

# GUIRONG (GRACE) YAN

## CURRICULUM VITAE



Assistant Professor, Ph.D.  
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### EDUCATION

- **Ph.D. in Engineering Mechanics** (Sept. 2002-Nov. 2006)  
Harbin Institute of Technology, Harbin, P.R. China
- **M.S. in Structural Engineering** (Sept. 2000-Aug. 2002)  
Harbin Institute of Technology, Harbin, P.R. China
- **B.S. in Civil Engineering** (Sept. 1994-Aug. 1998)  
Harbin Commerce University, Harbin, P.R. China

### RESEARCH INTERESTS

- **Computational wind engineering** (CFD simulations of different wind fields, such as tornadoes and hurricanes)
- **Improvement of tornado risk awareness** through virtual reality animation, social science and behavior finance
- **Wind hazard mitigation** to achieve resilient communities and cities by improving design codes and reinforcing strategies.
- **Structural health monitoring and condition assessment** (Linear/Nonlinear system identification and damage detection under multi-hazard environments)

### PROFESSIONAL EXPERIENCE

- **Tenure-track Assistant Professor** (Aug. 2014-present)  
Department of Civil, Architectural and Environmental Engineering, **Missouri University of Science and Technology**
- **Tenure-track Assistant Professor** (Aug. 2012- Aug. 2014)  
Department of Civil Engineering, **University of Texas at El Paso (UTEP)**
- **Lecturer** (Feb. 2010-Aug. 2012)  
School of Engineering, **University of Western Sydney (UWS), Australia**
- **Postdoctoral Research Associate** (Oct. 2009-Feb. 2010)  
School of Civil Engineering, **Purdue University** (Supervisor: Dr. Shirley Dyke)

- **Postdoctoral Research Associate** (Jun. 2008-Sept. 2009)  
Dept. of Mechanical, Aerospace and Structural Engineering, **Washington University in St. Louis** (Supervisor: Dr. Shirley Dyke)
- **Postdoctoral Research Associate** (Jun. 2007-May 2008)  
Dept. of Structural and Geotechnical Engineering, **Polytechnic University of Turin, Italy**  
(Supervisor: Dr. Alexander De Stefano)

## **HONERS AND AWARDS**

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- Missouri Accelerated Research Award, 2019
- UTEP Outstanding Research Performance Award, 2014
- NSF Fellow for ENHANCE (NSF-National Science Foundation), 2013
- TRB minority faculty Mentor (TRB-Transportation Research Board), 2013
- ASCE ExCEED Fellow, 2016

## **PUBLICATIONS** (38 Journal Papers and 55 refereed conference papers)

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### **Journal Publications** (38 Journal Papers; 15 at Missouri S&T)

- [1] Tiantian Li, **Guirong Yan**, Fangping Yuan & Genda Chen (2019), “Dynamic Responses on Large-Scale Dome Structures Induced by Tornado,” *Journal of Wind Engineering and Industrial Aerodynamics*, (190): 293-308.
- [2] Fangping Yuan, **Guirong Yan**, Ryan Honerkamp, and Kakkattukuzhy M. Isaac, Ming Zhao and Xiaoyong Mao (2019), “Numerical Simulation of Laboratory Tornado Simulator that can Produce Translating Tornadoes,” *Journal of Wind Engineering and Industrial Aerodynamics*, (190): 200-217.
- [3] **Guirong Yan**, Tiantian Li, Ruoqiang Feng, Genda Chen, Xugang Hua, and Qihua Duan (2018), “Detection of Nodal Snap-through Instability in Civil Large-scale Space Structures Using Tilt Sensing of Members,” *Journal of Applied Nonlinear Dynamics*, 7(1): 25-44. (DOI: 10.5890/JAND.2018.03.003)
- [4] **Guirong Yan**, Tiantian Li, Jianxin Yu, Ruoqiang Feng and Xiaoyun Shao (2018), “Damage localization using shape change in uniform load surface for civil large-span space structures,” *Journal of Intelligent Material Systems and Structures*, 30 (9): 1339-1354. <https://doi.org/10.1177/1045389X18806388>
- [5] Ou Yang, Bai Zhang, **Guirong Yan** and Jun Chen (2018), “Bond Performance between Slightly Corroded Steel Bar and Concrete after Exposure to High Temperature,” *ASCE Journal of Structural Engineering*, 144 (11): 04018209. (ORCID: <https://orcid.org/0000-0002-7267-1968>)
- [6] Ruoqiang Feng, Fengcheng Liu, Qi Cai, **Guirong Yan**, and Jiabing Leng (2018), “Field measurements of wind pressure on an open roof during Typhoons HaiKui and SuLi”, *Wind and Structures*, 26(1): 11-24. (DOI: <https://doi.org/10.12989/was.2018.26.1.011>)
- [7] **Guirong Yan**, Shirley J. Dyke and Ayhan Irfanoglu (2018), “Damage Detection for Truss Structures based on Member Axial-strain Mode Shapes with Experimental Validation,” *Journal of Vibration Testing and System Dynamics*, 2(4): 403-406. (DOI: 10.5890/JVTSD.2018.12.005)
- [8] Ruo-qiang Feng, Feng-cheng Liu, **Guirong Yan**, Xiao-liang Chang (2017), “Mechanical behavior of Ring-sleeve joints of single-layer reticulated shells,” *Journal of Constructional Steel Research*, 128: 601-610.

- [9] **Guirong Yan**, Chen Fang, Ruoqiang Feng, Xugang Hua and Yi Zhao (2017), “Detection of Member Overall Buckling in Civil Space Grid Structures Based on Deviation in Strain along the Member,” *Engineering Structures*, 131: 599-613.
- [10] Xi Wang, Ruoqiang Feng, **Guirong Yan**, Fengcheng Liu and Weijia Xu (2016), “Effect of joint stiffness on the stability of cable-braced grid shells,” *International Journal of Steel Structures*, 16(4): 1123-1133.
- [11] **Guirong Yan**, Peng Chen, Huangda Hu and Jiarui Yi (2015), “Fast Damage Detection of cable-stayed bridges using an Improved Edge-detection Method,” *Journal of Intelligent Material Systems and Structures*, 26: 1711-1722.
- [12] Zhuoxiong Sun, Sriram Krishnan, Greg Hackmann, **Guirong Yan**, Shirley J. Dyke, Chenyang Lu and Ayhan Irfanoglu (2015), “Damage detection on a full-scale highway sign structure with a distributed wireless sensor network,” *Smart Structures and Systems, An International Journal*, 16(1): 223-242.
- [13] **Guirong Yan**, Xuelin Peng and Hong Hao (2014), “Dynamic Characteristics of Submarine Pipelines and Experimental Validation of a Bedding Condition Assessment Approach based on Mode Shape Curvatures”, *Australian Journal of Structural Engineering*. 15 (1): 1-13.
- [14] Gregory Hackmann, Weijun Guo, **Guirong Yan**, Zhuoxiong Sun, Chenyang Lu and Shirley Dyke (2014), “Cyber-Physical Codesign of Distributed Structural Health Monitoring with Wireless Sensor Networks,” *IEEE Transactions on Parallel and Distributed Systems (TPDS)*, 25(1): 53-72.
- [15] Cecilia Surace, **Guirong Yan**, Richard Archibald, Rishu Saxena and Ruoqiang Feng (2014), “Structural Damage Detection using the Polynomial Annihilation Edge Detection Method”, *Australian Journal of Structural Engineering*, 15 (1): 37-49.
- [16] Ruoqiang Feng, Jihong Ye, **Guirong Yan** and Jinming Ge (2013), “Dynamic nonlinearity and nonlinear single-degree-of-freedom model for cable net glazing,” *ASCE Journal of Engineering Mechanics*, 139(10): 1446-1459.
- [17] Ming Zhao and **Guirong Yan** (2013), “Numerical simulation of vortex-induced vibration (VIV) of two circular cylinders of different diameters at low Reynolds number”, *Physics of Fluids*, 25(8), p083601.
- [18] Ming Zhao, Kalyani Kaja, Yang Xiang and **Guirong Yan** (2013), “Vortex-induced Vibration (VIV) of a circular cylinder in combined steady and oscillatory flow Article”, *Ocean Engineering*, 73: 83-95.
- [19] Ruoqiang Feng, Jihong Ye, **Guirong Yan**, Qing-xiang Li and Bin Yao (2013), “Wind-induced torsion vibration of the super high-rise building of Shenzhen Energy Center,” *The Structural Design of Tall and Special Buildings*, 22(10): 802-815.
- [20] Linren Zhou, **Guirong Yan**, Wei Wang and Jinping Ou (2013), “Review of Benchmark Studies and Guidelines for Structural Health Monitoring,” *Advances in Structural Engineering*, 16(7): 1187-1206.
- [21] Linren Zhou, **Guirong Yan** and Jinping Ou (2013), “Response Surface Method based on Radial Basis Functions for Modeling large-scale structures in model updating,” *Computer-Aided Civil and Infrastructure Engineering*, 28(3): 210-226.
- [22] Ruoqiang Feng, **Guirong Yan** and Jinming Ge (2012), “Effects of high modes on the wind-induced response of super high-rise buildings,” *Earthquake Engineering and Engineering Vibration*, 11(3): 427-434.

- [23] **Guirong Yan**, Alessandro De Stefano, Emiliano Matta and Ruoqiang Feng (2012), “A Novel Approach to Detecting Breathing-fatigue Cracks based on Dynamic Characteristics,” *Journal of Sound and Vibration*, 332 (2): 407-422.
- [24] **Guirong Yan**, Alessandro De Stefano and Ge Ou (2012), “A General Nonlinear System Identification Method Based upon the Time-varying Trend of the Instantaneous Vibration Frequency and Amplitude,” *Advances in Structural Engineering*, 15(5): 781-792.
- [25] Lanhui Guo, Ran Li, Sumei Zhang and **Guirong Yan** (2012), “Hysteretic Analysis of Steel Plate Shear Walls (SPSWs) and A modified Strip Model for SPSWs,” *Advances in Structural Engineering*, 15(10): 1751-1764.
- [26] **Guirong Yan**, Shirley Dyke and Ayhan Irfanoglu (2012), “Experimental Validation of a Damage Detection Approach on a Full-Scale Highway Sign Support Truss,” *Mechanical Systems and Signal Processing*, (28): 195-211.
- [27] **Guirong Yan**, Zhongdong Duan and Jinping Ou, Alessandro De Stefano (2010), “Structural Damage Detection Using Residual Forces Based on Wavelet Transform,” *Mechanical Systems and Signal Processing*, 24(1): 224-239.
- [28] **Guirong Yan** and Shirley Dyke (2010), “Structural Damage Detection Robust Against Time Synchronization Errors”, *Smart Materials and Structures*. 19 (6) (2010) 065001.
- [29] **Guirong Yan**, Weijun Guo, Shirley Dyke, Gregory Hackmann and Chenyang Lu (2010), “Experimental Validation of a Multi-level Damage Localization Technique with Distributed Computation”, *Smart Structures and Systems*, 6(5): 561-578.
- [30] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2010), “Damage Detection for Beam Structures Using an Angle-between-String-and-Horizon Flexibility Matrix,” *Structural Engineering and Mechanics, An International Journal*, 36(5): 643-667.
- [31] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2009), “Damage Detection for Truss or Frame Structures Using an Axial Strain Flexibility,” *Smart Structures and Systems, an Int. Journal*, 5(3): 291-316.
- [32] Zhongdong Duan, **Guirong Yan** and Jinping Ou (2008), “Challenges in applying the vibration-based damage detection to civil structures (in Chinese),” *Journal of Harbin Institute of Technology*, 40(4): 505-513.
- [33] Zhongdong Duan, **Guirong Yan**, Jinping Ou and Bill F. Spencer (2007), “Damage Detection in Ambient Vibration Using Proportional Flexibility Matrix with Incomplete Measured DOFs,” *Structural Control and Health Monitoring*, 14(2): 186-196.
- [34] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2007), “Application of genetic algorithm on structural finite element model updating (in Chinese),” *Journal of Harbin Institute of Technology*, 39(2): 181-186.
- [35] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2007), “Review on Structural Damage Detection Based on Vibration Data (in Chinese),” *Earthquake Engineering and Engineering Vibration*, 27(3): 95-103.
- [36] Zhongdong Duan, **Guirong Yan**, Jinping Ou and B.F. Spencer (2006), “Proportional Flexibility Matrix of Structures (in Chinese),” *Journal of Harbin Institute of Technology*, 38(8): 1237-1242.
- [37] Zhongdong Duan, **Guirong Yan**, Jinping Ou and Bill F. Spencer (2005), “Damage Localization in Ambient Vibration by Constructing Proportional Flexibility Matrix,” *Journal of Sound and Vibration*, 284(1-2): 455-466.

- [38] Zhongdong Duan, B.F. Spencer, **Guirong Yan** and Jinping Ou (2004), “An Improved Optimal Elemental Method for Finite Element Model Updating,” *Earthquake Engineering and Engineering Vibration*, 3(1): 67-74.

### **Journal Papers Under Review**

- [1] Ryan Honerkamp and **Guirong Yan**. Review on Characteristics of Tornadic Wind Fields and their Laboratory and CFD Simulations. *Journal of Wind Engineering and Industrial Aerodynamics*. Under review.
- [2] Zhi Li, Ryan Honerkamp, Daoru Han and **Guirong Yan**. Influence of a community of buildings on tornadic wind fields. *Journal of Wind and Structures*. Under Review.
- [3] Yi Zhao and **Guirong Yan**. Wind Flow Characteristics of Multi-Vortex Tornadoes. *Journal of Natural Hazard Review*. Under review.
- [4] Tiantian Li and **Guirong Yan**. Comparison between double-celled and single-celled single-vortex tornadoes and their wind effects. *Engineer Structures*. Under Review.
- [5] Yi Zhao, **Guirong Yan**, Kakkattukuzhy M. Isaac, “Study on Most Unfavorable Translating Paths of Tornadoes for Tornado-resistant Design of Civil Structures.” *Journal of Sustainable Cities and Society*. Under review.
- [6] Tiantian Li, **Guirong Yan**, Yi Zhao and Ryan Honerkamp, “Identification of Existing Stress in Existing Civil Structures for Accurate Assessment of Structural Behavior under Impending Extreme Winds.” *Journal of Structural Engineering*. Under review.

### **Book Chapter**

- [1] Fangping Yuan, **Guirong Yan**, Ryan Honerkamp, Kakkattukuzhy M. Isaac and Ruoqiang Feng (2018). “Effects of chamber shape on simulation of tornado-like flow in a laboratory.” Wind Engineering for Natural Hazards-Modeling, Simulation, and Mitigation of Windstorm Impact on Critical Infrastructure. Edited by Aly Mousaad Aly and Elena Dragomirescu. American Society of Civil Engineers, 2018, ISBN: 0784481857, 9780784481851

### **Publications in Conference Proceedings** (55 Peer Reviewed Conference Papers; 17 at Missouri S&T)

- [1] Ryan Honerkamp & **Guirong Yan**. “Investigation of Structural Failure Modes Induced by Tornadoes through Post-event Surveys.” The 9th International Conference on Structural Health Monitoring of Intelligent Infrastructure, August 4-7, 2019, St. Louis, MO, USA
- [2] Ryan Honerkamp & **Guirong Yan**. “High-fidelity CFD Simulation of a Large-scale Laboratory Tornado Simulator by Including Gravity and Translation.” The 15th International Conference on Wind Engineering, September 1-6, 2019, Beijing, China.
- [3] Tiantian Li & **Guirong Yan**. “Improve Wind-induced Structural Responses on a Cable-net Roof Structure by Using Two-way Coupled Wind-structure-interaction Simulations.” The 15th International Conference on Wind Engineering, September 1-6, 2019, Beijing, China.
- [4] Tiantian Li, **Guirong Yan**, Fangping Yuan & Genda Chen. “Non-stationary Characteristics of Tornadoes and Induced Dynamic Impact on a Large-span Dome Structure.” 2019 Structural Congress, April 24-28, 2019, Orlando, FL, USA.
- [5] Tiantian Li, **Guirong Yan**, Fangping Yuan & Genda Chen. “Tornado-Induced Structural Responses on Large-Scale Dome Structures.” *2018 International Symposium on Computational Wind Engineering*, June 18-22, 2018, Seoul, Korea.

- [6] Yi Zhao, **Guirong Yan** & Ming Zhao. “CFD Simulation of Full-Scale Multi-Subvortex Tornadoes.” *2018 International Symposium on Computational Wind Engineering*, June 18-22, 2018, Seoul, Korea.
- [7] Zhi Li, Ryan Honerkamp & **Guirong Yan** (2018). “Influence of a Community of Buildings on Tornadic Wind Field.” *2018 International Symposium on Computational Wind Engineering*, June 18-22, 2018, Seoul, Korea.
- [8] Yi Zhao, **Guirong Yan** and Kakkattukuzhy M. Isaac (2016). “Characteristics of wind flow around dome structures in tornadic wind field.” *The 4th American Association for Wind Engineering Workshop*, August 14 - 16, 2016, Miami, Florida, USA.
- [9] **Guirong Yan**, Jianxin Yu, Yi Zhao and Yan Xiao (2016). “Locate damage based on change in structural shape Calculated from Uniform Load surface.” *ASME 2016 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, September, 2016, Stowe, VT, USA.
- [10] Yi Zhao, **Guirong Yan**, Jiahao Zu, Fangping Yuan and Kakkattukuzhy M. Isaac (2016). “Comparison on wind effects of tornadic and straight-line wind fields on spherical dome structures.” *The 8th International Colloquium on Bluff Body Aerodynamics and Applications*, June 7-11, 2016, Boston, Massachusetts, USA.
- [11] Jiahao Zu, **Guirong Yan**, and Chao Li (2016). “Investigation of wind pressure of translating tornado on spherical dome structures.” *The 8th International Colloquium on Bluff Body Aerodynamics and Applications*, June 7-11, 2016, Boston, Massachusetts, USA.
- [12] Yi Zhao, **Guirong Yan**, and Xugang Hua (2016). “Investigation of Wind Effects of Tornadoes on Dome Structures.” *First International Symposium on Flutter and its Application*, May 15-17, 2016, Tokyo, Japan.
- [13] **Guirong Yan**, Jianxin Yu, Yi Zhao and Ruoqiang Feng (2016), “Locate Damage based on Change in Structural Shape for Civil Space Structures.” *Proc. SPIE 9803, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2016*, 98034X (April 20, 2016; Las Vegas, NA, USA). doi:10.1117/12.2219430.
- [14] **Guirong Yan**, Qiuhua Duan, Xugang Hua (2016), “Instability Signature for Detecting Snap-through Buckling of Dome Structures.” *Proc. SPIE 9803, Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2016*, 98033X (April 20, 2016; Las Vegas, NA, USA). doi:10.1117/12.2219389.
- [15] **Guirong Yan**, Scott Jemison, Qiuhua Duan and Ruoqiang Feng (2015), “Detection of pretension loss of cable-net structures.” *The ASME 2015 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, September, 2015, Colorado Springs, CO.
- [16] **Guirong Yan**, Qiuhua Duan, Ruoqiang Feng and Chen Fang (2015), “Identification of Overall Buckling of Members in Space Grid structures.” *The 3rd International Conference on Civil Engineering, Architecture and Sustainable Infrastructure*, July, 2015, Kowloon, Hong Kong.
- [17] **Guirong Yan**, Qiuhua Duan, Ruoqiang Feng and Chen Fang (2015), “Identification of Nodal Snap-through Instability in civil space Structures.” *The ASME 2016 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, September, 2015, Colorado Springs, CO.
- [18] **Guirong Yan**, Kai Zhao, Chen Fang and Ruoqiang Feng (2014), “Identification of Breathing Fatigue Cracks in Nonlinear Structures.” *2014 Conference on Smart Materials, Adaptive*

- Structures and Intelligent Systems*, September 8-10, 2014, Newport, Rhode Island, USA.
- [19] **Guirong Yan**, Kai Zhao, Ruoqiang Feng and Jiarui Yi (2014), “Identification of Fatigue Cracks through Separating Dynamic Responses.” *The SPIE Smart Structures/NDE*, March, 2014, San Diego, CA, USA
- [20] **Guirong Yan**, Jianxin Yu, Ruoqiang Feng and Carlos Ferregut (2013), “Damage Location of Civil Large-scale Space Structures based on Average Axial-strain Mode Shapes.” *The 9th International Workshop on Structural Health Monitoring*, September, 2013, Stanford, CA.
- [21] Peng Chen, Guangda Hu, Soheil Nazarian and **Guirong Yan** (2013), “Structural Damage Detection based on an Improved Edge-detection Technique.” *The ASME 2013 Conference on Smart Materials, Adaptive Structures and Intelligent Systems*, September 16-18, 2013, Snowbird, Utah, USA.
- [22] Cesar Carrasco, Chen Fang, Ruoqiang Feng and **Guirong Yan** (2013), “Detection of Instability for Civil Large-scale Space Structures.” *The 9th International Workshop on Structural Health Monitoring*, September, 2013, Stanford, CA.
- [23] Z. Sun, S. Krishnan, G. Hackmann, **G. R. Yan**, S. Dyke, C. Lu and A. Irfanoglu, “Damage Detection on a Full-Scale Highway Sign Structure with a Distributed Wireless Sensor Network.” *International Conference on Bridge Maintenance, Safety and Management (IABMAS'12)*, July 2012.
- [24] Z. S. Liu, L. Y. Tong and **G. R. Yan** (2012), “A novel system identification approach for bilinear systems.” *Australian Structural Engineering Conference*, 11-13 July, Perth, Australia.
- [25] Z. S. Liu, L. Y. Tong, **G. R. Yan** and K. Kaja (2012), “A multi-level damage localization approach for effectively using energy in wireless sensor networks: an experimental validation.” *Australian Structural Engineering Conference*, 11-13 July, Perth, Australia.
- [26] **Guirong Yan** Xuelin Peng, Hong Hao, (2011), “Localization of Free-spanning Damage Using Mode Shape Curvature.” *DAMAS2011*, Oxford University, England. *Journal of Physics: Conference Series*, 305 (1).
- [27] S.S. Krishnan, Z. Sun, A. Irfanoglu, S.J. Dyke and **G.R. Yan** (2011), “Evaluating the performance of distributed approaches for modal identification.” *Conference on Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems 2011*. Proceedings of SPIE Volume: 7981 Article Number: 79814M DOI: 10.1117/12.882143. San Diego, California, USA
- [28] **G.R. Yan**, Z.S. Liu, and Z.D. Duan(2010), “Structural damage detection using dynamic residue based on wavelet transform.” *International Symposium on Structural Engineering*, 18-20 December 2010, Guangzhou, China.
- [29] **G.R. Yan**, Z.S. Liu, and Z.D. Duan(2010), “Dynamic residue based on wavelet transform for Damage localization.” *Civionics Research Centre Annual Conference*, UWS, 25-26 November 2010.
- [30] **G.R. Yan**, Z.S. Liu, Z.D. Duan (2010), “A novel damage indicator based on wavelet transform for damage localization.” *Proceedings in Handling Exceptions in Structural Engineering: Structural Systems, Accidental Scenarios, Design Complexity*, July 2010, Rome Italy.
- [31] G. Wang, Z.S. Liu, **Guirong Yan** (2010), “A New Damage Feature based on Wavelet Packet Transform for Damage Detection under Ambient Vibration.” *ACMSM21*, December 7-10,

Melbourne, Australia.

- [32] **Guirong Yan**, Z.S. Liu, A.D. Stefano (2010), "A Novel Nonlinear System Identification Based upon Hilbert Transform." *ACMSM21*, December 7-10, Melbourne, Australia.
- [33] **Guirong Yan**, Shirley Dyke (2010), "Structural Damage Localization for Truss Structures Robust against Time Synchronization Errors in a Wireless Sensor Network," *The Fifth European Workshop in Structural Health Monitoring*, June 29-July 2, Stockholm, Italy.
- [34] Gregory Hackmann, Weijun Guo, **Guirong Yan**, Chenyang Lu, Shirley Dyke (2010), "Cyber-Physical Codesign of Distributed Structural Health Monitoring With Wireless Sensor Networks." *First International Conference on Cyber-Physical Systems*, April 13-14, Stockholm, Sweden.
- [35] **Guirong Yan** and Shirley J. Dyke (2009), "A Multi-level Damage Localization Strategy with Distributed Computation for Effectively Using Energy in WSN." *The 7th International Workshop on Structural Health Monitoring*, September 9-11, 2009, Stanford, CA.
- [36] **Guirong Yan**, Weijun Guo, Shirley J. Dyke, Gregory Hackmann and Chenyang Lu (2009), "Novel solutions to critical issues on the application of WSNs in SHM." *The 2009 Joint ASCE-ASME-SES Conference on Mechanics and Materials*, June 24-27, 2009, Blacksburg, VA, USA.
- [37] Nestor E. Castaneda, **Guirong Yan** and Shirley Dyke (2009), "Evaluation of the performance of a distributed structural health monitoring algorithm for wireless sensing." *The 7th International Workshop on Structural Health Monitoring*, September 9-11, 2009, Stanford, CA.
- [38] **Guirong Yan**, Shirley J. Dyke, Wei Song, Gregory Hackmann and Chenyang Lu (2009), "Structural Damage Localization with Tolerance to Large Time Synchronization Errors in WSNs." *American Control Conference*, June 10-12, 2009, St. Louis, MO, USA.
- [39] Gregory Hackmann, Fei Sun, Nestor Castaneda, **Guirong Yan**, Chenyang Lu, Shirley Dyke (2009), "Towards Robust Decentralized Structural Damage Localization Using Wireless Sensor Networks." *NSF CPS Forum*, April 13, 2009, San Francisco, CA, USA.
- [40] **Guirong Yan**, Zhongdong Duan, Jinping Ou (2006), "Damage detection of truss structures." *The 3rd International Conference on Bridge Maintenance, Safety and Management - Bridge Maintenance, Safety, Management, Life-Cycle Performance and Cost*, Pp 679-681, Jul. 16-19, 2006, Porto-Portugal.
- [41] Zhongdong Duan and **Guirong Yan** (2005), "An Angle-between-String-and-Horizon Flexibility for structural damage detection." *The 2nd International Conference on Structural Health Monitoring and Intelligent Infrastructure*, Vols 1 and 2, ED, Ou, JP; Li, H; Duan, ZD, Nov. 16-18, 2005
- [42] **Guirong Yan**, Zhongdong Duan (2005), "Damage Localization Based on the Residual Wavelet Force." *The 2nd Conference on Structural Health Monitoring of Intelligent Infrastructure*, Nov. 16-18, 2005, Shenzhen, Guangdong, China.
- [43] **Guirong Yan**, Zhongdong Duan, Jinping Ou (2005), "An Axial Strain Flexibility for Damage Detection of Truss Structure." *International Workshop on Smart Materials and Structures*, October 13-14, 2005, Toronto, Ontario, Canada.
- [44] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2005), "Damage Detection Based on Wavelet Transform Function (In Chinese)." *2005 Doctoral Forum of China*, August 2005, Nanjing, China.



- [45] **Guirong Yan**, Zhongdong Duan, Jinping Ou (2005), “Structural Damage Detection by Wavelet Transform and Probabilistic Neural Network.” *SPIE’s Smart Structures & Materials and Nondestructive Evaluation for Health Monitoring & Diagnostics Symposium*, March 6-10, 2005, San Diego, CA.
- [46] **Guirong Yan**, Zhongdong Duan, Jinping Ou (2004), “A Novel Damage Index Using Wavelet Packet Components Energies.” *The 3rd International Conference on Earthquake Engineering*, October 19-20, 2004, Nanjing, China.
- [47] Zhongdong Duan, **Guirong Yan**, Jinping Ou (2004), “Structural Damage Localization based on Rotational Flexibility Matrix.” *The Third International Conference on Earthquake Engineering*, ED, Liu, WQ; Yuan, FG; Chang, PC, October 19-20, 2004, Nanjing, China.
- [48] **Guirong Yan**, Zhongdong Duan, Jinping Ou (2004), “Structural Damage Detection Based on the Correlation Analysis between the Wavelet Packet Component Energies.” *The Eighth International Symposium on Structural Engineering for Young Exports*, August 20-23, 2004, Xi’an, China.
- [49] Zhongdong Duan, **Guirong Yan**, Jinping Ou and B.F. Spencer (2004), “Construction of Proportional Flexibility Matrix at Sensor Locations in Ambient Vibration for Damage Localization.” *The Second International Conference on Structural Engineering, Mechanics and Computation*, July 5-7, 2004, Cape Town, South Africa.
- [50] Z.D. Duan, **G.R. Yan**, and J.P. Ou (2004), “A wavelet packet transform and probabilistic neural network approach for structural damage detection.” *Proceedings of the 18th Australasian Conference on Mechanics of Structures and Materials: Developments in Mechanics of Structures and Materials*, A.A. Balkema Publishers, (ed. A.J. Deeks & H. Hao), Vol.2, 1197-1202, Perth, Australia, December 1-3, 2004.
- [51] Z.D. Duan, **G.R. Yan**, and J.P. Ou (2004), “Structural damage detection in ambient vibration using wavelet packet transform and probabilistic neural network.” *Structural Health Monitoring, ISIS 2004 Workshop*, 477-488, Winnipeg, Manitoba, Canada, September 22-23, 2004.
- [52] Z.D. Duan, **G.R. Yan**, and J.P. Ou (2004), “Structural damage location based on rotational flexibility matrix.” *The third China-Japan-US Symposium on Structural Health Monitoring and Control*, Dalian, October 14-15, 2004.
- [53] Z.D. Duan, **G.R. Yan**, J.P. Ou, and B.F. Spencer (2003), “Damage localization in ambient vibration by constructing proportional flexibility matrix.” *China-U.S.A. Workshop on Protection of Urban Infrastructure and Public Buildings against Earthquakes and Manmade Disasters*, Beijing, February 2003.
- [54] Z.D. Duan, **G.R. Yan**, J.P. Ou, and B.F. Spencer (2003), “Damage localization by constructing proportional flexibility matrix.” *The first workshop on Structural Health Monitoring and Intelligent Structures*, Tokyo, JAPAN, TOKYO. November 13-15, 2003., ED, Wu, ZS; Abe, M. (1-2), 561-565.
- [55] **Guirong Yan**, Zhongdong Duan and Jinping Ou (2003), “Structural Model Updating Using Genetic Algorithms (in Chinese).” *The 8th national vibration theory and application symposium*, 2003, Shanghai, China.

### Contributed Conference Papers

- [1] Fangping Yuan, **Guirong Yan**, Ryan Honerkamp and K.M. Isaac (2017), “Numerical Simulation of Tornado-like Flow in a Laboratory-scale Ward-type Simulator.” *The 13th Americas Conference on Wind Engineering*, Gainesville, FL, USA, May 21-24, 2017.

- [2] Yi Zhao, **Guirong Yan** and Ruoqiang Feng (2017), “Improvement of Tornado Simulation by Adjusting Boundary Conditions.” The 13th Americas Conference on Wind Engineering, Gainesville, Florida, USA, May 21 - 24, 2017.
- [3] Jiahao Zu, **Guirong Yan** and Chao Li (2016). “Investigation of Wind Pressure on Spherical Dome Structures due to Translating Tornado Using CFD.” The Sixth US-Japan Workshop on Wind Engineering, May 12-14, 2016, Tokyo, Japan.

## **PATENTS**

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- [1] Chenglin Wu, Dimitri Feys, Genda Chen and **Guirong Yan**. 3D Printing Configurable Reinforcements for Concrete Structures (Pending)

## **TECHNICAL REPORTS AND OTHER REPORTS**

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- [1] **Guirong Yan**, Zhang, X., Elgawady, M., Han, D., Li, T., Li, Z., Zhao, Y., Honerkamp, R., Zhao, J., Ramadan, A., Esswein, E., Barner, T., Roueche, D., (2019-06-11) “StEER - 22 May 2019 Jefferson City, MO Tornado: Field Assessment Structural Team 1 (FAST-1) Early Access Reconnaissance Report (EARR).” DesignSafe-CI. [https://aub.ie/steer\\_prj2406](https://aub.ie/steer_prj2406).
- [2] **Guirong Yan**, Final Technical report for NSF project “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”, March, 2019.
- [3] **Guirong Yan**, Final Technical report for UTC project “Highly efficient model updating for structural condition assessment of large-scale bridges”, February, 2015.
- [4] **Guirong Yan**, Annual report for NSF project “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”, August, 2018
- [5] **Guirong Yan**, Annual report for NSF project “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”, April, 2017
- [6] **Guirong Yan**, Annual report for NSF project “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”, April, 2016
- [7] **Guirong Yan**, Annual report for NSF project “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”, March, 2015
- [8] **Guirong Yan**, Annual report for UTC project “Highly efficient model updating for structural condition assessment of large-scale bridges”, February, 2015
- [9] **Guirong Yan**, Mid-term report for UTC project “Highly efficient model updating for structural condition assessment of large-scale bridges”, July, 2014

## **GRANTS AND PAST RESEARCH WORK** (In total, \$1.829M; \$1.047M my portion)

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### **Projects Conducted at Missouri S&T** (\$1.189M in total; \$598,383 my portion)

**Project Title:** Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes

**Budget:** \$314,262

- Agency:** National Science Foundation, Hazard Mitigation and Structural Engineering program, project No.: 1455709
- Researchers:** **PI: Guirong Yan**
- Year(s):** Jul. 2014-Feb. 2019
- Project Title:** REU Supplemental Award of “Damage and Instability Detection of Civil Large-scale Space Structures under Operational and Multi-hazard Environments based on Change in Macro-geometrical Patterns/Shapes”
- Budget:** \$10,000
- Agency:** National Science Foundation, Structural and Architectural Engineering program, project No.: 1639718
- Researchers:** **PI: Guirong Yan**
- Year(s):** May 2016-May 2017
- Project Title:** Graduate Assistance in Areas of National Need (GAANN): Doctorial Training in Civil Infrastructure Condition Assessment, Sustainability and Resiliency
- Budget:** \$738,420 in total (\$246,140/year for 3 years)
- Agency:** Department of Education
- Researchers:** **Co-PI: Guirong Yan** (PI: John Myers; other co-PIs: Genda Chen; Lesley Sneed; Mohamed Elgawady)
- Year(s):** Sept. 2016-Aug. 2019
- Project Title:** Research on tornado flow characteristics and their effects on wind loadings
- Budget:** \$5500 for building models and travel and 20 days of wind tunnel testing (\$20,000 in-kind)
- Agency:** Tokyo Polytechnic University
- Researchers:** **PI: Guirong Yan**; Co-PI: Dr. Yong Chul Kim
- Year(s):** June 2019-May 2020
- Project Title:** Creating Risk Awareness of Tornado Disasters to Increase Homeowners’ Preparedness and Property Reinforcement through Virtual Reality Animation
- Budget:** \$7,500
- Agency:** Center for Science, Technology, and Society at Missouri S&T. project No.: 69A3551747107
- Researchers:** **PI: Guirong Yan**; Co-PIs: Nancy Stone, Fiona Nah and Hongxian Zhang
- Year(s):** Jan. 2019-Dec. 2019
- Project Title:** Investigation of Wind Effects on Bridges Induced by Tornadoes for Tornado-Resistance Design – Phase I
- Budget:** \$37,499
- Agency:** Mid-America Transportation Center. USDOT. project No.: 69A3551747107
- Researchers:** **PI: Guirong Yan**
- Year(s):** Jan. 2019-Dec. 2019

**Project Title:** Transforming Wind Tunnel Testing by Developing Surface-mountable Polymer Pressure Sensors  
**Budget:** \$10,000  
**Agency:** NASA EPSCoR Program  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Sept. 2017-Dec. 2018

**Project Title:** Determine the Design Tornadic Wind Loads on Structures Using Straight-line Wind Tunnel Testing and CFD Simulation  
**Budget:** \$45,938  
**Agency:** University of Missouri Research Board  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Nov. 2016-Dec. 2018

**Projects Conducted at Previous Institutes** (\$639,540 in total; \$449,040 my portion)

**Project Title:** Experimental Validation of Novel Embedded Diagnostics Wireless Structural Monitoring Systems  
**Budget:** \$42,540  
**Agency:** National Science Foundation, NEES program. Subaward through Stanford University  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Sept. 2013-June. 2015

**Project Title:** Involving Hispanic Undergraduate Students into Earthquake Engineering Research  
**Budget:** \$4,000  
**Agency:** National Science Foundation, NEES program. Subaward through Purdue University  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Nov. 2013-Jun. 2014

**Project Title:** Collaborative Research: Understanding multi-scale reinforcement of carbon fibre composites  
**Budget:** AU\$381,000  
**Agency:** Australian Research Council Discovery Project  
**Researchers:** Leading PI: Liyong Tong; **PI: Guirong Yan**  
**Year(s):** Jan. 2013-Dec. 2015

**Project Title:** Highly efficient model updating for structural condition assessment of large-scale bridges  
**Budget:** \$45,000  
**Agency:** USDOT through University Transportation Center  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Jan. 2013-Jul. 2014

- Project Title:** Innovative Condition Assessment of Bulk Storage Structures Using Comprehensive Monitoring Approaches  
**Budget:** \$5,000  
**Agency:** University Research Institute (UTEP)  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Sept. 2012-Aug. 2013
- Project Title:** Australian-Chinese Research Collaboration on Structural Health Monitoring and Damage Detection for Steel-concrete Composite Structures Using Fibre Optical Sensing  
**Budget:** AU\$17,000  
**Agency:** International Research Initiatives Scheme (UWS)  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Jul. 2010-Jul. 2011
- Project Title:** Wireless Sensor Networks for Structural Health Monitoring and Damage  
**Budget:** AU\$90,000  
**Agency:** Internal Research Funds (UWS)  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Aug. 2010-Aug. 2012
- Project Title:** Damage Identification Methods of Non-linear Structures and Their Applications on Detecting Damage Caused by Earthquake  
**Budget:** US\$35,000  
**Agency:** National Natural Science Foundation of China  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Jan. 2008-Dec. 2010
- Project Title:** Damage Detection Methods for Civil Engineering Structures under Strong Earthquake  
**Budget:** US\$5,000  
**Agency:** Post-doc Science Foundation of China  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Sept. 2007-Sept. 2008
- Project Title:** Structural Damage Detection Methods and Condition Assessment Theory Based on Strong-motion Records  
**Budget:** US\$15,000  
**Agency:** Post-doc Starting Foundation of China  
**Researchers:** **PI: Guirong Yan**  
**Year(s):** Nov. 2006-Nov. 2008

## **INVITED SEMINARS (21 in total, 19 at Missouri S&T)**

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- [1] “Strong Winds and Wind-Resist Design in the USA”, Harbin Engineering University, Harbin, China, July, 2019.
- [2] “Make Tornado Alley a Safer Place to Live”, National Oceanic and Atmospheric Administration (NOAA), Norman, OK, March, 2019.
- [3] “Make Tornado Alley a Better Place to Live”, National Institute of Standards and Technology (NIST), Washington D.C., March, 2018.
- [4] “Simulation of Tornadic Wind fields and Wind Effects Induced by Tornadoes”, Tongji University, Shanghai, China, June, 2018.
- [5] “Help Insurance Companies Properly Price Premium by Predicting Tornado Induced Damage”, Berkshire Hathaway Specialty Insurance, San Francisco, August, 2018.
- [6] “Tornadic Wind Effects on Large-scale Dome Structures”, Southeast University, Nanjing, China, July, 2018
- [7] “Towards Tornado-resistant Design”, Shanghai Municipal Building and Achitecturing Engineering Company, Shanghai, China, July, 2018.
- [8] “CFD Simulation of Tornadic Wind fields”, Suzhou University of Science and Technology Suzhou, China, July, 2018.
- [9] “Condition Assessment and Hazard Mitigation for Sustainable and Resilient Civil Structures”, Tokyo Polytechnic University, Tokyo, Japan, May, 2016.
- [10] “Detection of Individual Member Buckling”, Southeast University, Nanjing, China, May, 2016.
- [11] “Condition Assessment and Hazard Mitigation for Sustainable and Resilient Civil Structures”, University of Missouri at Columbia, May, 2016.
- [12] “Detection of Snap-through Instability of Dome Structures” Nanjing Technology University, Nanjing, China, May, 2016.
- [13] “Detection of Instability of Civil Large-scale Space Structures,” 4<sup>th</sup> International Transportation Infrastructure Conference, St. Louis, MO, December, 2015.
- [14] “Condition Assessment and Multi-hazard Mitigation of Long-span Structures”, Hongkong Polytechnic University, Hongkong, May, 2015.
- [15] “Condition Assessment of Long-span Structures”, Missouri Department of Transportation, Jefferson City, February, 2015
- [16] “Damage and Instability Detection of Large-scale Space Structures”, Hunan University, Hunan, China June, 2015
- [17] “Detection of Instability of Civil Space Structures”, Harbin Institute of Technology, Harbin, China, June, 2015
- [18] “Buckling detection in Space-grid Structures”, Harbin Engineering University, Harbin, China, June, 2015
- [19] “Smart, Resilient Long-span Structures”, CIES, Missouri S&T, November, 2014
- [20] “Smart Long-span Structures for Multi-hazard Resilience”, Oregon State University, June, 2014
- [21] “Smart Bridges for Multi-hazard Resilience and Rapid Response”, SUNY-Buffalo, March, 2014.

## **POST-DOC MENTORING AND STUDENT SUPERVISION**

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### **Current Post-doc**

- [1] Dr. Tiantian Li, “Improve tornado risk awareness using virtual reality animation”, starting in June 2019

### **Current Graduate Students**

- [1] Yi Zhao, PhD student, “CFD simulation of tornadoes with multiple vortices and their wind effects on civil structures”, expected completion in October 2019.
- [2] Zhi Li, PhD student, “Wind hazard mitigation on civil space structures”, expected completion in June 2020.
- [3] Ryan Honerkamp, PhD student, “Laboratory simulation of tornadic wind flow and CFD simulation of the large-scale laboratory tornado simulator”, expected completion in June 2021.
- [4] Niyonzima Etienne, Master student (non-thesis), “Identification of existing stress induced by fabrication and installation errors on space structures”, from Fall 2017 to present.

### **Current Undergraduate Research Students**

- [1] Emilie M. Esswein, Undergraduate research assistant, “Lessons learned from real-world tornadoes”, from January 2019 to present.
- [2] Yiming Jin, Undergraduate research assistant, “Collecting perishable data in the wake of Jefferson City, MO tornado of 22 May 2019”, from January 2019 to present.
- [3] Drazen Gonzalez-Tirado, Undergraduate research assistant, “Construction of laboratory tornado simulator at WHAM lab”, from January 2019 to present.

### **Previous Post-docs**

- [1] Dr. Fangping Yuan, “CFD simulation of laboratory tornado simulator and real-world tornadoes”, from September 2016 to May 2017.
- [2] Dr. Yao Cheng, “Uncertainty quantification of CFD simulations of tornadic wind fields”, from June 2017 to October 2018.

### **Previous Students at Missouri S&T**

- [1] Tiantian Li, PhD student, “Dynamic structural responses of civil large-scale space structures induced by tornadoes through simulation of two-way wind-structure interaction”, completed in May, 2019.
- [2] Ryan Honerkamp, Undergraduate research assistant, “Design and Building a laboratory tornado simulator and lab testing”, from May 2016 to April 2018.
- [3] Niyonzima Etienne, Undergraduate research assistant at Missouri S&T, “Construction of a small-scale tornado simulator”, from May 2016 to May 2017.
- [4] Scott Jemison, Undergraduate research student, “Damage detection of cable-net structures”, from January 2015 to May 2015.
- [5] Melisa Morrison, Undergraduate research student, “Investigation of stress induced by fabrication/installation errors”, from January 2015 to May 2015.
- [6] Celena M. McElroy, Undergraduate research assistant, “System identification of a Mobius-strip structure”, from May 2016 to May 2019

- [7] Christopher Catron, Undergraduate research assistant, “Wind characteristics of real-world tornadoes”, from January 2017 to May 2017
- [8] Jillian Anderson, Undergraduate research assistant, “Study of behavior of real-world tornadoes”, from September 2017 to May 2018
- [9] Emily Hutcheson, Undergraduate research assistant, “Radar measurement of velocity in tornadic wind field”, from August 2018 to December 2018

**Previous PhD students at UTEP (Dr. Yan left UTEP in August, 2014)**

- [1] Chen Fang, PhD student at UTEP, “Detection of instability of space structures”, from May 2013 to August 2014.
- [2] Jianxian Yu, PhD student at UTEP “Damage detection of space structures using change in fractal pattern”, from May 2013 to August 2014.
- [3] Jiarui Yi, PhD student at UTEP, “Energy harvesting using smart materials”, from September 2013 to August 2014.

**TEACHING**

**Undergraduate Courses Taught at Missouri S&T**

- CE/ArchE 3210 Structural Design in Metals, Fall 2014 (53 students. Teaching Evaluation: 2.90/4)
- CE/ArchE 3210, Spring 2015 (46 students. Teaching Evaluation: 3.38/4)
- CE/ArchE 3210, Fall 2015 (51 students. Teaching Evaluation: 3.40/4)
- CE/ArchE 3210, Spring 2016 (30 students. Teaching Evaluation: 3.0/4)
- CE/ArchE 3210, Fall 2016 (41 students. Teaching Evaluation: 3.42/4)
- CE/ArchE 3210, Spring 2018 (55 students. Teaching Evaluation: 3.46/4)
- CE/ArchE 3210, Fall 2018 (60 students. Teaching Evaluation: 3.00/4)

**Graduate Course Taught at Missouri S&T**

- CE/ArchE 5001 Special topics: Wind Engineering, Fall 2017 (11 students. Teaching Evaluation: 3.62/4)

**Undergraduate Courses Taught at UTEP**

- CE 3343 Structural Analysis I, Fall 2012 (45 students. Teaching Evaluation: 4.9/5)
- CE 3343 Structural Analysis I, Spring 2013 (48 students. Teaching Evaluation: 4.7/5)
- CE 3343 Structural Analysis I, Fall 2013 (25 students. Teaching Evaluation: 4.7/5)
- CE 3343 Structural Analysis I, Spring 2014 (22 students. Teaching Evaluation: 4.8/5 )

**Graduate Courses Taught at UTEP**

- CE 5318 Bridge Engineering, Fall 2013 (19 students. Teaching Evaluation: 5/5)
- CE 5305 Advanced Structural Analysis, Spring 2014 (19 students. Teaching Evaluation: 4.5/5)

**PROFESSIONAL ACITIVIES**

- **Associate Editor** of Journal of Vibration Testing and System Dynamics
- **Review Editor** of the Editorial Board of Structural Sensing, Frontiers in Built Environment
- **Review Editor** of the Editorial Board of Wind Engineering and Science, Frontiers in Built



Environment

- **Reviewer for the following 15 journals**

- ASCE Journal of Engineering Mechanics
- ASCE Journal of Bridge Engineering
- Mechanical Systems and Signal Processing
- Journal of Sound and Vibration
- Smart Materials and Structures
- Structural Health Monitoring
- Shock and Vibration
- Structural Control and Health Monitoring
- Smart Structures and Systems, an Int. Journal
- Advances in Structural Engineering
- Journal of Sustainable Cities and Society
- IEEE Sensors Journal
- Computer-Aided Civil and Infrastructure Engineering
- International Journal of Steel Structures
- Journal of Applied Mathematics

- **Funding Application Reviewer**

- National Science Foundation, USA
- Australian Research Council, Australia
- National Science Foundation, China

- **Committees**

- Organizing Committee, The SHMII-9 Conference on August 4-7, 2019, in St. Louis
- Scientific committee, The 7th International Conference on Structural Health Monitoring of Intelligent Infrastructure, TORINO, Italy, 1- 3 July 2015
- Co-Chair of the Symposium of Smart Disaster Prevention/Mitigation Based on Novel Materials/Devices/Structures/Systems, The 6th JSME/ASME 2017 International Conference on Materials and Processing (ICM&P2017)

## **PROFESSIONAL AFFILIATIONS**

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- ASCE Structural Wind Engineering Committee, Member
- American Association of Wind Engineering, Member
- American Society of Civil Engineering, Member
- American Society of Engineering Education, Member
- Official Member of Structural Extreme Events Reconnaissance Network (Level 3)
- Primary member, International Bridge Association
- Technical committee member, SMASIS SHM/NDE
- International Members of a research committee in the JSME M&P Division (The Japan Society of Mechanical Engineers, Materials and Processing Division). Technical Section: Systems for Disaster Mitigation and Sustainability

## **UNIVERSITY, DEPARTMENT AND COMMUNITY SERVICE**

- Founded the Wind Hazard Mitigation (WHAM) Laboratory that houses a large-scale tornado simulator.
- Community service: evaluate damage in the wake of the Jefferson City, MO tornado of 22 May 2019
- Service CE Program Committee CE-UPC (2018-2019 Academic Year)
- Service Scholarship Committee (2018-2019 Academic Year)
- Service as a judge for the 10th Annual Graduate Fellows Poster Session on February 25, 2019
- Advise 14 undergraduate students
- Serve the PhD advising committees
- Serve the Master advising Committees
- Supervise senior design (such as, Chris Lepsky, Emergency Operations Center St. Charles County, O'Fallon, MO, in Fall 2017; Andrew Granich, Tornado-resistant design, in Spring 2018)
- Serve a faculty search committee for the assistant professor position in Structural Engineering in Spring 2016
- Sever a faculty search committee for the NTT assistant professor position in Architectural Engineering in Spring 2016
- Attended the department open house (did presentation for civil engineering) in Nov, 2015
- Give a talk for Chi Epsilon in October, 2015
- Outreach girls at the Harvener Center in April, 2015
- Outreach girls in my lab in June 2015
- Open WHAM lab to the students from Presbyterian School on March 8, 2017
- Develop and participate "Rescue the Bridge" outreach for INSPIRE UTC Expanding Your Horizons Conference on Nov 17, 2017
- INSPIRE UTC and MATC outreach on February 24, 2018. "NSBE High School Visit Weekend-Bridge Competition and Driving Simulator Showcase"
- INSPIRE UTC and MATC outreach on July 17, 2018
- Community outreach "Build a tornado-resilient community" on July 18, 2018
- Extreme weather outreach to 100 students Wyman Elementary School on December 3 and 4, 2018
- Outreach potential future female engineers through Missouri S&T summer campers "Girls Save the Planet!" on July 16, 2019