

## Joel B. Harley

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CONTACT INFORMATION	Department of Electrical and Computer Engineering University of Utah 50 S. Central Campus Drive Salt Lake City, UT 84112 USA	<i>E-mail:</i> joel.harley@utah.edu <i>Voice:</i> (732) 567-6786 <i>WWW:</i> wisp.ece.utah.edu
RESEARCH INTERESTS	Signal processing for media with complex wave propagation, cyber-physical systems, structural health monitoring, compressed sensing, matched field processing, machine learning, big data, transform theory, time reversal, detection and estimation, statistics, pattern recognition	
EDUCATION	<b>Carnegie Mellon University</b> , Pittsburgh, Pennsylvania USA <b>Ph.D.</b> , Electrical and Computer Engineering, May 2014 <b>M.S.</b> , Electrical and Computer Engineering, May 2011  <b>Tufts University</b> , Medford, Massachusetts USA <b>B.S.</b> , Electrical Engineering, May, 2008 Graduated Summa Cum Laude	
RESEARCH GRANTS	<b>Air Force Young Investigator Award</b> <i>Predictive, Model-Assisted Guided Wave Structural Health Monitoring</i> PI: Joel B. Harley Amount: \$359,979	<b>Mar. 2017 - Feb. 2020</b>
	<b>University of Utah Seed Grant</b> <i>Ultrasonic Characterization and Inspection of 3D Printed Metals</i> PI: Joel B. Harley Amount: \$34,999	<b>Sept. 2016 - Aug. 2017</b>
	<b>National Science Foundation</b> <i>Statistical Structural Health Monitoring and Damage Detection for Highly Variable Environments</i> PI: Joel B. Harley, Co-PI: Daniel O. Adams Amount: \$325,000	<b>Apr. 2016 – Mar. 2019</b>
	<b>Harman International</b> <i>Hybrid Noise Cancellation Ambient Aware DSP</i> PI: Joel B. Harley Amount: \$79,100	<b>Feb. 2016 – Jun. 2017</b>
AWARDS AND HONORS	<b>National and International Awards and Honors</b> Invited Paper Published in Proceedings of the IEEE National Defense Science and Engineering Graduate (NDSEG) Fellowship National Science Foundation (NSF) Graduate Research Fellowship Dept. of Homeland Security Graduate Fellowship (declined)	<b>2015</b> <b>2009</b> <b>2009</b> <b>2009</b>

### University Awards and Honors

Univ. of Utah Electrical and Computer Engineering Teaching Award	Aug. 2016
Best senior clinic award (faculty mentor) [with L-3 Communications]	Apr. 2016
Best senior project group award (faculty mentor)	Apr. 2016
Univ. of Utah Career Services Faculty Recognition Award (outstanding advising)	Mar. 2016
Carnegie Mellon A. G. Jordan Award (for academic excellence and service)	May 2014
Lamme/Westinghouse Electrical and Computer Engineering Graduate Fellowship	Apr. 2009
Tufts University Class of 1942 Scholarship Prize	May 2008
Tufts University Harry Poole Burden Prize in Electrical Engineering	May 2008
Induction into Eta Kappa Nu Electrical Engineering Honor Society	2007
Induction into Tau Beta Pi Engineering Honor Society	2007

### Best Student Paper Awards

<i>Proc. of the IEEE Ultrasonics Symposium</i>	Oct. 2011
<i>Proc. of the International Conference on Pipelines and Trenchless Technology</i>	Oct. 2011
<i>Proc. of the ASCE Workshop in Computing</i>	Jun. 2011
<i>Proc. of the Meetings on Acoustics, vol. 6, no. 1</i>	Jun. 2009

### RESEARCH & PROFESSIONAL EXPERIENCE

<b>University of Utah</b> , Salt Lake City, Utah USA <i>Adjunct Professor (Dept. of Mechanical Engineering)</i>	Mar. 2016 - present
<b>University of Utah</b> , Salt Lake City, Utah USA <i>Assistant Professor (Dept. of Electrical and Computer Engineering)</i>	July 2014 - present
<b>Carnegie Mellon University</b> , Pittsburgh, Pennsylvania USA <i>Graduate Researcher (Dept. of Electrical and Computer Engineering)</i>	Sept. 2008 - May 2014
<b>MIT Lincoln Laboratory</b> , Lincoln, Massachusetts USA <i>Ranges and Test Beds Intern</i>	Nov. 2007 - Aug. 2008
<b>Raytheon Integrated Defense Systems</b> , Sudbury, Massachusetts USA <i>Engineering Intern</i>	May 2007 - Aug. 2007
<b>Tufts University</b> , Medford, Massachusetts USA <i>Research Assistant (Physics Dept.)</i>	Jan. 2006 - Jun. 2008
<b>University of Illinois at Urbana-Champaign</b> , Urbana, Illinois USA <i>Research Assistant (Electrical and Computer Engineering Dept.)</i>	May 2006 - Aug. 2006

### LEADERSHIP EXPERIENCE

<b>IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society</b> <i>Ultrasonics Technical Committee Member</i>	Jan. 2016 - present
<i>Student rep. advisor and AdCom member</i>	Jan. 2015 - present
<i>Student representative and AdCom member</i>	Jan. 2013 - Dec. 2014
<b>IEEE Signal Processing Society</b> <i>Utah Chapter, President</i>	Jan. 2016 - present
<i>Utah Chapter, Treasurer</i>	Feb. 2015 - Dec. 2015
<i>Signal Proc. and Signal Proc. Education Workshop, Awards Chair</i>	Aug. 2015
<b>University of Utah</b> , Salt Lake City, Utah USA <i>Eta Kappa Nu advisor</i>	Feb. 2015 - present
<i>Graduate Committee member</i>	Sept. 2014 - present

**Carnegie Mellon University, Pittsburgh, Pennsylvania USA**

*ECE Graduate Student Organization Vice President* Sept. 2013 - May 2014  
*ECE Teaching and Career Seminar Co-organizer* May 2013 - Dec. 2013  
*ECE Graduate Student Organization President* Sept. 2012 - Aug. 2013  
*ECE Graduate Student Organization Vice President* Sept. 2011 - Aug. 2012

**Acoustical Society of America**

*Signal Processing in Acoustics Technical Committee Member* Jan. 2010 - Dec. 2012

TEACHING  
EXPERIENCE

**University of Utah, Salt Lake City, Utah USA**

*Instructor (ECE 6534: Advanced Digital Signal Processing II)* Jan. 2017 - Apr. 2017  
*Mentor (Senior Project)* Aug. 2016 - Apr. 2017  
*Instructor (ECE 3500: Fundamentals of Signals and Systems)* Aug. 2016 - Dec. 2016  
*Instructor (ECE 6540: Estimation Theory)* Jan. 2016 - Apr. 2016  
*Mentor (Senior Clinic with L3 Communications)* Aug. 2015 - Apr. 2016  
*Mentor (Senior Project)* Aug. 2015 - Apr. 2016  
*Instructor (ECE 3500: Fundamentals of Signals and Systems)* Sept. 2015 - Dec. 2015  
*Instructor (ECE 6534: Advanced Digital Signal Processing II)* Jan. 2015 - Apr. 2015  
*Instructor (ECE 3500: Fundamentals of Signals and Systems)* Sept. 2014 - Dec. 2014

**Carnegie Mellon University, Pittsburgh, Pennsylvania USA**

*Teaching Assistant (18-819F: Waves and Applications)* Jan. 2013 - May 2013  
*Teaching Assistant (18-202: Math. Found. of Electrical Eng.)* Sept. 2011 - Dec. 2011  
*Eberly Center Future Faculty Program* Jan. 2012 - May 2014  
*Guest Lecturer (18-290: Signals and Systems)* Nov. 2013  
*Graduate mentor* May 2011 - Dec. 2011  
*Graduate mentor* Sept. 2009 - Dec. 2009

PHD STUDENTS

**Kishan Supreet Alguri**

*Department of Elec. and Comp. Eng., University of Utah* Sept. 2014 - present

**Alexander Charles Douglass**

*Department of Mechanical Engineering, University of Utah* May 2015 - present

**Soroosh Sabeti**

*Department of Elec. and Comp. Eng., University of Utah* May 2016 - present

**Yi Tang**

*Department of Elec. and Comp. Eng., University of Utah* Sept. 2016 - present

MASTER'S THESIS  
STUDENTS

**Ashesh Pandey**

*Department of Electrical and Computer Engineering, University of Utah* Sept. 2015 - May 2017

**Pooja Mehta**

*Department of Electrical and Computer Engineering, University of Utah* Jan. 2016 - May 2017

**Spencer Adam Shiveley**

*Department of Electrical and Computer Engineering, University of Utah* Jan. 2016 - May 2017

**Joseph Melville**

*Department of Mechanical Engineering, University of Utah* May 2016 - May 2017

UNDERGRADUATE  
RESEARCHERS

**Carl Herriott**

*Department of Mechanical Engineering, University of Utah* Jan. 2017 - present

<b>Nathan Curtis</b> <i>Department of Mechanical Engineering, University of Utah</i>	<b>Sept. 2016 - present</b>
<b>Rajeev Sahay</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	<b>Sept. 2016 - present</b>
<b>Yisong Zhang</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	<b>Jan. 2016 - present</b>
<b>Ming Gao</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	<b>Oct. 2014 - May 2016</b>
<b>Ben Posch</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	<b>Oct. 2014 - Dec. 2015</b>
<b>Eric Snyder</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	<b>Oct. 2014 - May 2015</b>

PHD COMMITTEES

<b>Hana Baesmat</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	
<b>Richard Joseph Allred</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	
<b>Stephen Laraway</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	
<b>Ahmad Rezazadehreyhani</b> <i>Department of Electrical and Computer Engineering, University of Utah</i>	
<b>Peng Gong</b> <i>Department of Civil and Environmental Engineering, Carnegie Mellon University</i> Thesis: "Ultrasonic Signal Processing Techniques for Structural Damage Quantification"	<b>December 2015</b>
<b>Matineh Eybpoosh</b> <i>Department of Civil and Environmental Engineering, Carnegie Mellon University</i> Thesis: "A Data-Driven Framework Based on Sparse Representation of Ultrasonic Guided-Waves for Online Damage Detection of Pipelines"	<b>June 2015</b>

INVITED TALKS

- P1. **J.B. Harley**, K. Supreet Alguri, "Decomposing Guided Wavefields with Dictionary Learning," Special Session on Signal Processing in Acoustics: Compressive Sensing in Acoustics, Acoustical Society of America Meeting, Honolulu, HI, Nov. 29, 2016.
- P2. **J.B. Harley**, "Learning and Leveraging Sparse Representations for Waves in Highly Complex Media," Laboratoire Imagerie Biomédicale (LIB), University Pierre and Marie Curie, Paris, France, Sept. 16, 2016.
- P3. **J.B. Harley**, "University of Utah Collaboration: Project and Experiments," NASA Marshall, Huntsville, AL, Aug. 2, 2016.
- P4. **J.B. Harley**, "Predicting Complex Wavefields with Few Measurements," Goethe University of Frankfurt am Main, Frankfurt, Germany, Jun. 27, 2016.
- P5. **J.B. Harley**, "Using Wavenumber Sparsity to Characterize Materials and Locate Structural Damage," Nondestructive Evaluation Sciences Branch, NASA Langley, Hampton, VA, Jan. 8, 2015.

- P6. **J.B. Harley**, “Signal Processing for Cyber-Physical Civil and Aerospace Infrastructures,” Department of Electrical and Computer Engineering, Northeastern University, Boston, MA, Jan. 24, 2014.
- P7. **J.B. Harley**, “Smarter Sensing for Critical Infrastructures: The Intersection of Physical Principles, Sparse Models, and Statistical Signal Processing,” Department of Electrical and Computer Engineering, Tufts University, Medford, MA, Jan. 21, 2014.
- P8. **J.B. Harley**, “Recovering Dispersion Curves in Guided Wave – A Compressive Sensing Approach,” Department of Structural Engineering, University of California, San Diego, CA, Oct. 16, 2013.

PATENTS

**J.B. Harley**, J.M.F. Moura, “Temperature Compensation in Wave-Based Damage Detection,” United States 13/945,766, filed Jul. 2013 (patent pending).

JOURNAL  
PUBLICATIONS

- J1. W. Zhao, M. Li, **J.B. Harley**, Y. Jin, J.M.F. Moura, J. Zhu, “Reconstruction of Lamb wave dispersion curves by sparse representation with continuity constraints,” Journal of the Acoustical Society of America, vol. 141, no. 2, pp. 749-763, Feb. 2017. DOI: 10.1109/JPROC.2015.2481438.
- J2. **J.B. Harley**, “Predictive Guided Wave Models Through Sparse Modal Representations,” Proceedings of the IEEE, vol. 104, no. 8, pp. 1604-1619, Dec. 2015. DOI: 10.1109/JPROC.2015.2481438.
- J3. **J.B. Harley**, J.M.F. Moura, “Data-driven and calibration-free lamb wave source localization with sparse sensor arrays,” IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 62, no. 8, pp. 1516-1529, Aug. 2015. DOI: 10.1109/TUFFC.2014.006860.
- J4. C. Liu, **J.B. Harley**, M. Bergeś, D.W. Greve, I.J. Oppenheim, “Robust Ultrasonic Damage Detection under Complex Environment using Singular Value Decomposition,” Ultrasonics, vol. 58, pp. 75-86, Apr. 2015. DOI: 10.1016/j.ultras.2014.12.005.
- J5. **J.B. Harley**, J.M.F. Moura, “Dispersion curve recovery with orthogonal matching pursuit,” Journal of the Acoustical Society of America, vol. 136, no. 6, pp. EL1-EL7, Jan. 2015. DOI: 10.1121/1.4902434.
- J6. **J.B. Harley**, J.M.F. Moura, “Data-Driven Matched Field Processing for Lamb Wave Structural Health Monitoring,” Journal of the Acoustical Society of America, vol 135, no. 3, March 2014. DOI: 10.1121/1.4863651
- J7. **J.B. Harley**, J.M.F. Moura, “Sparse Recovery of the Multimodal and Dispersive Characteristics of Lamb Waves,” Journal of the Acoustical Society of America, vol. 133, no. 5, pp. 2732-2745, May 2013. DOI: 10.1121/1.4799805
- J8. **J.B. Harley**, J.M.F. Moura, “Scale Transform Signal Processing for Optimal Ultrasonic Temperature Compensation,” IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 59, no. 10, Oct. 2012. DOI: 10.1109/TUFFC.2012.2448.
- J9. Y.Ying, J.H. Garrett, I.J. Oppenheim, L. Soibelman, **J.B. Harley**, J. Shi, Y. Jin, “Towards Data-Driven Structural Health Monitoring: Application of Machine Learning and Signal Processing to Damage Detection,” Journal of Computing in Civil Engineering, vol. 27, no. 6, Sept. 2012. DOI: 10.1061/(ASCE)CP.1943-5487.0000258.

- J10. Y. Ying, J.H. Garrett, **J. Harley**, I.J. Oppenheim, J. Shi, and L. Soibelman, “Damage Detection in Pipes under Changing Environmental Conditions using Embedded Piezoelectric Transducers and Pattern Recognition Techniques,” *Journal of Pipeline Systems Engineering and Practice*, vol. 4, no. 1, Mar. 2012. DOI: 10.1061/(ASCE)PS.1949-1204.0000106.
- JOURNAL PUB.  
(IN REVIEW) J11. C. Liu, **J.B. Harley**, M. Bergés, D.W. Greve, W.R. Junker, I.J. Oppenheim, “A Robust SVD-Based Baseline Removal Method for Guided Wave Damage Localization,” submitted.
- JOURNAL PUB.  
(SUBMITTED) J12. **J.B. Harley**, C. C. Chia, “Statistical Partial Wavefield Imaging with Lamb Waves,” *Structural Health Monitoring*, submitted 3/2017.
- JOURNAL PUB.  
(IN PREPARATION) J13. A. Douglass, **J.B. Harley**, “Guided Wave Temperature Compensation in Harsh Environments with Dynamic Time Warping,” in preparation (plan to submit 3/2017).
- J14. K.S. Alguri, J. Melville, **J.B. Harley**, “Damage Detection using a Dictionary Learning Framework,” in preparation (plan to submit 4/2017).
- J15. S. Shiveley, **J.B. Harley**, “Structural Health Monitoring with Large Data Sets,” in preparation (plan to submit 6/2017).
- J16. A. Pandey, J. Kirsch, M. Barjatia, **J.B. Harley**, “Low Latency Speech Enhancement with the Stationary Wavelet Transform and Minimum Prediction,” in preparation (plan to submit 7/2017).
- CONFERENCE  
PROCEEDINGS C1. K. Supreet Alguri, J.E. Michaels, **J.B. Harley**, “Robust Baseline Subtraction for Ultrasonic Full Wavefield Analysis,” In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, Atlanta, GA, pp. 02005, Feb. 2017. DOI: 10.1063/1.4974546
- C2. A. Douglass, **J.B. Harley**, “Dynamic Time Warping for Temperature Compensation in Structural Health Monitoring,” In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, Atlanta, GA, pp. 02005, Feb. 2017. DOI: 10.1063/1.4974558
- C3. S.A. Shiveley, A. Douglass, B. Posch, and **J.B. Harley**, “Guided Wave Structural Health Monitoring with Large Data Sets,” In Proc. of the IEEE International Ultrasonics Symposium, Tour, France, pp. 1-4, October 2016. DOI: 10.1109/ULTSYM.2016.7728712.
- C4. K. Supreet Alguri, **J. B. Harley**, “Consolidating Guided Wave Simulations and Experimental Data: A Dictionary Learning Approach,” in Proc. of SPIE Health Monitoring of Structural and Biological Systems, Los Vegas, pp. 98050Y-98050Y-10, Apr. 2016. DOI: 10.1117/12.2219420.
- C5. P. Gong, **J.B. Harley**, M. Berges, W.R. Junker, D.W. Greve, and I.J. Oppenheim, “Ultrasonic Guided Wave Detection of Scatterers on Large Clad Steel Plates,” in Proc. of SPIE Sensors and Smart Structures Technologies for Civil, Mechanical, and Aerospace Systems, Los Vegas, pp. 98033O, Mar. 2016. DOI: 10.1117/12.2214393.
- C6. **J.B. Harley**, Luca De Marchi “Multidimensional Guided Wave Dispersion Recovery for Locating Defects in Composite Materials”, In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, Minneapolis, MN, vol. 1706, pp. 030009, Feb. 2016. DOI: 10.1063/1.4940481.
- C7. C. Kexel, **J.B. Harley**, J. Moll, “Attenuation and Phase Compensation for Guided Wave Based Inspection Using a Filter Approach,” in Proc. of the IEEE International Ultrasonics Symposium, Taiwan, pp. 4, Oct. 2015. DOI: 10.1109/ULTSYM.2015.0081.

- C8. S. Kim, B. Uprety, D.O. Adams, V.J. Mathews, **J.B. Harley**, “Acoustic Emission Based Damage Characterization in Composite Plates Using Low-Velocity Impact Testing,” In Proc. of the International Workshop on Structural Health Monitoring, Stanford, CA, Sept. 2015. DOI: 10.12783/SHM2015/185.
- C9. A.B. Zoubi, V.J. Mathews, **J.B. Harley**, D.O. Adams, “Lamb Waves Mode Decomposition Using the Cross-Wigner-Ville Distribution,” In Proc. of the International Workshop on Structural Health Monitoring, Stanford, CA, Sept. 2015. DOI: 10.12783/SHM2015/185.
- C10. P. Gong, M.E. Patton, C. Liu, D.W. Greve, **J.B. Harley**, W.R. Junker, I.J. Oppenheim,, “Ultrasonic Detection of the Alkali-Silica Reaction in Concrete,” In Proc. of the IEEE International Ultrasonics Symposium, pp. 361-364, Sept. 2014. DOI: 10.1109/ULTSYM.2014.0089.
- C11. **J.B. Harley**, C. Liu, I.J. Oppenheim, D.W. Greve, J.M.F. Moura, “Coherent, Data-Driven Lamb Wave Localization under Environmental Variations,” In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, vol. 1650, no. 202, July 2014. DOI: 10.1063/1.4914611.
- C12. **J.B. Harley**, J.M.F. Moura, “Matched Field Processing Localization with Random Sensor Topologies,” In Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing, p. 1404 - 1408, Florence, May, 2014. DOI: 10.1109/ICASSP.2014.6853828.
- C13. C. Liu, **J.B. Harley**, P. Gong, M.E. Patton, D.W. Greve, W.R. Junker, I.J. Oppenheim, “A Robust Baseline Removal Method for Guided Wave Damage Localization,” In Proc. of the SPIE Conference on Smart Structures and Nondestructive Evaluation, p. 90611K, San Diego, CA, Mar., 2014. DOI: 10.1117/12.2045577.
- C14. P. Gong, M.E. Patton, D.W. Greve, **J.B. Harley**, W.R. Junker, C. Liu, I.J. Oppenheim, “ASR Detection in Concrete from Ultrasonic Passband,” In Proc. of the SPIE Conference on Smart Structures and Nondestructive Evaluation, p. 90610E, San Diego, CA, Mar., 2014. DOI: 10.1117/12.2045645.
- C15. C. Liu, **J.B. Harley**, D.W. Greve, M. Bergeś, I.J. Oppenheim, “Pipe Degradation Identification Under Highly Dynamic Environment Using Singular Value Decomposition,” Stanford, CA, Sept. 10-12, 2013.
- C16. **J.B. Harley**, J.M.F. Moura, “High Resolution Localization with Lamb Wave Sparse Wavenumber Analysis,” In Proc. of the International Workshop on Structural Health Monitoring, Stanford, CA, Sept. 10-12, 2013.
- C17. P. Gong, M.E. Patton, C. Liu, **J.B. Harley**, D.W. Greve, I.J. Oppenheim, “ASR Detection in Concrete from Frequency-Related Ultrasonic Attenuation,” In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, vol. 1581, pp. 909-916, Baltimore, MD, July 21-26, 2013. DOI: 10.1063/1.4864918.
- C18. **J.B. Harley**, J.M.F. Moura, “Decomposition of Multipath Lamb Waves with Sparse Wavenumber Analysis for Structural Health Monitoring,” In Proc. of the IEEE Ultrasonics Symposium, pp. 675-678, Prague, Czech Republic, Jul. 21-25, 2013. DOI: 10.1109/ULTSYM.2013.0174.
- C19. **J.B. Harley**, J.M.F. Moura, “Broadband Localization in a Dispersive Medium Through Sparse Wavenumber Analysis,” In Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing, pp. 4071-4075, Vancouver, Canada, May 26-31, 2013. DOI: 10.1109/ICASSP.2013.6638424.

- C20. S. Chen, F. Cerda, J. Guo, **J.B. Harley**, Q. Shi, P. Rizzo, J. Bielak, J.H. Garrett, J. Kovacevic, "Multiresolution Classification with Semi-Supervised Learning for Indirect Bridge Structural Health Monitoring," In Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing, pp. 3412-3416, Vancouver, Canada, May 26-31, 2013. DOI: 10.1109/ICASSP.2013.6638291.
- C21. C. Liu, Y. Ying, M. Bergés, J.H. Garrett, I.J. Oppenheim, **J.B. Harley**, N. O'Donoghue, D.W. Greve, J.M.F. Moura, M.H. Altschul, L. Soibelman, "Ultrasonic Monitoring of a Pressurized Pipe in Operation," In Proc. of the ASCE Structures Congress, p. 1903-1913, Pittsburgh, PA, May 2-4, 2013. DOI: 10.1061/9780784412848.167.
- C22. C. Liu, **J.B. Harley**, Y. Ying, I.J. Oppenheim, M. Bergés, D.W. Greve, J.H. Garrett, "Singular Vector Decomposition for Novelty Detection in Ultrasonic Pipe Monitoring," In Proc. of the SPIE Conference on Smart Structures and Nondestructive Evaluation, p. 86921R, San Diego, CA, Mar. 11-15, 2013. DOI: 10.1117/12.2009891.
- C23. N. O'Donoghue, **J.B. Harley**, C. Liu, J.M.F. Moura, I.J. Oppenheim, "Maximum likelihood defect localization in a pipe using guided acoustic waves," In Proc. of the Asilomar Conference on Signal, Systems, and Computers, pp. 1863-1867, Ocean Grove, CA, Nov. 4-7, 2012. DOI: 10.1109/ACSSC.2012.6489360.
- C24. C. Liu, **J.B. Harley**, N. O'Donoghue, Y. Ying, M. Bergés, M.H. Altschul, J.H. Garrett, D.W. Greve, J.M.F. Moura, I.J. Oppenheim, L. Soibelman, "Robust change detection in highly dynamic guided wave signals with singular value decomposition," In Proc. of the IEEE Ultrasonics Symposium, pp. 483-486, Dresden, Germany, Oct. 7-10, 2012. DOI: 10.1109/ULTSYM.2012.0120.
- C25. **J.B. Harley**, A.C. Schmidt, J.M.F. Moura, "Accurate Sparse Recovery of Guided Wave Characteristics for Structural Health Monitoring," In Proc. of the IEEE Ultrasonics Symposium, pp. 158-161, Dresden, Germany, Oct. 7-10, 2012. DOI: 10.1109/ULTSYM.2012.0039.
- C26. C. Liu, **J.B. Harley**, N. O'Donoghue, Y. Ying, M. Bergés, M.H. Altschul, J.H. Garrett, D.W. Greve, J.M.F. Moura, I.J. Oppenheim, L. Soibelman, "Ultrasonic Scatterer Detection in a Pipe Under Operating Conditions Using SVD," In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, pp. 1454-1461, Denver, CO, Jul. 15-20, 2012. DOI: 10.1063/1.4789213.
- C27. **J.B. Harley**, N. Thavornpitak, J.M.F. Moura, "Delay-and-Sum Technique for Localization with Cylindrical Objects," In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, pp. 294-301, Denver, CO, Jul. 15-20, 2012. DOI: 10.1063/1.4789061.
- C28. A. Schmidt, **J.B. Harley**, J.M.F. Moura, "Compressed Sensing Radar Surveillance Networks," In Proc. IEEE Sensor Array and Multichannel Signal Processing Workshop, pp. 209-212, Hoboken, NJ, Jun. 17-20, 2012. (Invited Paper) DOI: 10.1109/SAM.2012.6250469.
- C29. C. Liu, **J.B. Harley**, N. O'Donoghue, Y. Ying, M.H. Altschul, J.H. Garrett, J.M.F. Moura, I.J. Oppenheim, L. Soibelman, "Ultrasonic Monitoring of a Pipe Under Operating Conditions," In Proc. of the SPIE Conference on Smart Structures and Nondestructive Evaluation, vol. 8345, p. 83450B, San Diego, CA, Mar. 11-15, 2012. DOI: 10.1117/12.915040.
- C30. **J.B. Harley**, J.M.F. Moura, "Guided Wave Temperature Compensation with the Scale-Invariant Correlation Coefficient," In Proc. of the IEEE Ultrasonics Symposium, Orlando, FL, Oct. 18-21, 2011. (Best Paper Award) DOI: 10.1109/ULTSYM.2011.0218.



- C31. Y. Ying, J. H. Garrett, Jr., **J. Harley**, I. J. Oppenheim, J. Shi, L. Soibelman, “Damage Detection and Localization in Pipes under Changing Environmental Conditions using Embedded Piezoelectric Transducers and Pattern Recognition Techniques,” In Proc. of the International Conference on Pipelines and Trenchless Technology, Beijing, China, Oct. 26-29, 2011. (Best Paper Award) DOI: 10.1061/(ASCE)PS.1949-1204.0000106.
- C32. **J.B. Harley**, J. M. F. Moura, “An efficient temperature compensation technique for guided wave ultrasonic inspection,” In Proc. of the International Workshop on Structural Health Monitoring, Stanford, CA, Sept. 13-15, 2011.
- C33. Y. Ying, J. H. Garrett, **J. Harley**, J.M.F. Moura, N. O’Donoughue, I. J. Oppenheim, J. Shi, and L. Soibelman, “Machine Learning for Pipeline Monitoring under Environmental and Operational Variations,” In Proc. of the International Workshop on Structural Health Monitoring, Stanford, CA, Sept. 13-15, 2011. DOI: 10.1061/41182(416)30.
- C34. **J.B. Harley**, Y. Ying, J.M.F. Moura, I.J. Oppenheim, L. Soibelman, and J.H. Garrett, “Application of Mellin Transform Features for Robust Ultrasonic Guided Wave Structural Health Monitoring,” In Proc. of the Review of Progress in Quantitative Nondestructive Evaluation, Burlington, VT, Jul. 17-22, 2011. DOI: 10.1063/1.4716399.
- C35. Y. Ying, **J. Harley**, J.H. Garrett, Jr., Y. Jin, I.J. Oppenheim, J. Shi, L. Soibelman, “Applications of Machine Learning in Pipeline Monitoring,” In Proc. of the ASCE Workshop in Computing, pp. 242-249, Miami, FL, Jun. 19-22, 2011. (Best Paper Award) DOI: 10.1061/41182(416)30.
- C36. N. O’Donoughue, **J. Harley**, J.M.F. Moura, “Detection of Targets Embedded in Multipath Clutter with Time Reversal,” In Proc. of the IEEE International Conference on Acoustics, Speech, and Signal Processing, pp. 3868-3871, Prague, Czech Republic, May 22-27, 2011. DOI: 10.1109/ICASSP.2011.5947196.
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