

Jian Li, Ph.D.

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EDUCATION

University of Illinois at Urbana-Champaign, Civil Engineering, Ph.D., 2013
Harbin Institute of Technology, P.R. China, Civil Engineering, MS, 2007
Harbin Institute of Technology, P.R. China, Civil Engineering, BS, 2005

RESEARCH AND PROFESSIONAL EXPERIENCE

The University of Kansas, Assistant Professor of Civil Engineering, 2013 – present

HONORS AND AWARDS

1. ASCE ExCEEed Fellow, American Society of Civil Engineers, 2015
2. NSF APSS fellowship for Summer Study in Japan, 2010
3. Outstanding Graduate Awards, Harbin Institute of Technology, 2005, 2007
4. Outstanding Graduate Award, China Civil Engineering Society, 2005

RESEARCH INTERESTS

- Structural Health Monitoring
- System Identification and Model Updating
- Wireless Smart Sensor Networks
- Substructure Hybrid Simulation
- Earthquake Impact Assessment and Mitigation

PROFESSIONAL ORGANIZATIONS

- American Society of Civil Engineers (ASCE), Member
- Earthquake Engineering Research Institute (EERI), Member
- The International society for optics and photonics (SPIE), Member

JOURNAL PUBLICATIONS

1. Li, J., Mechitov, K.A., Kim, R.E., and Spencer Jr. B.F. (2016) "Efficient Time Synchronization for Structural Health Monitoring using Wireless Smart Sensor Networks." *Journal of Structural Control and Health Monitoring*. Vol. 23, No. 3, pp. 470-486.
2. Moreu, F., Li, J., Jo, H., Kim, R.E., Scola, S., Spencer Jr., B.F., and LaFave, J.M. (2016) "Reference-free Displacement Estimation for Timber Railroad Bridge Assessment using Wireless Smart Sensors." *ASCE Journal of Bridge Engineering*. Vol. 21, No. 2.
3. Kharroub, S., Laflamme, S., Song, C., Qiao, D., Phares, B., and Li, J., "Smart Sensing Skin for Detection and Localization of Fatigue Cracks." *Smart Materials and Structures*, Vol. 24, No. 065004

4. Wang, H., Li, J., Guo, T., Wang, C., and Li, A. (2015) "Influence of Apparent Wave Velocity on Seismic Performance of a Super-long-span Triple-tower Suspension Bridge." *Advances in Mechanical Engineering*, Vol 7, No. 6, pp. 1-14.
5. Spencer Jr., B.F., Jo, H., Mechtov, K.A., Li, J., Sim, S.H., Kim, R.E., Cho, S., Linderman, L.E., Moinzadeh, P., Giles, R.K., and Agha, G. (2015) "Recent Advances in Wireless Smart Sensors for Multi-scale Monitoring and Control of Civil Infrastructure." *Journal of Civil Structural Health Monitoring*. (Published online)
6. Moreu, F., Jo, H., Li, J., Kim, R., Cho, S., Kimmle, A., Scola, S., Le, H., Spencer Jr., B.F., LaFave, J.M. (2014). "Dynamic assessment of timber railroad bridges using transverse displacements." *ASCE Journal of Bridge Engineering* (Published online).
7. Wang, H., Tao, T., Guo, T., Li, J., and Li, A. (2014). "Full-Scale Measurement and System Identification on Sutong Cable-stayed Bridge during Typhoon Fung-Wong." *The Scientific World Journal*, Vol. 2014, Article ID 936832, 13 pages.
8. Sim, S., Li, J., Jo, H., Park, J., Cho, S., Spencer Jr., B. F., and Jung, H. (2014). "Wireless Smart Sensor Network for Automated Monitoring of Cable Tension." *Smart Materials and Structures*, Vol. 23, No. 2.
9. Li, J., Ruiz-Sandoval, M., Spencer Jr., B.F., and Elnashai, A.S. (2014). "Parametric Time-domain Identification of Multiple-Input Systems Using Decoupled Output Signals." *Earthquake Engineering and Structural Dynamics*, Vol. 43, No. 9, pp. 1307-1324.
10. An, Y., Ou, J., Li, J., and Spencer Jr., B. F. (2014). "Stochastic DLV Method for Steel Truss Structures: Simulation and Experiment." *Smart Structures and Systems*, Vol. 14, No. 2, pp. 105-128.
11. Wang, H., Li, A., Niu, J., Zong, Z., and Li, J. (2013). "Long-term Monitoring of Wind Characteristics at Sutong Bridge Site." *Journal of Wind Engineering and Industrial Aerodynamics*, Vol. 115, pp. 39-47.
12. Li, J., Spencer Jr., B.F., and Elnashai, A.S. (2013). "Bayesian Updating of Fragility Functions using Hybrid Simulation," *ASCE Journal of Structural Engineering*, Vol. 139, No. 7, pp. 1160-1171.
13. Jang, S., Li, J., and Spencer Jr., B.F. (2013). "Corrosion Estimation of a Historic Truss Bridge using Model Updating," *ASCE Journal of Bridge Engineering*, Vol. 18, No. 7, pp. 678-689.
14. Zhang, Y., Jia, C., Li, J., and Spencer Jr., B.F. (2013). "Model Updating Based on an Affine Scaling Interior Optimization Algorithm." *Engineering Optimization* , Vol. 45, No. 11, pp. 1379-1395.
15. Li, J., Spencer Jr., B.F., Elnashai, A.S., and Phillips, B.M. (2012). "Substructure Hybrid Simulation with Multiple-Support Excitation," *ASCE Journal of Engineering Mechanics*, Vol. 138, No. 7, pp. 867-876.
16. Lin, S., Li, J., Elnashai, A.S., and Spencer Jr., B.F. (2012). "NEES Integrated Seismic Risk Assessment Framework (NISRAF)," *Soil Dynamics and Earthquake Engineering*, Vol. 42, pp. 219-228.
17. Wang, H., Li, A., and Li, J. (2010). "Progressive Finite Element Model Calibration of a Long-span Suspension Bridge Based on Ambient Vibration and Static Measurements." *Engineering Structures*, Vol. 32, No. 9, pp. 2546-2556.
18. Wang, H., Li, A., Hu, R., and Li, J. (2010). "Accurate Stress Analysis on Steel Box Girder of Long-span Suspension Bridges Based on Multi-Scale Submodeling Method." *Advances in Structural Engineering*, Vol. 13, No. 4, pp. 727-740.

19. Wang, H., Li, A., Zhao, G., and Li, J. (2010). "Non-linear Buffeting Response Analysis of Long-span Suspension Bridges with Central Buckle." *Earthquake Engineering and Engineering Vibration*, Vol. 9, No. 2, pp. 259-270.

CONFERENCE PUBLICATIONS

1. Asadollahi, P. and Li, J. (2016). "Statistical Analysis of Modal Properties of a Cable-stayed Bridge through Long-term Structural Health Monitoring with Wireless Smart Sensor Networks." *Proc. SPIE Smart Structures/NDE 2016*, Las Vegas, NV.
2. Kong, X., Li, J., Bennett, C., Collins, W., and Laflamme, S. (2016). "Model Calibration for a Soft Elastomeric Capacitor Sensor Considering Slippage under Fatigue Cracks." *Proc. SPIE Smart Structures/NDE 2016*, Las Vegas, NV.
3. Wu, J., Yan, Q.S., Li, J., and Hu. M. (2016). "Geometry Control of Long-span Continuous Girder Concrete Bridge during Construction through Finite Element Model Updating." *Proc. SPIE Smart Structures/NDE 2016*, Las Vegas, NV.
4. Laflamme, S., Vens, J., Qiao, D., Downey, A., and Li, J. (2015). "Dense Network of Large Area Electronics for Fatigue Crack Detection and Localization." *10th International Workshop on Structural Health Monitoring*, Stanford, CA.
5. Kong, X., Li, J., Laflamme, S., and Bennett, C. (2015). "Fatigue Crack Monitoring using Large-area, Flexible Capacitive Strain Sensors." *Proc. 6AESE/11ANCRiSST*, Champaign-Urbana, IL.
6. Laflamme, S., Downey, A., Sheafe, C., Qiao, D., and Li, J. (2015). "Scalable Thin Film Sensor for Damage Detection and Localization." *Proc. 6AESE/11ANCRiSST*, Champaign-Urbana, IL.
7. Liu, H., Zhou, J., Bennett, C., Matamoros, A., and Li, J. (2015). "A Parametric Study of Crack-Arrest Holes as a Mitigation Technique for Distortion-induced Fatigue Cracking in Steel Bridges." *Proc. 16th European Bridge Conference*, At Edinburgh, Scotland.
8. McElrath, K., Olson, Z., Bennett, C., Matamoros, A., and Li, J. (2015). "Development and Field Testing of Angles-with-Plate Retrofit Technique for Repairing Distortion-induced Fatigue in Steel Bridges without Deck Removal." *Proc. 16th European Bridge Conference*, At Edinburgh, Scotland.
9. Kong, X., Li, J., Laflamme, S., Bennett, C., and Matamoros, A. (2015). "Characterization of a Soft Elastomeric Capacitive Strain Sensor for Fatigue Crack Monitoring." *Proc. SPIE Smart Structures/NDE 2015*, San Diego, CA.
10. Li, J., Mechitov, K.A., and Spencer Jr., B.F. (2014). "Long-term and Short-term Autonomous Structural Health Monitoring Strategies using Wireless Smart Sensor Networks." *Proc. The Sixth World Conference on Structural Control and Monitoring (6WCSCM)*, Barcelona, Spain.
11. Li, J., Mechitov, K.A., Kim, R., and Spencer Jr., B.F. (2014). "Improved Synchronized Sensing for Structural Health Monitoring using Wireless Smart Sensor Networks." *Proc. The Sixth World Conference on Structural Control and Monitoring (6WCSCM)*, Barcelona, Spain.
12. Li, J., Ruiz-Sandoval, M., Spencer Jr., B.F., and Elnashai, A.S. (2014). "System Identification of Civil Engineering Structures with Multiple Inputs by Decoupling Output Signals." *Proc. SPIE Smart Structures/NDE 2014*, San Diego, CA.
13. Sim, S., Li, J., Jo, H., Park, J., Cho, S., Spencer Jr., B. F., and Yun, C.B. (2013). "Automated Wireless Monitoring System for Cable Tension Using Smart Sensors." *Proc. SPIE Smart Structures/NDE 2013*, San Diego, CA.

14. Moreu, F., Jo, H., Li, J., Cho, S., Kim, R., Spencer Jr., B.F., and LaFave, J.M. (2012). "Reference-free Displacement Estimation for Structural Health Monitoring of Railroads Bridges." *AREMA 2012 Annual Conference*, Chicago, IL.
15. Li, J., Nagayama, T., Mechitov, K.A., and Spencer Jr., B.F. (2012). "Efficient Campaign-type Structural Health Monitoring Using Wireless Smart Sensors." *Proc. SPIE Smart Structures/NDE 2012*, San Diego, CA.
16. Lin, S., Li, J., Elnashai, A.S., and Spencer Jr., B.F. (2012). "NEES Integrated Seismic Risk Assessment Framework (NISRAF)," *Proc. The 2012 NZSEE Annual Conference, the University of Canterbury, Christchurch, New Zealand*.
17. Sim, S., Li, J., Jo, H., Park, J.W., Cho, S.J., and Spencer Jr., B.F. (2011). "Automated Cable Tension Monitoring using Smart Sensors." *Proc. World Congress on Advances in Structural Engineering and Mechanics (ASEM' 11)*, Seoul, Korea.
18. Lin, S., Elnashai, A.S., Li, J., and Spencer Jr., B.F. (2011). "Integrated System for Earthquake Impact Assessment," *III ECCOMAS Thematic Conference on Computational Methods in Structural Dynamics and Earthquake Engineering (COMPDYN 2011)*, M. Papadrakakis, M. Fragiadakis, V. Plevris (eds.) Corfu, Greece, 25-28 May.
19. Sim, S., Li, J., Cho, S.J., Jo, H., Park, J.W., and Spencer Jr., B.F. (2011). "Decentralized In-network Data Processing for Infrastructure Monitoring Using Smart Sensors." *Proc. The 11th Korea-Japan Joint Symposium on Steel Bridges*, Jeju National University, Jeju, Korea.
20. Jo, H., Sim, S., Mechitov, K. A., Kim, R., Li, J., Moinzadeh, P., Spencer Jr., B.F., Park, J.W., Cho, S., Jung, H., Yun, C.B., Rice, J., and Nagayama, T. (2011). "Hybrid Wireless Smart Sensor Network for Full-scale Structural Health Monitoring of a Cable-stayed Bridge." *Proc. SPIE Smart Structures/NDE 2011*, San Diego, CA.
21. Li, J., Spencer Jr., B.F., Elnashai, A.S., and Phillips, B.M. (2010). "Hybrid Simulation with Multiple-Support Excitation." *Proc. The Fifth World Conference on Structural Control and Monitoring (5WCSCM)*, Tokyo, Japan.
22. Jang, S., Rice, J., Li, J., Jo, H., Spencer Jr., B.F. (2009). "Structural Monitoring of a Historic Truss Bridge Using a Wireless Sensor Network." *Proc. 5th International Workshop on Advanced Smart Materials and Smart Structures Technology*, ANCRISST 2009, Boston, MA.
23. Li, J., Lin, S., Zong, X., Spencer Jr., B.F., Elnashai, A.S., and Agrawal, A.K. (2009). "An Integrated Earthquake Impact Assessment Framework." *Proc. Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER) Workshop*, University of Illinois at Urbana-Champaign, Urbana, IL.

OTHER PUBLICATIONS

1. Li, J. and Spencer Jr., B.F. (2015). "Monitoring, Modeling, and Hybrid Simulation An Integrated Bayesian-based Approach to High-fidelity Fragility Analysis." *Newmark Structural Engineering Laboratory (NSEL) Report Series*, No. 37, University of Illinois at Urbana-Champaign, Urbana, IL (<http://hdl.handle.net/2142/78092>).
2. Cho, S., Spencer Jr. B.F., Jo, H., Li, J., and Kim, R. (2012). "Bridge Monitoring using Wireless Smart Sensors." *SPIE Newsroom*. doi: 10.1117/2.1201201.004043.
3. Miller, T., Spencer Jr., B.F., Li, J., and Jo, H. (2010). "Solar Energy Harvesting and Software Enhancements for Autonomous Wireless Smart Sensor Networks." *Newmark Structural Engineering Laboratory (NSEL) Report Series*, No. 22, University of Illinois at Urbana-Champaign, Urbana, IL

PROFESSIONAL PRESENTATIONS

1. *Statistical Analysis of Modal Properties of a Cable-stayed Bridge through Long-term Wireless Structural Health Monitoring*, Bridge DAWG Forum on bridge performance data analysis, the 95th Annual Meeting of the Transportation Research Board, Washington, DC, January 2016.
2. *Fatigue Crack Monitoring of Steel Bridges using Wireless Soft Elastomeric Capacitor Sensor Networks*, the Cambridge Conference on WSN for Civil Engineering and Infrastructure Monitoring, Cambridge, United Kingdom, 29-30 June 2015.
3. *Long-term and Short-term Autonomous Structural Health Monitoring Strategies using Wireless Smart Sensor Networks*, the Sixth World Conference on Structural Control and Monitoring (6WCSCM), Barcelona, Spain, July, 2014.
4. *Improved Synchronized Sensing for Structural Health Monitoring using Wireless Smart Sensor Networks*, the Sixth World Conference on Structural Control and Monitoring (6WCSCM), Barcelona, Spain, July, 2014.
5. *Bridge Inspection for the 21st Century*, University of Kansas Professional Development Series, Kansas City, Missouri, April 7, 2014
6. *System Identification of Civil Engineering Structures with Multiple Inputs by Decoupling Output Signals*, SPIE Smart Structures/NDE 2012, San Diego, CA, March 2014
7. *Improved Synchronized Sensing for Structural Health Monitoring using Wireless Smart Sensor Networks*, the 10th EKS retreat, Robert Allerton Park, Monticello, IL, February 2014.
8. *Efficient Campaign-type Structural Health Monitoring Using Wireless Smart Sensors*, SPIE Smart Structures/NDE 2012, San Diego, CA, March 2012.
9. *NEES Integrated Seismic Risk Assessment Framework - Application to the Meloland Overcrossing Bridge*, the 7th EKS retreat, Robert Allerton Park, Monticello, IL, February 2011 (Best presentation award, third place).
10. *Autonomous Wireless Smart Sensor Network (WSSN) Operation*, Workshop on Cyber-Physical Co-Design of Wireless Monitoring and Control for Civil Infrastructure, University of Illinois at Urbana-Champaign, Urbana, IL, February, 2011.
11. *NEES Integrated Seismic Risk Analysis Framework*, Poster Session, 2011 NSF CMMI Grantee Conference, Atlanta, GA, January 2011.
12. *Hybrid Simulation with Multiple-Support Excitation*, the Fifth World Conference on Structural Control and Monitoring (5WCSCM), Tokyo, Japan, July, 2010.
13. *Hybrid Simulation with Multiple-Support Excitation (MSE)*, the 6th EKS retreat, Robert Allerton Park, Monticello, IL, February 2010
14. *An Integrated Earthquake Impact Assessment Framework*, Asian-Pacific Network of Centers for Earthquake Engineering Research (ANCER) Workshop, University of Illinois at Urbana-Champaign, Urbana, IL, August, 2009.
15. *An Integrated Earthquake Impact Assessment System*, the 5th EKS retreat, Robert Allerton Park, Monticello, IL, February 2009
16. *Framework for Development of Hybrid Simulation in an Earthquake Impact Assessment Context*, the 4th EKS retreat, Robert Allerton Park, Monticello, IL, February 2008

RESEARCH GRANTS

1. "Strain-based Fatigue Crack Monitoring of Steel Bridges using Wireless Elastomeric Skin Sensors." Funded for \$405,000, *Transportation Pooled Fund (TPF) Study, TPF-5(328)*. PI

with Co-I: Caroline Bennett; Co-I: William Collins; Co-I: Stan Rolfe. Project Duration: 09/2015-09/2018.

2. "Determination of Fatigue Resistance of Coupler Connection in Aluminum Overhead Truss Sign Supports." Funded for \$144,846, Kansas Department of Transportation (KDOT). Co-I with PI: Caroline Bennett. Project Duration: 2015-2017.
3. "Mitigation of Weldment Cracking of Highway Steel Structures due to the Galvanizing Process." Funded for \$499,974.75. *NCHRP 10-94*. Co-I with PI: Caroline Bennett; Co-I: Stan Rolfe; Co-I: Adolfo Matamoros. Project Duration: 07/2014-12/2016.

PROFESSIONAL ACTIVITIES

1. *Symposium co-organizer* Mini-symposium on Wireless Sensor Technology, 11th International Workshop on Advanced Smart Materials and Smart Structures Technology (11ANCRiSST), Champaign, August, 2015
2. *Session Chair* 6th World Conference on Structural Control and Monitoring, Barcelona, Spain, July 2014
3. *Session Chair* 59th Annual Structural Engineering Conference, Lawrence, KS, March 2014

COURSES TAUGHT AT THE UNIVERSITY OF KANSAS

CE 461 Structural Analysis Fall 13; Sp 14; Fall 14; Sp 15; Sp 16
CE 704 Dynamics and Vibrations Sp 16
CE 895 Experimental Structural Dynamics Fall 15

UNIVERSITY SERVICE

School of Engineering

1. School of Engineering Scholarship Committee, Member *Summer 2015 - Present*

Department of Civil, Environmental, and Architectural Engineering

1. Faculty Advisor to the EERI KU Student Chapter *Fall 2013-Present*
2. Member of the undergraduate recruitment committee *Fall 2014-Present*
3. CEAE Undergraduate scholarship committee, Chair *Fall 2014-Present*