATE RESEARCH ASSISTANT

1. Bashir Ahmadi
2. Brianna Arthur
3. Khaled Alsumait
4. Mohamed Farid Kamal
5. Brady Durham (undergraduate honor thesis)
6. Monica Prycel
7. Erick Ritter
8. Kellan Sullivan
9. Kristi Gemperline (undergraduate honor thesis)

10. Devin Blanch (undergraduate honor thesis)

TEACHING – GRADUATE COURSES

Course Prefix	Course title	Year	Sem	Sem. No.	Sem Score	Total No.	Total Score ¹
CIVE 767	Structural Dynamics & Earthquake Engineering	2011	Fall	13	4.69	13	4.69
CIVE 664	Mechanics of Fatigue and Fracture	2013	Spring	14	3.54	47	4.32
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 ²		
CIVE 561	Advanced Steel Behavior and Design	2014	Spring	28	3.80	94	4.69
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 ²		
CIVE 561		2020	Spring	22	NA ²		
CIVE 580A7	Fire Dynamics and Engineering	2016	Fall	9	4.44	9	4.44
CIVE 562	Fundamentals of Vibrations	2019	Spring	12	NA ²		
CIVE 562		2020	Spring	11	NA ²		
CIVE 562		2021	Spring	9	NA ²		

¹ 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

² Quantitative student evaluations were discontinued by the university effective the fall semester of 2018.

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 ¹
CIVE 466	Design and Behavior of Steel Structures	2012	Spring	36	3.48	469	4.53
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 ²		
CIVE 466		2019	Fall	56	NA ²		
CIVE 466		2020	Fall	55	NA ²		
CIVE 466		2021	Fall	50	NA ²		

CIVE 102	Intro to Civil & Env. Engr.	2013	Fall	146	3.98	146	3.98
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¹ 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

² Quantitative student evaluations were discontinued by the university effective the fall semester of 2018.

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

- Member of ASCE.
- Member of AISC.
- Member of International Association for Bridge Maintenance and Safety.
- Member of the Structural Engineering Association of Colorado (SEAC).

PROPOSAL AND PANEL REVIEW

- National Science Foundation, CMMI.
- 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 COMMITTEES

- 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 – present.
- Member of the ASCE Technical Committee on Fire Protection, 2014 – present.
- Member of the ASCE Technical Committee on Performance-Based Design, 2014 – present.
- 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

- University Curriculum Committee (UCC) – College Representative, Fall 2021 – Fall 2022.
- College Curriculum Committee (CCC) - Chair, Fall 2021 – Fall 2022.
- 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 – Present.
- 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.
- 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

- 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

- Editorial Board for *Nature Scientific Reports*.
- Editorial Board for the *Journal of Earthquake Engineering*.
- Editorial Board for *Sustainable and Resilient Infrastructure* published by Elsevier.
- Editorial Board for *Frontiers in Built Environment* published by Frontiers Med
- Guest Editor: *Environmental Research Communications (IOP Science)* – Data Analytics and Artificial Intelligence for Forecasting Community Resilience.
- Guest Editor: *Metals (MDPI)* – Sustainable and Resilient Steel Structures.
- Guest Editor: *Metals (MDPI)* – Advances in Structural Steel Research.
- Reviewer for *Nature Scientific Reports*, 2020 – present.
- Reviewer for *Nature 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 ORGANIZING AND CHAIRING COMMITTEES

- Organizing Committee Member for 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.
- Technical Advisory Committee - 3rd International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), Brighton, U.K., 2022.
- **Chair** - Critical Healthcare Infrastructure and Operation Modeling Workshop, National Center for Disaster Medicine and Public Health, Washington D.C., 2021.
- Session Co-Chair - 17th World Conference on Earthquake Engineering (17WCEE) - Advances in Performance-Based Earthquake Engineering, Sendai, Japan, 2021.
- Technical Advisory Committee - of the 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 - American Geophysical Union (AGU) 2020 Fall Meeting - Science to Action: Increasing Communities' Resilience to Climate Change and Long-Time Horizon Hazards Impacts on the Built Environment and Social Infrastructure, 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.
- **Co-Chair** - *U.S. National Academies Arab-American Frontiers of Engineering, Science and Medicine* Symposium, Cairo, Egypt, 2019.

- Session Co-Chair - 2nd International Conference on Seismic Design of Structures and Foundations Conference (SEISMICON), London, 2019.
- Session Co-Chair - ASCE Structures Congress: Assessment and Repair of Deteriorated Steel Infrastructure, Orlando, FL, 2019.
- Session Co-Chair - *Next Generation Buildings & Infrastructure* at the *U.S. National Academies Arab-American Frontiers Symposium*, Kuwait, 2018.
- Member of the Organizing Committee - Steel Structure 2018.
- Session Chair - 11th National Conference on Earthquake Engineering: Critical Infrastructure, Los Angeles, CA, 2018.
- Session Co-Chair – 2018 ASCE Structures Congress: Impact of Fire on Bridges with Recent Case Studies, Fort Worth, TX, 2018.
- Session co-chair at the ASCE Structures Congress: Performance-Based Engineering: State-of-the-Art, State-of-Practice, and Future Trends, Fort Worth, TX, 2018.
- Session Chair – 2017 ASCE Structures Congress: Fatigue and Fracture Assessment of Bridge Resilience and Development of Retrofit Methods, Denver, CO, 2017.
- Session Chair - 1st International Workshop on Modeling of Physical, Economic, and Social Systems: Modeling of Systems and Dependencies, Washington DC, 2016.
- Session Chair - ASCE GeoStructures Congress: Alternative Approaches to Multi-Hazard Analysis & Design of Structures, Phoenix, AZ, 2016.
- Session Co-Chair - *National Academy of Engineering (NAE) Frontier for Engineering (FOE) Symposium; Engineering Education/New Engineering Education Paradigms/Implementing Experiential Learning into the Engineering Curriculum*, Irvine, CA, 2015.
- Session Co-Chair - Joint 6AESE/11ANCRiSST Conference: 6th International Conference on Advances in Experimental Structural Engineering and the 11th International Workshop on Advanced Smart Materials and Smart Structures Technology, the University of Illinois at Urbana-Champaign, 2015.
- Session Co-Chair - STESSA Conference: Behavior of Steel Structures in Seismic Areas, Shanghai, China, 2015.
- Session Co-Chair - 5th Asia Conference on Earthquake Engineering (5th 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 - 2014 ASCE Structures congress: Multi-hazard Design of Structures Considering Earthquake and Fire, 2014.
- Session Chair - 2013 ASCE Structures congress: Application of Experimental Techniques for System-level Seismic Evaluation of Structures, 2013.
- **Chair** - Workshop on Fatigue and Fracture Assessment and Repair of Steel Bridges, General Authority for Roads, Bridges and Land Transport, Cairo, Egypt, 2013.
- Session Chair - STESSA 2009 Conference: Behavior of Steel Structures in Seismic Areas, Philadelphia, PA, 2009.
- Session Chair - 2007 ASCE Structures Congress: NDE of Concrete Girders, 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 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 the 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 D.C., 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 3rd 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 43th 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 2nd 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 2nd 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 D.C., July 2017.
 - Invited by the U.S. National Academy of Science to attend the Arabs-U.S. 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 D.C., June 2016 (*Travel award provided*).
- Invited to the 1st International Workshop on Modeling of Physical, Economic, and Social Systems, Washington D.C., October 2016 (*Travel award provided*).
- Invited to the 1st 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

- WSCOE Walk on the Oval Graduation, CSU, 2021.
- Judge for Demo Day, CSU, 2021.
- 8th 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.
- Judge for the Multicultural Undergraduate Research Art and Leadership Symposium, CSU, 2019.
- Shake table demo to various schools in Colorado.
- Steel Bridge advisor, 2012 – current.
- ASCE academic advisor, 2012 – 2018.

- Honor Thesis advisor for various undergraduate students, 2012 – current.
- 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 D.C.), 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 D.C.), 2017.
- Shake table tests as part of the undergraduate course CIVE 103, Engineering Graphics and Computing, 2012 – 2014.
- Earthquake Demo and Seminar for 6th and 8th-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

- ***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, D.C. (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

- **SOURCE** – \$4.5 million CSU civil engineering study to simulate the impact of explosives on structures in virtual reality platform – <https://engr.source.colostate.edu/4-5-million-csu-civil-engineering-study-to-simulate-impact-of-explosives-on-structures-in-virtual-reality-platform/> (also: **Homeland Security Review; Design and Development Today; Industrial Equipment News**)
- **CBS 13** – *El Dorado County Residents Receive Letters Warning About Smoke And Ash Damage From Wildfire* – <https://sacramento.cbslocal.com/2021/09/15/el-dorado-county-smoke-ash-wildfire/>
- **Temblor** – *Reenvisioning resilience may help earthquake recovery in Italy* – <https://temblor.net/earthquake-insights/reenvisioning-resilience-may-help-earthquake-recovery-in-italy-12725/> (also: **United Nations Office for Disaster Risk Reduction; Securewayhouse**)
- **Healthcare Finance News** – *Strategies Emerge for Better Managing Healthcare Systems During Pandemics* – <https://www.healthcarefinancenews.com/news/strategies-emerge-better-managing-healthcare-systems-during-pandemics/>
- **Bridge Design and Engineering (Bd & e)** – *The Future- When Normal Becomes Extreme* – <https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=7bf746c8-2032-48dc-8fb0-8cb4510c2e86>
- **Global Biodefense** – *How Health Care Systems Might Better Manage Multiple Natural Disaster, Outbreak Surges* – <https://globalbiodefense.com/2021/03/19/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* – <https://www.news-medical.net/news/20210310/Researchers-investigate-compound-effects-of-pandemicsnatural-disasters-on-health-care-systems.aspx>
- **SOURCE** – *CSU civil engineers publish strategies for better managing health care systems during pandemics and natural disasters* – <https://engr.source.colostate.edu/csu-civil-engineers-publish-strategies-for-better-managing-health-care-systems-during-pandemics-and-natural-disasters/> (also: **EurekAlert; MedicalXpress; Doc Wire News; News Break**)
- **SOURCE** – *Engineering researchers will use NSF grant to revolutionize wave farm design, lowering cost of renewable energy* – <https://engr.source.colostate.edu/engineering-researchers-will-use-nsf-grant-to-revolutionize-wave-farm-design-lowering-cost-of-renewable-energy> (also: **Opera News; dailyadvent.com**)
- **SOURCE** – *CSU civil engineers find link between hospitals and schools key to community resilience,*

- develop tool for measuring social services stability* – <https://engr.source.colostate.edu/csu-civil-engineers-find-link-between-hospitals-and-schools-key-to-community-resilience-develop-tool-for-measuring-social-services-stability/> (also: **Phys.org; EurekAlert; ScienceDaily; United Nations Office for Disaster Risk Reduction; Techcodex; ScienMag; psychiatryintel; Justdial; 25hournews; Comentr; Techxplore; Farmtable; Newsbreak.com; livedose.com**)
- **Florida News Times** - *Civil Engineers Believe that the Link Between Hospitals and Schools is the Key to Community Resilience* - <https://floridanewstimes.com/civil-engineers-believe-that-the-link-between-hospitals-and-schools-is-the-key-to-community-resilience/124405/>
 - **Walter Scott Jr. College of Engineering** – *Welcome Back, Rams: Acknowledging Teaching Efforts by Different Faculty* - https://www.youtube.com/watch?v=Gbmw-3V5ZHA&feature=emb_title&ab_channel=WalterScott%2CJr.CollegeofEngineering
 - **SOURCE** – *Research that Goes Boom: CSU Civil Engineers Test Structures and Tissues for Blast Impact* – <https://engr.source.colostate.edu/research-that-goes-boom-csu-civil-engineers-test-structures-and-tissues-for-blast-impact/> (also: **nocotoday.com; awsm-systems.com; nataliya.ks.ua; venturelicious.com**)
 - **SOURCE** – *Research shows custom community approach is best for mitigating wildfire risk* – <https://engr.source.colostate.edu/research-shows-custom-community-approach-is-best-for-mitigating-wildfire-risk/> (also: **Newsbreak**)
 - **MultiBriefs Exclusive** – *How well can your hospital recover after COVID-19? This new study can help* - <https://exclusive.multibriefs.com/content/how-well-can-your-hospital-recover-after-covid-19-this-new-study-can-help/medical-allied-healthcare>
 - **SOURCE** – *Planning for a Disaster: Model Can Predict Hospital Resilience for Natural Disasters, Pandemics* – <https://engr.source.colostate.edu/planning-for-a-disaster-model-can-predict-hospital-resilience-for-natural-disasters-pandemics/> (also: **ScienceDaily; Zenith.news; Parallelstate; Electronics360; World News Monitor; EurekAlert**)
 - **U.S. National Academy of Engineering** - *Bridges at Risk from Climate Change* (<https://www.naefrontiers.org/>)
 - **Le Courrier d’Algerie** – *Résilience Des Villes Suite Aux Catastrophes: Project De Convention Entre L’université Saad-Dahleb De Blida Et Celle Du Colorado (Resilience of Cities Following Disasters: Draft Convention between the Saad-Dahleb University of Blida and that of Colorado)* - <http://lecourrier-dalgerie.com/resilience-des-ville-suite-aux-catastrophes-projet-de-convention-entre-universite-saad-dahleb-de-blida-et-celle-du-colorado/> (also: **pro.medias-dz.com**)
 - **SOURCE** – *School of Global Environmental Sustainability announces new Resident Fellows, Global Challenges Research Teams* - <https://source.colostate.edu/school-of-global-environmental-sustainability-announces-new-resident-fellows-global-challenges-research-teams> (also: **ScienceDaily**)
 - **United Press International** – *Climate Change Could Damage Thousands of U.S. Bridges, Engineers Say* - https://www.upi.com/Top_News/US/2020/01/21/Climate-change-could-damage-thousands-of-US-bridges-engineers-say/2771575515714/
 - **SOURCE** – *Arab-American Frontiers Symposium Co-Chair Investigates Community Resiliency Models* - <https://engr.source.colostate.edu/arab-american-frontiers-symposium-co-chair-investigates-community-resiliency-models/>
 - **U.S. National Academy of Engineering** - **Frontiers of Engineering Alumni Spotlight** - <https://www.naefrontiers.org/195583/Hussam-Mahmoud>
 - **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)* - <https://www.bbc.co.uk/sounds/play/w172wpkgvznw8f7>
 - **POPULAR MECHANICS** – *Climate Change Could Wreck a Quarter of U.S. Bridges in 21 Years* <https://www.popularmechanics.com/technology/infrastructure/a29579577/climate-changes-bridges/>

- **The INDEPENDENT** - *Climate Crisis: One in Four Steel Bridges in US ‘Could Collapse by 2050’ Due to Extreme Temperatures, Study Says* - <https://www.independent.co.uk/environment/climate-change-us-bridges-collapse-steel-crisis-study-weather-a9169256.html>
- **Nature Climate Change – Research Highlights** - *Vulnerable bridges* - <https://www.nature.com/articles/s41558-019-0652-0>
- **BOULDER WEEKLY** – *Breaking point: New Study Highlights How Climate Change Could Imperil the Fate of Thousands of Bridges in Colorado and Beyond* - <https://www.boulderweekly.com/news/breaking-point/>
- **SOTT** - *America's Bridge Infrastructure Needs Work Due to Climate Change!* - <https://www.sott.net/article/422720-Americas-bridge-infrastructure-needs-work-due-to-climate-change>
- **ASCE SmartBrief** - *Study Links Climate Change to Clogged Expansion Joints in Bridges* - <https://www.smartbrief.com/branded/91F4B281-2E1D-4492-AC81-F51EDC8C14C3/A5F66CC7-FFB4-40C0-A23E-1149F9DF83BA>
- **SOURCE** – *Climate Change Could Hasten Deterioration of U.S. Bridge Infrastructure* - <https://engr.source.colostate.edu/climate-change-could-hasten-deterioration-of-u-s-bridge-infrastructure/> (also: **NAE GRAND CHALLENGES; SCIENCE DAILY; PHYS.ORG; PARALLELSTATE.COM; EurekAlert; Environmental News Network; American Infrastructure, Group, INC.; The world News Monitor; Kenya News; United Nations Office for Disaster Risk Reduction; Nation News; Humanitarian News; Resilience Engineering Institute; Eco Who; gephardtaily; Kobi;)**
- **United Press International** - *Climate Change May Accelerate the Deterioration of U.S. Bridges* - https://www.upi.com/Science_News/2019/10/25/Climate-change-may-accelerate-the-deterioration-of-US-bridges/2451572017168/
- **GLOBAL CONSTRUCTION REVIEW** - *One Quarter of All Steel Bridges in the US May Fail by 2040* - <http://www.globalconstructionreview.com/news/one-quarter-all-steel-bridges-us-may-fail-2040/>
- **DIGITAL JOURNAL** - *America's Bridge Infrastructure Needs Some Serious Work* - <http://www.digitaljournal.com/tech-and-science/science/america-s-bridge-infrastructure-needs-some-serious-work/article/560501>
- **Tweak Town** - *Climate Change Could Severely Impact America's Bridge Infrastructure* <https://www.tweaktown.com/news/68364/climate-change-severely-impact-americas-bridge-infrastructure/index.html>
- **New Scientist** - *Climate Change May See One in Four US Steel Bridges Collapse by 2040* <https://www.newscientist.com/article/2221040-climate-change-may-see-one-in-four-us-steel-bridges-collapse-by-2040/> (**climatedepot.com; reddit.com; websfavourites.com; CincinnatiBell.com**)
- **Cable News Network (CNN)** - *Even 'Weak' Hurricanes Can Cause a Lot of Harm* <https://www.CNN.com/2019/07/16/opinions/hurricane-season-barry-strength-pilkington-mahmoud/index.html>
- **The Smithsonian Magazine (The Smithsonian Institution in Washington, D.C)** - *How Satellites and Big Data Are Predicting the Behavior of Hurricanes and Other Natural Disasters* <https://www.smithsonianmag.com/innovation/how-satellites-and-big-data-are-predicting-behavior-hurricanes-and-other-natural-disasters-180970893/#ss51zXQLACYAzere.99>
- **Civic Meter** - *Could Epidemiological Models Help Predict Vulnerability of Communities to Wildfires?* - <https://civictmeter.com/civic-analytics/could-epidemiological-models-help-predict-vulnerability-of-communities-to-wildfires/>
- **SOURCE** – *New Model Quantifies Communities' Vulnerability to the Spread of Fire* – <https://engr.source.colostate.edu/new-model-quantifies-communities-vulnerability-to-the-spread-of-fire/> (also in **SCIENCE DAILY; Tech Xplore; PHYS.ORG; PARALLELSTATE.COM;**

- EurekAlert; Sustainable-news.com;)**
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